

**MINUTES OF 39<sup>th</sup> COMMERCIAL SUB-COMMITTEE MEETING OF ERPC HELD ON  
18.02.2019 (MONDAY) AT 11:00 HRS AT ERPC, KOLKATA**

**ITEM NO. A1: Confirmation of the minutes of the 38<sup>th</sup> Commercial Sub-Committee meeting held on 12.10.2018.**

The minutes of the 38<sup>th</sup> Commercial Committee meeting were intimated vide ERPC letter No-ERPC/COM-I/GEN/2018/5517-5556 dated 30.10.2018. No request for amendment has been received by ERPC Secretariat.

*Members may confirm the minutes of the 38<sup>th</sup> Commercial Sub Committee Meeting.*

**Deliberation in the Meeting:**

*Members present in the meeting confirmed the minutes of the 38<sup>th</sup> Commercial Committee Meeting.*

**PART B: ITEMS FOR DISCUSSION**

**ITEM NO. B1: COD of U#4 (660MW) of Barh STPS –II of NTPC – APTEL Order**

Hon'ble CERC in its order dated 20th September, 2017 in Petition No. 130/MP/2015 along with IA No. 67/2017 had revised the COD date of U-IV (660MW) of Barh STPS-II as 08/03/2016 in place of 15/11/2014 (as previously declared by NTPC).

Accordingly, in line with the above decision of CERC, ERPC had revised and issued the REA, DSM & RTA Accounts vide letter dated 12.01.2018 and RTDA Account vide letter dated 02.02.2018 respectively for the period from 15.11.2014 to 07.03.2016 (Copy enclosed at **Annexure-I**).

Subsequently, NTPC vide letter dated 18.10.2018 informed that they have filed an appeal before APTEL bearing Appeal No. 330 of 2017 against the above CERC order dated 20.09.2017. Along with the appeal NTPC vide IA No. 840 of 2017 also filed for stay of implementation of the CERC order dated 20.09.2017. In view of above NTPC requested ERPC to keep the revised Accounts in abeyance till the application of stay is decided by Hon'ble Tribunal. In reply, ERPC vide letter dated 19.01.2018 clarified that no stay order has been received till date.

Recently, APTEL has given its judgement for IA No. 840 of 2017 in Appeal No. 330 of 2017. APTEL in its order dated 25th January, 2019 has dismissed the Appeal of NTPC and upheld the impugned order dated 20/09/2017 passed by CERC in petition no. 130/MP/2015 stating that they are of the considered view that the issues raised in the appeal being Appeal No. 330 of 2017 are devoid of merits.

Therefore all the affected beneficiaries of Barh STPS-II along with NTPC and CTU/PGCIL are to initiate action towards settlement of the Accounts as issued by ERPC for the period from 15.11.2014 to 07.03.2016 for implementation of CERC order dated 20/09/2017.

As per the revised statement, beneficiary wise Deviation Charges receivable by NTPC Barh Stg-II Unit IV from the pool for infirm power injection for the period from 15.11.2014 to 07.03.2016 is ₹ **636.86 Cr** as per the table below:

<b>Beneficiary</b>	<b>₹ (Crore)</b>
BSPHCL	564.8512231
JUVNL	41.0085656
GRIDCO	25.5745384
SIKKIM	2.7492379
MP(WR)	2.6757824
<b>Total</b>	<b>636.8593474</b>

Moreover, apart from the above, Deviation Charges also receivable by Barh STPS from the DSM pool for the above period is ₹ 63.1484181 Crores.

However, the beneficiaries will get refund of Energy Charges, Capacity Charges and Transmission Charges on account of BARH St-II Unit 4 Infirm for the period 15.11.2014-07.03.2016 which is also reflected in the revised statement.

*Members may discuss and finalize the modalities for settlement of accounts.*

#### **Deliberation in the Meeting:**

*Member Secretary, ERPC informed that the power generated by U-IV (660MW) of Barh STPS-II during the period from 15/11/2014 to 08/03/2016 had been treated as infirm generation due to revision of COD date by the Hon'ble CERC vide order dated 20th September, 2017 in Petition no. 130/MP/2015. Accordingly, revised accounts were issued by ERPC Secretariat.*

*NTPC submitted that, as per the Order of CERC, excess payment, if any, received by NTPC during the above period shall be adjusted by NTPC against the capital cost. As and when the revised tariff order is issued by the Hon'ble Commission, NTPC shall revise the bills accordingly.*

*There was detailed deliberation on this issue. During deliberation, it emerged that there was no convergence on the interpretation of CERC order regarding treatment of excess payment received by NTPC during the period from 15/11/2014 to 08/03/2016.*

*It was decided to refer this issue to TCC.*

#### **ITEM NO. B2: Pilot on Security Constrained Economic Despatch (SCED) of Inter-State Generating Stations (ISGS) Pan India**

CERC vide Suo-Motu order dated 31.01.2019 in petition no. 02/SM/2019 has directed implementation of SCED for the Inter-State Generating Stations on pilot basis w.e.f 01.04.2019. RPCs and POSOCO have been directed to conduct stakeholder awareness programs for smooth implementation of SCED pan-India.

In this regard, POSOCO has circulated an agenda note vide letter no. POSOCO/NLDC/2019/402 dated 04.02.2019 (Copy enclosed at **Annexure - II**). Details of the agenda note are given below:

- Hon'ble Commission, vide Order in Petition No. 02/SM/2019 (Suo-Motu) dtd. 31st January, 2019, directed for Pilot on SCED of Inter-State Generating Stations (ISGS) Pan India <http://cercind.gov.in/2019/orders/02-SM-2019.pdf>
- The Central Commission observed that there is an overarching objective to optimize the Scheduling and dispatch of the generation resources and reduce the overall cost of Production of electricity without major structural changes in the existing System/framework. SCED is a desired step in the Indian grid operation towards optimization methodologies. SCED is an involved

procedure requiring developing software, creating interfaces and establishing various protocols, information dissemination and streamlining settlement system etc.

- Accordingly, the Commission directed for pilot of SCED for the Inter-State Generating Stations, on pilot basis, w.e.f. 01st April, 2019.
- The SCED optimization model is for all the thermal Inter State Generating Stations (ISGS) that are regional entities and whose tariff is determined or adopted by the Commission for their full capacity without violating grid security and honouring the existing scheduling practices prescribed in the Indian Electricity Grid Code.
- A Detailed Procedure would be formulated that would contain the guidelines regarding operational aspects of SCED including scheduling, dispatch, accounting, settlement etc.
- The variable charges declared by the generators for the purpose of Reserve Regulation Ancillary Services (RRAS) would be considered in the optimization process.
- Schedules of the States/beneficiaries would not be changed and the beneficiaries would continue to pay the charges for the scheduled energy directly to the generator as per the existing practices.
- NLDC would open a separate bank account called “National Pool Account (SCED) “. All payments to/from the generators on account of SCED schedules would flow to and from the said National Pool Account.
- For any increment in the injection schedule of a generator due to optimization, the generator would be paid from the National Pool Account (SCED) for the incremental generation at the rate of its variable charge.
- For any decrement in the schedule of a generator due to optimization, the generator would pay to the aforesaid National Pool Account (SCED) for the decrement generation at the rate of its variable charge after discounting compensation due to part load operation as certified by RPC as per the provisions of IEGC.
- The incremental changes in schedules on account of optimization would not be considered for incentive computation for the generating stations. The deviation in respect of such generators would be settled with reference to their revised schedule. The increment or decrement of generation under SCED would not form part of RRAS.
- RPCs would issue weekly SCED accounts along with the DSM, RRAS, FRAS and AGC accounts based on data provided to them by RLDCs.
- RPCs would issue the regional accounts including the SCED schedules and NLDC would issue a consolidated "National SCED Settlement Statement" comprising payment and receipts to/from all generators participating in the SCED.
- The savings obtained through SCED after settlement of all accounts of SCED would be recorded and maintained in the “National Pool Account (SCED) “ by the NLDC.
- CTU is directed to ensure reliable communication between the respective generating stations and Load Despatch Centres.
- As and when the detailed procedure on implementation of SCED pan-India is finalized, the same would also be circulated in the forthcoming OCC meetings in the month of March, 2019.

***ERLDC (POSOCO) may deliver the presentation on SCED.***

#### **Deliberation in the Meeting:**

***ERLDC gave a brief presentation highlighting the objective, the basic principle and the methodologies to be followed in its implementation. It emerged from the discussion that the***

*overall system cost shall be reduced to a great extent. (Copy of presentation enclosed at Annexure-III)*

*It was suggested by the members that a detailed procedure is needed to be developed by CERC for equitable distribution of fund accumulated in the pool among the beneficiaries and the generators before full scale implementation of SCED.*

**ITEM NO. B3: Implementation of DSM (4th amendment) Regulations'2018 – ERPC Agenda**

DSM (4<sup>th</sup> Amendment) Regulations, 2018 was notified by Honorable CERC on 20.11.2018. The said amendment has been implemented w.e.f 01.01.2019 and the same has been intimated to all the constituents of Eastern Region vide letter no **ERPC/Com-I/Corres/2019/7024-7107, dated 01.01.2019**. Accordingly, DSM account is being prepared and issued by ERPC Secretariat as per 4<sup>th</sup> Amendment Regulations.

ERPC Secretariat will give a brief presentation on the performance and behavior of various constituents of Eastern Region for the last 4 weeks from the implementation of new regulations.

*ERPC may give the presentation. Members may discuss.*

**Deliberation in the Meeting:**

*ERPC Secretariat gave a detailed presentation on the DSM Accounts issued for the last 5 weeks based on the implementation of DSM (4th amendment) Regulations'2018. During the presentation, the impact of sign change violation & drawl/injection pattern of various utilities of Eastern Region were highlighted. (Copy of presentation enclosed at Annexure-IV)*

**ITEM NO. B4: Implementation of DSM (4th amendment) Regulations'2018 – Concerns raised by various utilities of Eastern Region**

**NHPC:** As per CERC DSM Regulation, (4th Amendment issued by CERC vide order no. L-1/132/2013-CERC dated 20/11/2018) in the event of sustained deviation from schedule in one direction by any regional entity, such Regional entity shall have to change sign of their deviation from schedule at least once after every 6 time blocks. The violation under this clause attracts additional charges of 20% on the daily DSM payable/receivable.

For Rangit Power Station (3X20MW), NHPC vide letter no. NH/O&M/GMC/223 dated 24.01.2019 (Copy enclosed at **Annexure - V**), have intimated that when machines are not operational (Off peak hour in lean season) and schedules is zero the actual transmission figures are non-zero resulting in deviation from schedule. In this scenario, when there is no injection of power from Rangit, the actual transmission figures are beyond control of Power Station, therefore it is not possible to do the sign reversal of deviation from schedule as stipulated in the above said regulations resulting in additional deviation charges to NHPC.

Similar case also existed in Northern Region, which was taken up with NRPC in the 155th OCC Meeting of NRPC held on 17th January 2019, wherein it was decided that "where injection schedule given to the generator is zero and the power from the grid is being drawn by the generator for their auxiliary consumption, in such scenario, no "additional Charge" for sustained deviation shall be imposed".

Accordingly, the Deviation Settlement Account for the week 31st December 2018 to 06th January 2019 has also been issued by NRPC on above assumptions.



In view of above, NHPC requested that when there is no injection from Rangit Power House or in such cases, the additional charge as Penalty on sign change may not be considered.

**TUL:** The generation schedule of Teesta-III HEP is 'zero', only grid power is flowing through Teesta-III HEP bus-bar. During such period additional deviation charges has been imposed on Teesta-III HEP, due to no sign change. We have been penalized to the tune of ₹1.75 lacs as DSM charges for the the period of 01-Jan-2019 to 20-Jan-2018 by ERPC.

Additional deviation charges (ADC) during 01-Jan-19 to 20-Jan-19							
Sl.No	Description		1-Jan-19 to 6-Jan-19	7-Jan-19 to 13- Jan-19	14-Jan-19 to 20- Jan-19	Total value(Rs)	Remarks
1	During Machine Idle Condition (Generation SCH-Zero)	ADC due to sign change when Machine is Idle	-200578.45	-96807.53	-66992.29	-364378.27	By considering both ADC due to sign change and revenue during machine was in idle condition ,Penalty of Rs 1.75 Lakhs was paid from TUL to ERPC for the period of 1-Jan-19 to 20-Jan-19
		ADC due to volume limit when machine is Idle	-42128.82	-31731.31	-35419.15	-109279.28	
2	Total revenue earned when Machine is in Idle Condition(Generation SCH-Zero)		105189.02	147299.89	45189.66	297678.57	

Since our generation schedule is zero, we should not be penalized due to flow of grid power through Teesta-III bus bar. (Copy of email enclosed at **Annexure – VI**)

**CHUZACHEN:** When the generation schedule for Chuzachen HEP is zero, Chuzachen HEP acts as a LILO for the 132 KV Rangpo-Chuzachen-Gangtok Circuit. The direction of power flow on this circuit is dependent on the grid conditions due to which Chuzachen HEP should be exempted from the sign change rule as we have no role to play in the import or export of power under this condition on this circuit.

Chuzachen is a run-of -river plant with restricted pondage. During the transitional months of May to June; there are sudden increases of hydrology in the Himalayan region and a 1% cap for additional generation is not enough to utilize the water potential available then as reservoir storage will be exceeded. Hence for transitional months; additional generation cap should be sufficiently increased as loss of water is a loss of revenue for the company as well as the nation. (Copy of email enclosed at **Annexure – VII**)

**DANS ENERGY:** DANS Energy vide letter no. DEPL/JLHEP/O&M/18-19/ERLDC/001, dated 12.02.2019(Copy enclosed at **Annexure - VIII** ) informed that Additional Deviation Charges have been imposed on DEPL in respect of Jorethang Loop HEP for the period from 01.01.2019 to 27.01.2019 due to Sign Change violation penalty. This is on account of negative power being captured by Special Energy Meters at New Melli Grid Pooling Station, which has been installed by PGCIL during zero schedule power by Jorethang Loop HEP and without any import/start up power from grid to DEPL during the plant shut down period.

**KBUNL:** KBUNL vide letter no. KBUNL/COMML/1584 dated 14.02.2019 (Copy enclosed at **Annexure - IX** ) has requested that Additional Deviation Charges for over-injection by a Central Sector Generating Station, whose tariff is determined by Hon'ble CERC, when grid frequency is 50.05Hz & above, the rate of DSM applicable should be ACP or ECR (lesser of the two).

**HVDC PUSAULI & ALIPURDUAR:** Powergrid has submitted that quantum of auxiliary power consumption at any point of time through HVDC depends on the load flow through the system which is dependent on demand and supply situation of the grid and is beyond their control. Hence, Powergrid has requested that deviation from schedule on account of auxiliary power drawn for their HVDC stations should be exempted from sign change violation penalty.

*Members may discuss.*

**Deliberation in the Meeting:**

*Members of the Commercial Committee, after detailed deliberation, unanimously decided the followings:*

- i) Power drawn by a generator against “ZERO” schedule shall exempted from penalty due to sign change violation.*
- ii) Power injected by a generator against “ZERO” schedule shall NOT be exempted from penalty due to sign change violation.*
- iii) If the drawal schedule of a utility is equal to or less than 3 MW, no penalty shall be imposed against the sign change violation.*
- iv) Regarding the issue raised by KBUNL, it was decided that for any over-injection by Generators at grid frequency 50.05Hz or above, ADC shall be applicable at ACP.*
- v) The above decisions shall be placed in the TCC and ERPC meeting for concurrence.*
- vi) On receipt of the concurrence, the same shall be implemented retrospectively w.e.f. 01.01.2019.*
- vii) However, the decision of CERC, if any, on this issue shall prevail.*

**ITEM NO. B5: Implementation of FRAS – ERPC Agenda**

CERC in its Suo-Motu order dated 16.07.2018 in petition No.07/SM/2018/Suo-Motu directed the implementation of FRAS (Fast Response Ancillary Service) on pilot basis w.e.f 26.11.2018. ERPC secretariat has accordingly prepared and issued FRAS accounts along with RRAS accounts since implementation. As per CERC order, total energy dispatched during a day for hydro stations under FRAS shall be made zero and hence, no energy charges shall be payable to the hydro stations. Incentive shall be paid on mileage basis from DSM pool at the rate of 10 paisa/KWH for both “up” & “down” Energy to FRAS provider. It has been observed that in some days the net energy dispatch under FRAS ( “up” & “down” ) is not zero for hydro stations like Teesta V & Rangit. This may result in significant financial implication for FRAS providers in the event of large quantum of dispatch under FRAS.

ERPC Secretariat will give a brief presentation. NHPC is also requested to give a presentation on the experience attained since the implementation of FRAS.

*ERPC & NHPC may give the presentation. Members may discuss.*

### **Deliberation in the Meeting:**

*ERPC Secretariat gave a detailed presentation on the implementation of FRAS in the Eastern Region. The implication of unbalanced FRAS schedule was also highlighted during the presentation. (Copy of presentation enclosed at Annexure-X)*

*NHPC gave a presentation highlighting operational challenges faced by operators of NHPC plants participating in FRAS. (Copy of presentation enclosed at Annexure-XI)*

*It was decided to bring this issue before upcoming TCC meeting.*

#### **ITEM NO. B6: Deviation and Transmission Deviation Charge Adjustment of NPGC due to erroneous CT ratio for SEM readings of NPGC**

NPGC, vide letter no. 0370/NPGC/EED dated 07.01.2019 (Copy enclosed at **Annexure - XII**), requested for revision of Deviation charges and RTDA account for the period from 10.05.2018 to 23.12.2018. As per NPGC, CT ratio of Station Transformer metering core CT was inadvertently mentioned by them as 1200:1 instead of 600:1 which is the actual CT ratio. This resulted in higher recording of Actual energy drawal by NPGC and hence increased liability of Deviation and Transmission Deviation Charges payment by NPGC.

ERPC Secretariat convened a Special meeting on 07.02.2019 on this issue wherein it was discussed in details and the documents provided by NPGC were verified. ERLDC informed that the corrected CT ratio of 600:1 has been considered w.e.f 24.12.2018. NPGC was advised to submit an affidavit mentioning the inadvertent error and actual CT ratio adopted for metering by 14.02.2019 along with all supporting documents. It was decided that ERPC Secretariat will revise the affected accounts for the period from 10.05.2018 to 23.12.2018 after receipt of the affidavit. It was further observed that DSM pool members would not be affected due to revision in DSM Account. Adjustment in DSM Account would be done in maximum six instalments subject to availability of fund in DSM pool (Copy of Notice and Minutes of the Special Meeting given at **Annexure - XIII**).

*This is for information of the members.*

### **Deliberation in the Meeting:**

*ERPC Secretariat informed that, as per decision taken in the special meeting held on 07.02.2019, NPGC has submitted an affidavit & accordingly ERPC Secretariat has revised the DSM account. RTDA account would be revised subsequently.*

#### **ITEM NO. B7: Import of power by Bhutan in 2019**

DGPC Bhutan vide letter no. DGPC/O&MD/23/2018/437 dated 04.02.2019 (given at **Annexure - XIV**) intimated that 1<sup>st</sup> unit of 720MW Mangdechhu HEP, which was supposed to be commissioned in 2018, is still not commissioned due to unavoidable circumstances. It is expected to be commissioned by end of February 2019 if all the works get executed as per the planned schedule.

Due to this, Bhutan has imported a net energy of 11.291923MU from India in the month of January 2019. This net import of power by Bhutan from India may continue during the months of February & March 2019 as well till the 1<sup>st</sup> unit of MHEP is commissioned.

ERPC Secretariat had convened a meeting on 13.07.2018 to finalize the treatment of import of power by Bhutan during February and March 2018. In the meeting ERPC Secretariat and Director (O&M), DGPC Bhutan gave detailed presentations. It was observed that the entire anomaly has arisen due to non-existence of any suitable tariff between India and Bhutan for import of power by Bhutan. ERPC Secretariat had first adjusted the import of power by Bhutan during Feb-2018 and Mar-2018 from the export of power to India during Apr-2018 and thereafter segregated the balance power into Tala & Chukha components. However, Bhutan has prepared the accounting based on segregation of export of power to India during April 2018 into Tala & Chukha components first and thereafter made the adjustment of import of power during the months of Feb-2018 and Mar-2018.

In the meeting it was unanimously decided that financial liability arising as a result of the methodology adopted by ERPC Secretariat for treatment of import of power by Bhutan shall be shared between India and Bhutan on 50:50 basis as a one-time settlement ( Copy of Minutes of the meeting given at **Annexure - XV**). The same methodology may be adopted for accounting and financial settlement of import of power by Bhutan during 2019 as well.

***DGPC may intimate the status of MHEP Commissioning and members may discuss.***

#### **Deliberation in the Meeting:**

***Commercial Sub-Committee noted that Bhutan has a special relationship with India in general and Eastern Region in particular in terms of import of power from Bhutan. Keeping this in view, Commercial Sub-Committee recommended that, as a special case, the issue of import of power by Bhutan this year should be resolved in line with the methodology adopted in the previous year. This shall be put up to TCC for approval.***

#### **ITEM NO. B8: National Energy Accounting – NPC Agenda**

In the 8th Meeting of NPC (National Power Committee) held on 30.11.2018 at Guwahati, an agenda note as circulated by NLDC vide letter dated 09.11.2018 (Copy enclosed at **Annexure-XVI**) on National Energy Account & National Deviation Pool Account was taken up for discussion. Summary of the proposed methodology is as follows:

**1) Scheduling:** Scheduling inter-regional transactions on a net basis for each region. NLDC shall communicate the net inter-regional schedules to the NPC for accounting.

**2) Metering:** SEM data shall be collected by the RLDCs, processed meter data shall be made available to NPC through NLDC.

**3) Accounting & Settlement:** Based on the scheduling and meter data provided, NPC shall prepare the National Energy Account (NEA) including the National Deviation Account for the inter-regional and trans-national transactions. The NEA will reflect the payables/receivables for each region on a net-basis and this amount shall be payable/receivable to the National Deviation Pool Account which shall be operated by NLDC. The NEA shall also reflect the cross-border or trans-national transactions and the neighbouring countries shall be paying/receiving to/from the National Deviation Pool Account operated by NLDC. Payment to the National DSM Pool shall have the highest priority.

**4) Handling Surplus/Deficit in Regional Pool Accounts and transfer of residual to PSDF:** Once the National DSM Pool becomes operational, all residual/surplus amount in the regional DSM pools shall be transferred to the National DSM Pool Account. The NPC accounts would also facilitate the transfer of funds from the surplus available in the National DSM pool to the

deficit regional DSM pool accounts as a single transaction thereby simplifying the process. Once all liabilities have been met, any residual in National DSM Pool shall be transferred periodically to the PSDF in accordance with the extant CERC Regulations.

In the 8<sup>th</sup> NPC Meeting, it was decided that the proposal on NEA & National Deviation Pool Account may be discussed in all the RPCs and the observations of RPCs may be furnished to NPC Secretariat.

*Members may discuss.*

**Deliberation in the Meeting:**

*It was decided that the constituent would go through the agenda item in detail & give their comments for deliberation in the upcoming TCC meeting.*

**ITEM NO. B9: Certification of non-ISTS lines of OPTCL system carrying ISTS power**

OPTCL, vide letter no. RT&C-NON-ISTS/2017-497 dated 02.02.2019 (Copy enclosed at **Annexure - XVII**), has requested ERPC Secretariat to expedite the process of certification of their 9 nos. of 220KV & 132KV transmission lines as non-ISTS lines carrying ISTS power.

Accordingly, ERPC Secretariat issued a letter to ERLDC (vide letter no ERPC/COM-I/non-ISTS/2019/8986-87 dated 11.02.2019 as enclosed at **Annexure - XVIII**) requesting to carry out necessary system studies and forward the same to ERPC.

This is necessary to enable OPTCL to file before CERC for determination of transmission charges.

*ERLDC may update.*

**Deliberation in the Meeting:**

*ERLDC presented quarter-wise study result for the year 2018-19. It was decided that another quarter-wise study for the year 2017-18 shall also be carried out by ERLDC. Both the results shall be put up to TCC for deliberation.*

**ITEM NO. B10: Implementation of Differential protection for short distance lines in different substations of ER-II –Powergrid**

The Lines where line differential protection are to be implemented are as follows:

Sl. No.	Substation name	Name of the Line	Line length	Line owned by
1	Durgapur	220KV DGP (PG) - DVC Ckt.-I	1	DVC
2		220KV DGP (PG) - DVC Ckt.-II	1	DVC
3		220KV DGP (PG) - Bidhan Nagar (WBSETCL) Ckt.-I	11	WBSETCL
4		220KV DGP (PG) - Bidhan Nagar (WBSETCL) Ckt.-II	11	WBSETCL
5	Malda	132KV MLD (PG) - MLD (WBSETCL) Ckt.-I	5.94	WBSEDCL
6		132KV MLD (PG) - MLD (WBSETCL) Ckt.-II	5.94	WBSEDCL
7	Alipurduar	220KV ALPD (PG)- ALPD (WBSETCL) Ckt-I	6.377	WBSETCL

8		220KV ALPD (PG) - ALPD (WBSETCL) Ckt.-II	6.377	WBSETCL
9	Birpara	132KV BRP (PG) - BRP (WBSETCL) Ckt.-I	0.3	WBSETCL
10		132KV BRP (PG) - BRP (WBSETCL) Ckt.-II	0.3	WBSETCL
11	Siliguri	132KV SLG (PG) - NJP (WBSETCL) Ckt.	10	WBSETCL
12		132KV SLG (PG) - NBU (WBSETCL) Ckt.	10	WBSETCL

In 68<sup>th</sup> PCC meeting, it was opined that differential protection should be implemented for all short lines (<20KM) to overcome relay co-ordination issues with respect to distance and over-current protection.

PCC in principle agreed and opined that differential protection at both the ends could be implemented by one entity to maintain the relay and communication compatibility.

PCC advised Powergrid to implement differential protection at both ends for rest of the above lines.

*In 38<sup>th</sup> TCC Meeting, it was decided in the meeting that the cost relating to implementation of fiber based differential protection scheme for both ends shall be borne by concerned utilities owning the line.*

Therefore for retrofitting of the old relays budgetary offer has been collected from M/s GE Ltd. Vide ref. no.-SPT001/PGCIL dated 22.05.2018. A BOQ has been prepared and the total financial implication comes to **Rs. 1,30,27,200/-** (One crore thirty lacs twenty seven thousands two hundreds only) including GST and other terms & conditions. Powergrid placed the proposal for

- Technical & administrative approval,
- Financial concurrence for Rs. 1,30,27,200/- (inclusive of GST),
- Execution of work through open tender basis

PCC in principle agreed to the proposal and referred to Commercial Sub-Committee Meeting for discussion.

*Members may discuss.*

#### **Deliberation in the Meeting:**

***Commercial Sub-Committee recommended for implementation of Differential protection for short distance lines in different substations of Powergrid ER-II at cost of Rs. 1,30,27,200/- (One crore thirty lacs twenty seven thousands two hundred only). This shall be put up to TCC for concurrence.***

#### **ITEM NO. B11: Constitution of Committee for analysing the major outages of ISTS elements of Eastern Region**

ERPC Secretariat is issuing certificate for availability of Transmission elements of all ISTS licensee of Eastern Region. ERPC Secretariat has to certify various types of outages based on the reasons specified with reasonable restoration time. Recently, in few cases of major outages, it becomes difficult to ascertain all the facts to arrive at the reasonability of the outage and reasonable time of restoration. Therefore a Committee has been constituted vide letter no. ERPC/MS/TA/2018-19/8480-84 dated 25.01.2019 (Copy enclosed at **Annexure - XIX**) for analysing the major outages of ISTS elements of ER to identify the category of outage and reasonable restoration time.

The members of the Committee as nominated by ER constituents are as follows:

1. Sh. D.K. Bauri, EE, ERPC -- Convenor
2. Sh. Chinmay Halder, ACE, WBSLDC
3. Sh. Sudhansu Sekhar Nanda, DGM (E& MR), OPTCL
4. Sh. S.K.Singh, GM(AM), Powergrid (ER-I)
5. Dr. Deepak Lakhapati, Head-Design, Sterlite Power

The committee will function as per the following guidelines:

- i) The Committee shall meet from time to time to analyse the various outages as referred by Member Secretary, ERPC.
- ii) The Convenor of the committee shall coordinate with all the members to organize meetings.
- iii) The Committee shall look into the various details of causes for outage of transmission elements and suggest the category of outage and reasonable restoration time period for of the transmission element.
- iv) The committee in its report/minute shall indicate the category and reasonable time period to be considered for each category for all outages as per the prevailing CERC regulations and CERC/CEA/CTU standards.
- v) ERLDC may be invited on case to case basis as and when felt by the committee members for verifying the outage time, log, record etc. as available with ERLDC.
- vi) The other concerned transmission licensee may be invited on case to case basis for explaining the details of outages of their respective elements.
- vii) The above members from Powergrid and Sterlite Power shall not take part in the decision making while analyzing outages of their respective elements. However, in such cases their function shall be restricted to represent or explain their cases of outages to the Committee.
- viii) If required, the committee shall undertake site visit for assessing the actual position in case of major failure of transmission elements which require higher restoration time beyond the standard allowable restoration period.

*This is for information to the members.*

#### **Deliberation in the Meeting:**

*Members appreciated the initiative taken by Member Secretary, ERPC regarding the constitution of a Committee for analysing the major outages of ISTS elements of Eastern Region.*

#### **ITEM NO. B12: Payment/Receipt Status from various pool accounts in ER – ERLDC Agenda**

##### **D1.1: Payment of Deviation Charge – Present Status.**

The status of Deviation Charge payment as on 06.02.2019 is enclosed at **Annexure – XX**. The current principal outstanding Deviation Charge of JUVNL & BSPHCL is **₹ 55.14 Cr & ₹ 9.83 Cr** respectively considering bill up to 20.01.2019. ERLDC is regularly giving reminders to BSPHCL & JUVNL to liquidate the outstanding Deviation charges.

Further SIKKIM is not paying DSM charges in Pool since last few years and waiting for adjustment with the receivable amount.

SIKKIM may please pay the Payable amount as per bill within due date instead of waiting for adjustment.

*ERLDC may please update.*

**Deliberation in the Meeting:**

*ERLDC informed that JUVNL has liquidated Rs. 13.88 Cr. JUVNL was asked to clear the pending dues at the earliest. BSPHCL & SIKKIM representative were absent in the Meeting.*

**D1.2: DSM Account Mismatch between ER & NR**

A huge mismatch between DSM accounts for ER-NR Link published by ERPC & NRPC has been observed since April 2018. Prior to April 2018 such mismatch was not significant. Actual Meter data of ER-NR Inter regional link, published in NRPC DSM Bill is matching with ERPC/ERLDC/NRLDC Actual SEM data. However, Schedule energy data of ER-NR Inter regional link published in NRPC DSM statement is not matching with ERPC data. It was gathered that some software related issue at NRPC is the main reason for this mismatch. DSM statement for ER-NR Link prepared by ERPC secretariat is correct.

Present statement of ER-NR Inter regional DSM Bill issued by NRPC & ERPC is given in **Annexure-XXI** for reference. ERLDC had taken up the issue with NRPC through NRLDC for sorting out the issue and for the revision of respective accounts prior to 03.09.2018. However so far revision for period up to 01.07.2018 is done by NRPC and still revision of account for 2 more months are pending. Such huge mismatch in two DSM account is causing problem in settlement of DSM as well RRAS account. The current principal outstanding Deviation receivable by ER Pool from NR Pool for ER-NR is **₹ 330 Cr.**

*Members may please discuss.*

**Deliberation in the Meeting:**

*ERLDC informed that NRPC has revised the Deviation Bill for ER-NR up to 1st July 2018. Remaining Period of Revision is pending to be done at NRPC end.*

**D1.3: Non-payment of Deviation Charges by IBEUL**

IBEUL is not paying Deviation charges in ER DSM Pool since 12.04.2017 (almost 2 years) and present outstanding amount payable by M/s IBEUL towards principal deviation charges is **₹ 112.50429 Lac** considering bill up to 20.01.2019 and **₹ 21.35362 Lac** against the delayed payment interest of deviation charges till 31.01.19. A petition in CERC had been filed in July 2018 by ERLDC against M/s IBEUL for violation of Regulation 10 of DSM regulations 2014. Petition was heard for admission on 13.12.18 and next hearing is due on 28.02.2019.

*IBEUL may confirm the program for payment of outstanding dues.*



### **Deliberation in the Meeting:**

*IBEUL representative was not present in the meeting. ERLDC informed that Petition in CERC against IBEUL has been filed and it will be heard on 27.02.19.*

#### **D1.4: Interest due to delayed payment of deviation charges**

Due to delayed payment of deviation charges in DSM Pool in FY 2017-18, Interest was computed for all the DSM Pool Member. ERLDC vide letter No. संदर्भ : पूक्षेभारप्रेके./एम.ओ/यू-11 /2126 dated 26.06.18 was issued the interest statement for FY 2017-18.

The statement of interest amount is enclosed in **Annexure-XXII**. Settlement of delayed payment Interest for 2017-18 for the recipient constituents has been done on 01.06.18. SIKKIM & IBEUL are yet to clear the outstanding interest amount of 2017-18. In 38th CCM, it was decided that ERPC Secretariat would write a letter to the concerned utilities to release the outstanding amount at the earliest. However concerned utilities are yet to make the payment.

*IBEUL & SIKKIM may please confirm the program for payment of Interest on account of delayed payment for FY 2017-18.*

### **Deliberation in the Meeting:**

*IBEUL & SIKKIM representatives were not present in the meeting and it was decided that ERPC secretariat would write Letter to SIKKIM for resolving its pending issues.*

#### **D1.5: Reactive Energy Charges --- Present Status.**

The updated position of Receipt/Payment of Reactive Energy Charges in the pool as on 06.02.2019 (considering bill up to 20.01.2019) is indicated in **Annexure – XXIII**. The total outstanding receivable on account of Reactive charges from West Bengal is ₹ 1.84 Cr & from BSPHCL is ₹ 0.46 Cr. Reactive Charge receivable from SIKKIM is ₹ 3.1 Lac. SIKKIM has not paid the Reactive energy Charges since more than last one year. JUVNL has also the outstanding of ₹ 0.32 Cr payable to Reactive Pool.

*WBSETCL/WBSEDCL, SIKKIM & JUVNL may confirm the program for payment of outstanding dues*

### **Deliberation in the Meeting:**

*JUVNL informed that outstanding dues will be cleared at the earliest. BSPHCL, WBSETCL/WBSEDCL, SIKKIM representative were not present in the Meeting. It was decided that ERPC secretariat would write Letter to above constituents for resolving their pending issues.*

#### **D1.6: Outstanding reactive energy charge against WBSEDCL**

Reactive Energy charges amount receivable from WBSEDCL prior to 04.01.2016 was ₹ 1.82 Cr (prior to Suo-moto order dated 21.07.2016 of the Hon'ble WBERC in the matter of case no: SM-14/16-17) which was long pending.

However, WBSEDCL has started liquidating the payment in EMI and so far WBSEDCL has paid ₹ 0.91 Cr in 3 installments (3 X 3025688 = 9077064) and 3 more installments amounting to ₹ 0.91 Cr are pending.

*WBSETCL/WBSEDCL may confirm the program for payment of outstanding dues.*

**Deliberation in the Meeting:**

*WBSETCL/WBSEDCL representative was not present in the meeting.*

**D1.7: RRAS Account ----Present Status.**

The updated position of payments to the RRAS Provider(s) from the DSM pool and payments by the RRAS Provider(s) to the DSM pool as on 06.02.2019 (considering bill up to 20.01.2019) is indicated in **Annexure – XXIV**. So far ₹ 227.3 Cr have been settled under RRAS in ER during FY 2018-19.

*This is for information to the members.*

**Deliberation in the Meeting:**

*Members noted.*

**D1.8: Congestion account - Present Status**

No Congestion in ER is imposed since 06.12.2012. The status of congestion charge payment after full settlement is enclosed at **Annexure –XXV**.

**Deliberation in the Meeting:**

*Members noted.*

**D1.9: Status of PSDF**

An amount of ₹ 6.86 Cr from Reactive account have been transferred to PSDF after 38th Commercial sub-committee meeting held on 12.10.18. With this the total amount of ₹ 956.6 Cr has been transferred to PSDF so far. No amount from Deviation pool has been transferred to PSDF A/c since 29.06.16 and surplus amount in deviation pool is being utilized for settlement of RRAS & FRAS Bill. The break up details of fund transferred to PSDF (till 06.02.19) is enclosed in **Annexure-XXVI**.

*This is for information to the members.*

**Deliberation in the Meeting:**

*Members noted.*

**ITEM NO. B13: Reconciliation of Commercial Accounts – ERLDC Agenda**

**B13.1: Reconciliation of Deviation Accounts.**

At the end of 3rd quarter of 2018-19, the reconciliation statement (Period: 01.10.18 to 31.12.18) has been issued by ERLDC on 09.01.19 and statements have been sent to the respective

constituents. The same has also been uploaded at ERLDC website at <https://erldc.in/market-operation/dsmreconciliation/>. The constituents were requested to verify /check the same & comments, if any, on the same were to be reported to ERLDC by 31.01.2019. The status of reconciliation is enclosed in **Annexure-XXVII**.

IBEUL has not reconciled the statement for last 2 years.

OPGC has not signed reconciliation statement for last 2 quarter.

BSPHCL, JUVNL, DVC, WBSETCL, SIKKIM, NHPC, KBUNL, GMR, JLHEP, DICKCHU, TASHIDING, Powergrid (ER-I & II) & NPGC have not signed reconciliation statement for 3rd quarter of 2018-19.

Above constituents are once again requested to submit the signed reconciliation statement at the earliest. If the confirmation is not received within 2 weeks from the date of issuance of the letters, the statements issued by ERLDC shall be deemed to have been reconciled.

***Concerned members may update.***

#### **Deliberation in the Meeting:**

***ERLDC informed that BSPHCL, DVC, KBUNL, Powergrid ER-II have reconciled the statement.***

#### **B13.2: Reconciliation of Reactive Account**

At the end of 3rd quarter of 2018-19, the reconciliation statement (Period: 01.10.18 to 31.12.18) has been issued by ERLDC on 09.01.19 and statements have been sent to the respective constituents. The same has also been uploaded at ERLDC website at <https://erldc.in/market-operation/reactivereconciliation/> Constituents were requested to verify /check the same & comments if any on the same were to be reported to ERLDC.

SIKKIM & JUVNL have not reconciled the Account since last 2 quarters.

BSPHCL, DVC, GRIDCO & WBSETCL have not reconciled the account of last one quarter.

***Constituents may please reconcile the Reactive account.***

#### **Deliberation in the Meeting:**

***ERLDC informed that GRIDCO has reconciled the statement. BSPHCL, DVC & WBSETCL representatives were not present in the meeting.***

#### **B13.3: Reconciliation of RRAS Account**

At the end of 3rd quarter of 2018-19, the reconciliation statement (Period: 01.10.18 to 31.12.18) has been issued by ERLDC on 09.01.19 and statements have been sent to the respective constituents (i.e. NTPC, KBUNL and BRBCL). The same has also been uploaded at ERLDC website at <https://erldc.in/market-operation/rrasreconciliation/> NTPC & BRBCL has reconciled the RRAS Account.

KBUNL may please reconcile the RRAS account.

### **Deliberation in the Meeting:**

*KBUNL representative was not present in the meeting.*

#### **B13.4: Reconciliation of FRAS Account.**

At the end of 3rd quarter of 2018-19, the reconciliation statement (Period: 01.10.18 to 31.12.18) has been issued by ERLDC on 09.01.19 and statements have been sent to the respective constituents (i.e. NHPC). The same has also been uploaded at ERLDC website at <https://erldc.in/market-operation/fras-reconciliation/> NHPC has not reconciled the account.

NHPC may please reconcile the FRAS account.

### **Deliberation in the Meeting:**

*NHPC agreed to reconcile the statement shortly.*

#### **B13.5: Reconciliation for STOA payments made to SLDC / STU:**

The reconciliation statements of STOA payments for the period of Apr'18 to Dec'18 have been sent to the DVC, OPTCL and WBSETCL for checking at their end and confirmation from their side. WBSETCL and OPTCL are yet to confirm for the period from Jul'18 to Sep-18 and DVC is yet to confirm for the period from Oct'18 to Dec'18

*DVC, OPTCL and WBSETCL may update.*

### **Deliberation in the Meeting:**

*ERLDC has informed that DVC & OPTCL has reconciled the statement for remaining period respectively. WBSETCL representative were not present in the meeting.*

#### **B13.6: Reconciliation for payments made to STOA applicants:**

The reconciliation statements of STOA payments for the period from Apr'18 to Jun'18 have been sent to CESC, JITPL, JUVNL and WBSEDCL for checking at their end and confirmation.

CESC has confirmed for the above period. WBSEDCL is yet to confirm for the period Jul'18 to Dec'18. JITPL is yet to confirm for the period Jul'18 to Sep'18. JBVNL has not confirmed for the entire period.

As per clause 15.1 of CERC approved STOA bilateral procedure, since the confirmations have not been received within 2 weeks from the date of issuance of the letters, the statement issued by ERLDC have been deemed to be reconciled. The details are attached in the **Annexure-XXVIII**.

**Since there is a serious audit objection on non-signing of DSM, Congestion and STOA reconciliation statement it is once again requested that all regional pool members may check and sign the statement sent by ERLDC.**

*Members may take necessary action for signing the statements at the earliest.*

### **Deliberation in the Meeting:**

*ERLDC informed that JBVNL has reconciled. WBSEDCL representative was not present in the meeting. It was decided that ERPC Secretariat would write a letter to concerned utilities to reconcile the statements at the earliest.*

#### **B13.7: Opening of LC by ER constituents for DSM payments – ERLDC Agenda**

Clause 10 (4) of CERC Deviation Settlement Mechanism and related matters Regulations, 2014 vide notification No. L-1/132/2013/CERC dated 6<sup>th</sup> January, 2014 to be implemented from 17.02.2014 is reproduced below:

#### **Quote**

*All regional entities which had at any time during the previous financial year failed to make payment of Charges for Deviation including Additional Deviation Charges for Deviation within the time specified in this regulations shall be required to open a Letter of Credit (LC) equal to 110% of its average payable weekly liability for Deviations in the previous financial year, in favor of the concerned RLDC within a fortnight from the date these Regulations come into force.....*

*.....Provided further that LC amount shall be increased to 110% of the payable weekly liability in any week during the year, if it exceeds the previous LC amount by more than 50%.*

#### **Unquote**

The details of LC amount required to be opened in 2018-19 by ER constituents is given in ***Annexure - XXIX***. Letters to this effect has been issued by ERLDC to the defaulting entities.

IBEUL & Tashiding (SHIGA) have to open fresh LC but they have not opened the LC till date.

BSPHCL, JUVNL, SIKKIM & APNRL have not been renewed after expiry of their LC. In 39<sup>th</sup> TCC/ERPC Meeting, JUVNL had assured to open the LC with requisite amount shortly. Rest of the constituents who have to open the LC have opened LC.

***BSPHCL, JUVNL, SIKKIM, IBEUL, APNRL & TASHIDING (Shiga) may update.***

### **Deliberation in the Meeting:**

*ERLDC informed that the letters had been sent to the defaulting entities to open the required LC but there was no response from their end.*

***BSPHCL, SIKKIM, IBEUL & TASHIDING representative were not available in the meeting.***

***It was decided that ERPC Secretariat would write a letter to concerned utilities to open the requisite LCs at the earliest.***

#### **ITEM NO. B14: Meter reading related issues – ERLDC Agenda**

##### **B14.1:Erroneous recording of data by Interface Meters**

Following meters at different substation of PGCIL and BSPTCL is recording erroneous reading since last few weeks. The problem was informed to the respective substation through e mail and telephonically. However the problem of erroneous data of meters is still persisting.

S. No.	Substation	Name of Feeder	Meter S.No	Date start of problem (Date)	Issues
<b>PGCIL Substations</b>					
1	MALDA	132 KV SIDE OF MALDA 220/132 160 MVA ICT-2	ER-1103-A	03.12.18	Reverse Polarity
2	BIRPARA	132 KV SIDE OF BIRPARA 220/132 160 MVA ICT-1	ER-1041-A	03.12.18	Reverse Polarity
3	BIRPARA	132 KV SIDE OF BIRPARA 220/132 160 MVA ICT-2	NP-5891-A	03.12.18	Reverse Polarity
4	BOLANGIR	220 KV SIDE BOLANGIR 400/220 KV 500 MVA ICT-I	ER-1573-A	03.12.18	Wrong Connection of CT/PT
5	BOLANGIR	220 KV SIDE BOLANGIR 400/220 KV 500 MVA ICT-2	NP-7919-A	03.12.18	Wrong Connection of CT/PT
6	MOTIHARI	132kV SIDE OF 200MVA MOTIHARI(DMTCL) ICT-1	ER-1174-A	03.12.18	Reverse Polarity
<b>BSPTCL Substation</b>					
1	BEGUSARAI	220kV Begusarai-Purnea-1	ER-1344-A	19.12.18	Reverse Polarity

The above issue was also discussed in 153<sup>rd</sup> OCC and PGCIL/BSPTCL was requested to resolve these issues at the earliest. However the problem is yet to be resolved.

*PGCIL/BSPTCL may please update the status.*

#### **Deliberation in the Meeting:**

*PGCIL informed that Issue related to meters at Malda & Birpara has been resolved.*

*ERLDC informed that Issue related to Bolangir PGCIL S/s, Motihari DMTCL s/s and Begusrai BSPTCL is not resolved yet.*

### **B14.2: Replacement of Non-functioning/defective Meters**

#### **B4.2.1: Talcher Solar NTPC**

03 Nos. of L&T meters (NP-7626-A, NP-7630-A & NP-5968-A) installed at 11 KV Feeder at Talcher Solar is defective since last one and half months and due to which SEM data of these meters is not being received by ERLDC. At present Talcher Solar generation is being computed with Standby meters without any Back Up meter data. The matter was informed to PGCIL Odisha Project for replacement of these 03 nos. of meters at Talcher Solar immediately.

In 153<sup>rd</sup> OCC, PGCIL informed that all 03 meters at NTPC Talcher Solar have been replaced. However, till now neither meter details nor meter data have been sent to ERLDC.

*PGCIL/NTPC may please respond.*

### **Deliberation in the Meeting:**

*Powergrid representative informed that the 03 nos. of meters at NTPC Talcher end have been replaced. ERLDC also confirmed the replacement of meter and availability of meter data at ERLDC end.*

#### **B14.3: NTPC Barh ICT-3**

As per information received from NTPC Barh, Meter NP-7482-A installed at HV side of 400/132 ICT-3 is defective since 21.11.18. Subsequently it was requested to Powergrid for replacement of the ICT meter. Till now ERLDC has neither received information of meter replacement nor getting meter data. NTPC has informed that the defective meter has been replaced by Genus Meter. In 153<sup>rd</sup> OCC, NTPC informed that due to non-availability of meter software, data could not be submitted and it will be submitted to ERLDC at the earliest. However, the data of Genus Meter is not being sent by NTPC Barh even after one month of replacement of meter. At present newly replaced meter is not connected through AMR.

*PGCIL/NTPC may please respond.*

### **Deliberation in the Meeting:**

*ERLDC informed that meter data of replaced meter is being received.*

#### **B14.4: Ranchi PG**

Meter No NP-7402-A installed at Ranchi New (PG) end of 400 KV Ranchi (PG) Line is not being received by ERLDC since more than last 3 months due to non-functioning of the meter. The above issue was raised in 38<sup>th</sup> CCM and 39<sup>th</sup> TCC/ERPC Meeting. In 38<sup>th</sup> CCM, Powergrid informed that the meter would be replaced by the 20th October, 2018.

In 153<sup>rd</sup> OCC, PGCIL informed that meter at Ranchi has been replaced and data is not been submitted to ERLDC due to software related issue.

*Powergid may please update the status.*

### **Deliberation in the Meeting:**

*ERLDC informed that Ranchi end meter data is being received at ERLDC end.*

#### **B14.5: Non Receipt of SEM data from various locations**

As per IEGC, weekly SEM data has to be sent by respective utilities by every Tuesday to the concerned RLDC. Weekly SEM data from following locations are not being submitted to ERLDC since long.

#### **B14.6: Ara and Kishanganj BSPHCL**

Ara(BSPTCL) and Kishanganj(BSPTCL) end meter data of 132 KV Ara(PG) – Ara(BSPTCL) and 132 KV Purnea(PG) – Kishanganj(BSPTCL) Lines is not being received by ERLDC due to AMR related issue. The data of aforesaid meters was earlier reporting to AMR and data was taken by ERLDC from AMR. Due to problem in AMR at Ara and Kishanganj, BSPTCL was requested

to send the meterdata from above 02 locations by downloading at their end till restoration of AMR.

In 152<sup>nd</sup> OCC meeting, it was informed that Modem at Arah was defective. OCC further advised BSPTCL to download the meter data using DCD and submit to ERLDC till restoration of AMR. The above issue was also discussed in 153<sup>rd</sup> OCC. Till now data is not being received at ERLDC end.

*BSPHCL may please respond.*

**Deliberation in the Meeting:**

*BSPHCL representative was not present in the Meeting. It was decided that ERPC Secretariat would write a letter to BSPHCL to send meter data of Ara & Kishanganj.*

**B14.7: Gelephu S/S in Bhutan**

Gelephu end meter data of 132 KV Gelephu-Salakati(PG) Line is not being received by ERLDC since last 3 months. Bhutan NLDC informed that due to defective DCD data cable at Gelephu, they are not sending the data to ERLDC.

Similar problem was observed with DCD at Malbase. In 152<sup>nd</sup> OCC, Powergrid informed that they had handed over one DCD, cable and supporting software to BPC on 14th November 2018 to download the data of Malbase. Regarding Gelephu, BPC informed the downloading cable is defective and needs replacement. The issue of non-submission of Gelephu data was also discussed in 153<sup>rd</sup> OCC.

However the data of Gelephu is still not being received at ERLDC end and presently for Kurichu net Injection/Drawl and ER-NER flow computation, Salakati end data is being used without any proper validation of data of Salakati end. In 153<sup>rd</sup> OCC, DGPC agreed to communicate the issue to BPC.

*PGCIL/Bhutan may please update.*

**Deliberation in the Meeting:**

*ERLDC informed that NLDC Bhutan has communicated that due to data cable related problem they are not able to send the data.*

*PGCIL assured to resolve the issue of non-availability of Gelephu end meter data in coordination with DGPC & BPC by 15<sup>th</sup> March, 2019. PGCIL informed that Malbase issue has been resolved.*

**ITEM NO. B15: Non-submission of weekly SEM readings by Tuesday noon from non-AMR Locations/ faulty AMR locations/ Genus meter locations – ERLDC Agenda**

As per IEGC (effective from 3.5.2010) Sub-clause-22 of Clause-6.4 (demarcation of responsibilities), all concerned utilities in whose premises SEMs are installed shall take weekly meter readings and transmit the same to RLDC by Tuesday noon for timely issuance of Deviation account Bill. Significant improvement in timely receipt of SEM data has been seen after AMR implementation at various locations and most of the meter data is being received by Tuesday.



Genus meters are installed at many locations in Eastern Region and data of Genus meters from those locations which are yet to be integrated in AMR are being sent manually and getting delayed in sending to ERLDC. It was also gathered that if concerned person responsible for data downloading is on Leave or not available, meter data is not being sent from those substations.

However general trend of receipt of meter data in last one month is as below:

By Wednesday or later: Sasaram (PG), Patna(PG), BSPTCL( Sonnagar New), WBSETCL (North Bengal) & SIKKIM

**POWERGRID, BSPTCL, WBSETCL & SIKKIM are again requested to please adhere to the schedule as per IEGC.**

#### **Deliberation in the Meeting:**

**BSPTCL, WBSETCL, SIKKIM representatives were not present in the Meeting. Powergrid assured to adhere to the schedule.**

#### **ITEM NO. B16: Implementation of 4<sup>th</sup> phase AMR including requirement of AMR data for SCADA Comparison – ERLDC Agenda**

Overall Monthly Status Report of PGCIL AMR as on date			
			Date : 04 – Feb – 2019
Total Substation connected	146		
Total DCU connected	161		
Total Meter connected	978		
Details of Communicating Meter		Details of Non Communicating Meter	
Total Communicating Substation	117	Total non- Communicating Substation	29
Communicating DCU	132	Non Communicating DCU	29
Communicating meter	731	Non Communicating meter **	247
		** Reason for Meter non communication	
		Meter / Feeder OFF	53
		Meter replacement	48
		GPRS issue(Non-PGCIL Locations)	59
		AMC plan for TCS	39
		DC power issue at Substation(Kahalgaoon-NTPC)	48

Presently 146 meters are connected through AMR system in ER. ERLDC is receiving data from 117 locations out of total 146 locations through AMR. The status of data receipt from the locations as on 04.02.2019 is as below:

There have been issues with the GPRS communication/DCU/Meter replacement for around 29 locations having 247 meters as mentioned above.

In 39<sup>th</sup> TCC/ERPC Meeting, it was agreed to implement 4<sup>th</sup> Phase AMR at a cost of ₹ 1.75 Cr in place of ₹ 93.56 Lakhs approved earlier considering the added requirement of metres, Locations, additional functionality, AMCs etc. ERPC suggested that Powergrid should ensure reliability in data transmission by implementing LAN connectivity through OPGC Network wherever feasible.

In 153<sup>rd</sup> OCC, Powergrid informed that Works had been awarded to M/s TCS on 23<sup>rd</sup> December 2018 at a cost of Rs 1.69 Cr after negotiation. Powegrid further added that work would be

completed by October 2019. List of 256 Meters and 29 New Locations for 4<sup>th</sup> Phase AMR is enclosed in **Annexure-XXX**.

*Moreover from Apr-19 onwards, meters of AMR Phase-I are going out of AMC in every month. 200 Meters with 46 Locations AMR AMC is expiring in next 3 months. Month wise AMC expiry details are enclosed in Annexure- XXXI.*

**POWERGRID** may update the latest status of implementation.

#### **Deliberation in the Meeting:**

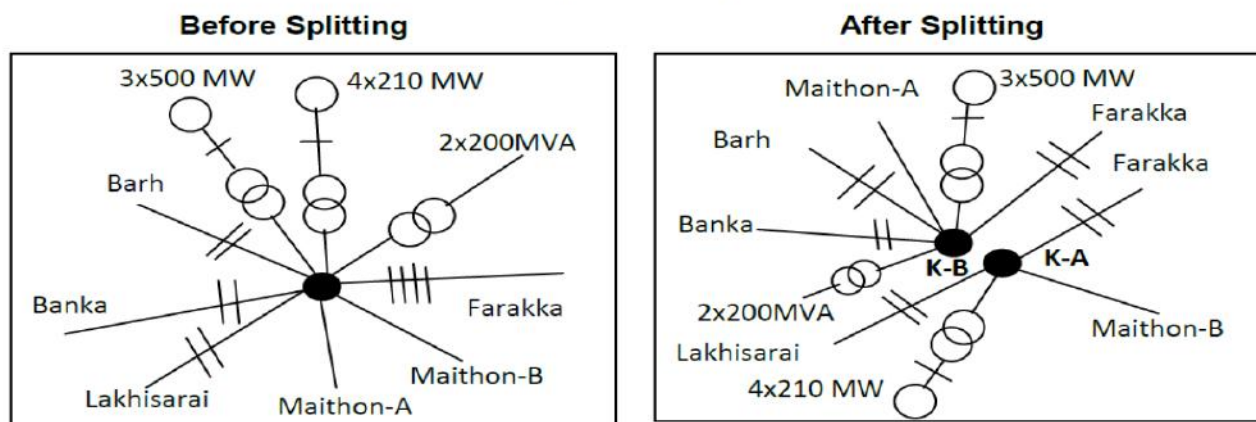
*Powergrid informed that LOA for 4th phase has been placed.*

*ERLDC informed about the expiry of phase wise AMC of AMR for existing location and meters from Apr 2019 onwards. Powergrid further informed that Phase wise expiry of AMC is commencing from June 2019 onward and Comprehensive AMC plan is being prepared and the same shall be put up separately.*

#### **ITEM NO. B17: Actual Generation Segregation methodology of NTPC Kahalgaon Stage-I & II after Bus Splitting Scheme – ERLDC Agenda**

The bus splitting scheme of Kahalgaon (NTPC) 400/132 was discussed and agreed in principle in 11<sup>th</sup> Standing Committee meeting of Eastern region held on 20<sup>th</sup> Sep 2010 and completion of Bus splitting scheme is expected during Feb 2019. The bus splitting scheme is as follows:

##### **Kahalgaon Switchyard**



As per the decision taken in 16<sup>th</sup> Commercial Sub Committee Meeting held on 23.02.2011, Kahalgaon NTPC Stage wise AG computation has to be done by apportioning AG (summation of all outgoing feeders) in proportion to stage wise GT. It was also decided to adopt this proposal as an interim measure. Accordingly, segregation of STG-I & STG-II generation of Kahalgaon (NTPC) as per above methodology was started w.e.f 01.04.2011 and the same is being followed till date.

Post bus splitting of Kahalgaon, the above methodology may be reviewed. Further after implementation of Bus Sectionaliser, Meter (Main & Check) may be installed at both end of Bus Sectionaliser.

**NTPC** may please update.

### **Deliberation in the meeting:**

*It was decided to constitute a Committee with the following members to finalise the methodology to be adopted for segregation of actual generation of NTPC Kahalgaon Stage-I & II after implementation of bus splitting scheme:*

- 1. Sh. Shyam Kejriwal, SE, ERPC – Convenor*
- 2. Sh. N. Ahmed, Manager, ERLDC*
- 3. Sh. R.K.Mondal, AGM, NTPC-Kahalgaon*
- 4. Sh. S.K.Singh, GM(AM), Powergrid (ER-I)*

*A meeting of the Committee shall be convened at ERPC Secretariat and report shall be submitted to the upcoming TCC.*

### **ITEM NO. B18: Replacement of GPRS communication with Optical Fiber for AMR – ERLDC Agenda**

In ER, 80% meters are connected through Automated Meter Reading (AMR). At present the communication system used for data transfer from each location is GPRS. It has been observed that many locations are not communicating with AMR system due to poor/no GPRS signal. Many substations have their own optical fiber which is also used for the LAN network of respective stations. TCS has successfully connected 02 locations (Subhasgram-PG and Binaguri-PG) in ER-II with PGCIL intranet and these two locations are smoothly reporting to AMR system after connecting with PGCIL LAN. The proposed network will not only provide better communication but also reduce the cost of GSM.

In 150<sup>th</sup> OCC, POWERGRID informed that the replacement of GPRS communication of the Remaining 34 locations would be completed by December 2018. POWERGRID may please update the progress.

In 153<sup>rd</sup> OCC, Powergrid informed that optical fiber for AMR has been implemented at 30 locations out of total 38 locations and rest of the locations would be completed by February 2019.

*Powergrid may please further update.*

### **Deliberation in the Meeting:**

*Powergrid informed that 32 locations out of 38 have been completed and remaining 6 locations would be completed by April 2019.*

*Powergrid requested other utilities to share their Fibre details to explore possibilities of using their own optical fiber network, wherever it is available, for communicating with AMR for smooth functioning of AMR.*

### **ITEM NO. B19: Procurement of new SEMs – ERLDC Agenda**

In 30<sup>th</sup> ERPC meeting procurement of 965 no of SEM's and 110 nos of Laptop/DCD (in 111<sup>th</sup> OCC meeting) was approved. Further 31<sup>st</sup> TCC/ERPC approved the cost sharing mechanism of expenditure on SEM's and DCD/Laptops along with POWERGRID overhead charges @ 15% to be shared by the beneficiaries constituents of Eastern Region in proportional to the share allocation for the month in which the proposal was approved in the ERPC meeting.

In 35<sup>th</sup> CCM held at ERPC on 02.08.17, PGCIL informed that in 1<sup>st</sup> phase, 300 meters and 40 laptops with software had been supplied by M/s Genus so far.

In 145<sup>th</sup> OCC, PGCIL informed that 300 meters of 2<sup>nd</sup> lot has been supplied. Time drifted meters are being replaced by Genus meters phase wise.

In 38<sup>th</sup> CCM, PGCIL informed that 364 nos. (approx.) of SEMs would be delivered in 3rd phase and the inspection of the same is scheduled by December, 2018.

*Powergrid may update the Stock of meters as well as status of delivery of remaining meters.*

**Deliberation in the Meeting:**

*Powergrid informed that remaining 364 nos. of meters have been delivered.*

**ITEM NO. B20: Agenda items by NHPC**

**B20.1: Signing of reconciliation statement**

The 3<sup>rd</sup> quarter of F.Y 2018-19 reconciliation statements are required to be signed on priority in respect of GRIDCO, WBSEDCL, Sikkim & Jharkhand besides II and III qtrs. in case of DVC.

*GRIDCO, WBSEDCL, DVC, SIKKIM & Jharkhand may please update the plan for signing the reconciliation statements.*

**Deliberation in the meeting:**

*It was informed that the reconciliation between NHPC & GRIDCO is going to be sorted out shortly. JUVNL intimated that they would sign the reconciliation statement within one week. WBSEDCL, DVC, SIKKIM representatives were not present in the meeting.*

**B20.2: Payment of Late Payment Surcharge by WBSEDCL**

The total amount of LPS ₹ 28.78 Crs. against energy of TLDP-III has been adjusted from the payment received dated 06.12.2018 as per new NHPC payment and rebate scheme dated 10.07.2018 and accepted by WBSEDCL vide their letter No. CE/PTP/NHPC/293 dated 25.09.2018. Thus surcharge amount of ₹ 28.78 Crs is more than 60 days on balance principal amount as on 31.01.2019.

**Deliberation in the meeting:**

*WBSEDCL representative was not present in the meeting.*

**B20.3: Extension of PPA in r/o TLDP-III & IV Power Stations:**

The PPA of TLDP-III Power station has already expired on 31.03.2018 while PPA for TLDP IV project is valid for 05 years period from COD and the same is expiring on 10.03.2021. Only the formal supplementary agreement is required to regularize extension of these PPA's which has been already confirmed by WBSEDCL vide letter dated 26.07.2012. It is pertinent to mention here that as per minutes of meeting of 103rd ERE Board held on 27.04.2002 at Chalsa and circulated by EREB vide their letter no. EREB/PSD/BOARD/2002/2970-3033 dated 24.05.2002, Principal Secretary (Power), Govt. of West Bengal have confirmed that the entire power from TLDP-III & TLDP-IV H.E. Projects would be absorbed by WBSEB as per the commitment of WBSEB to absorb entire power generated by both the power stations.

**Deliberation in the meeting:**

*WBSEDCL representative was not present in the meeting.*

**B20.4: Selling power from upcoming 500MW Teesta VI Project:**

NHPC is envisaging to sell power from its upcoming 500MW, Teesta-VI project in Sikkim. Therefore, in principle consent for the entire period of life i.e 35 years is required from the beneficiaries of Eastern region except for BSPHCL & JBVNL who have already given their consent.

**Deliberation in the meeting:**

*It was decided to place the agenda in the upcoming TCC meeting.*

**ITEM NO. B21: Revision of commercial accounts after specified time – ERPC Agenda**

ERPC Secretariat issues various commercial accounts such as weekly DSM, RRAS, FRAS and Reactive Accounts and monthly REA, RTA, RTDA etc. In recent past, we have received some letters regarding the revision of accounts of previous period dating long back due to various reasons.

Further it is mentioned that on the forwarding letter of all accounts, it is clearly mentioned that “*Constituents are requested to intimate any discrepancy / error within **stipulated time** from the date of issue of this provisional account. In case of any discrepancy/error, the provisional account would be revised based on re-examination, final decision and confirmation. In case no communication is received from any of the constituents indicating mistakes / discrepancy, the provisional account is issued, would be treated as final*”

In view of the above, it is requested all the constituents may adhere to the time line mentioned accordingly. From now onwards, any request from any utility for retrospective revision of any commercial account due to negligence of any sort on the part of that utility shall not be entertained beyond the timeline as specified.

*Members may please note.*

**Deliberation in the meeting:**

*Constituents agreed to adhere to the time schedule for raising discrepancies/revision of commercial accounts issued by ERPC Secretariat.*

## **PART C: ITEMS FOR INFORMATION**

### **ITEM NO. C1: STU and SLDC Transmission & Operating charges.**

#### **1) State Transmission Utility Charges and Losses applicable for STOA for FY 2018-19**

As available with ERLDC the STU charges and losses to be considered for STOA for FY 2018-19 are as follows:

<b>Name of STU</b>	<b>Intra-State Transmission Charges</b>	<b>TRANSMISSION LOSS (For Embedded entities)</b>
WBSETCL	*	3.10%
DVC	Rs. 143.7 / MWh	2.68%
OPTCL	Rs. 62.5 / MWh	3.00%
JUSNL	*	#
BSPTCL	*	#
SIKKIM	*	#

\* Indicates rates yet to be furnished by concerned State Utilities. Transmission Charges for use of state network shall be Payable @ Rs.80 per MWh as per subsequent Amendment regulation 2009-dated 20.05.2009.

# Not yet intimated by the State Utility.

#### **2) State Load Despatch Centre Operating Charges for STOA for FY 2018-19**

<b>Name of SLDC</b>	<b>SLDC Operating Charge</b>
West Bengal	**
DVC	**
Odisha	Rs. 2000
Jharkhand	**
Bihar	**
SIKKIM	**

\*\* Indicates rates yet to be furnished by concerned State Utilities. Operating charges at the rate of Rs 1000/-, per day or part of the day for each bilateral transaction for each of the Regional Load Despatch Centre involved and at the rate of Rs 1000/- per day or part of the day for each State Load Despatch Centre involved shall be payable by the applicant as per subsequent Amendment regulation 2009-dated 20.05.2009.

*This is for information to the members.*

### **Deliberation in the Meeting:**

*Members noted.*

### **ITEM NO. C2: Information of Deviation/reactive payment in ER pool account**

Constituents of Eastern region are making payment of Deviation charge, Reactive Charge, RAAS in ER Pool Accounts. However ERLDC is not getting details of payment made in ER pool account from all constituents. In 31<sup>st</sup> and subsequent CCM, all the ER pool members were requested to send the details of payment in the format to ERLDC in the email account at [erldcomml@posoco.in](mailto:erldcomml@posoco.in). WBSETCL, NTPC, APNRL, DANS Energy, Shiga Energy, TPTCL and MPL are sending the details. DVC is sending through Hard Copy. Other

constituents viz BSPHCL, JUVNL, GRIDCO, SIKKIM, PGCIL(HVDC), may also furnish the details of payment made in ER Pool.

S.No	Name of Utility	Amount	DSM/Reactive Account Week No	Date	Cheque No	Mode of Payment

*Members may note for compliance.*

**Deliberation in the Meeting:**

*Members noted.*

**ITEM NO. C3: Updating of CT/PT Ratio**

The meter details along with the CT/PT ratio has been uploaded at ERLDC website at link <https://erlhc.in/market-operation/meter/>. The constituents are requested to check CT/PT ratios being used. Comments/discrepancies, if any, on the same may please be communicated to ERLDC at the earliest. So far no discrepancy has been reported to ERLDC. It is once again requested to the constituents/PGCIL to verify the Meter serial No, CT/PT ratio.

*Members may please note.*

**Deliberation in the Meeting:**

*Members noted.*

**ITEM NO. C4: Status of Start-up power drawl, infirm injection and CoD**

Status of Start-up power drawl, infirm injection and CoD Declaration of Generator as Regional entity and Pool member is as follows:

**1. Start Up power**

S. No	Generator	Startup power granted	
		From	To
1.	OPGC(2x660MW)	15.01.2018	31.05.2019
2.	NPGC(2X660 MW)	10.05.2018	31.12.2019
3.	NTPC, Darlipalli(2X800MW)	31.05.2018	31.13.2019
4.	BRBCL U#3(250 MW)	14.09.2018	31.03.2019

**2. Infirm Power**

S. No	Generator	Infirm Injection Started From	6 month period would end by	Extension granted by CERC
1.	OPGC(2x660MW) Unit-3	23.01.2019	22.07.2019	NIL
2.	NPGC(2X660 MW) Unit-1	14.01.2019	13.07.2019	NIL
3.	NTPC,	NIL	NIL	NIL

	Darlipalli(2X800MW)			
4.	BRBCL U#3(250 MW)	01.01.2019	30.06.2019	NIL

### 3. COD Declared: NIL

*Members may please note.*

#### **Deliberation in the Meeting:**

*Members noted.*

#### **ITEM NO. C5: Segregation of Tala and Chukha Energy**

Order related to Dagachu scheduling was issued by Honorable CERC on 11th September 2014 via order no 187/MP/2014. As per CERC order, for computing the actual power of Tala and Chukha injected at Indian periphery, the actual injection of Dagachhu power as computed by meters installed on its outgoing lines and furnished by NLDC Bhutan, has to be subtracted from the total power injected at Binaguri (New Siliguri) and Birpara.

The total power of Tala and Chukha so arrived above will be apportioned amongst Tala and Chukha in the ratio of the Tala and Chukha receipt at Indian periphery in the corresponding month of the previous year as per the published figure in the Regional Energy Accounts.

After deriving the components of injection of Tala and Chukha at Indian periphery, the existing methodology of settlement with reference to Tala and Chukha injection shall be followed by ERPC. Accordingly, the above methodology was being used for Tala and Chukha energy segregation.

However it was observed that after adjusting Dagachu Power from the export of net power from Bhutan power at Indian Boundary, Bhutan has net import of India Power in the Month of Feb18 and March 18 and due to the same REA for Bhutan was suspended in Feb18 & Mar18.

*In view of above, Due to non-availability of Tala and Chukha receipt at Indian Periphery and suspended REA in Feb18 & Mar18, Segregation of Tala and Chukha energy at Indian Periphery in Feb19 & March19 is being done as per Feb17 & March17 REA data. The issue was also discussed in 153<sup>rd</sup> OCC Meeting held on 21.01.2019.*

*This is for Information to the members.*

#### **Deliberation in the Meeting:**

*Members noted.*

#### **ITEM NO. D1: Additional Agenda – By Powergrid**

##### **a) Non Opening of LC requisite amount of LC :**

- 1) Following constituents are required to enhance/ extend LC towards Payment Security Mechanism, as per CERC Regulations:



SI No	Name of DIC's	Present Value of LC	Value of LC Required
(i)	North Bihar Power Distribution Company Limited(NBPDCL)	9.73	34.50
(ii)	South Bihar Power Distribution Company Limited(SBPDCL)	14.50	51.83
(iii)	Ind-Barath Energy (Utkal) Limited	--	17.50
(iv)	South Eastern Railway(SER)	--	3.15
(v)	East Central Railway(ECR)	--	43.07
(vi)	Damodar Valley Corporation(DVC)	6.99	21.12

- 2) Following constituents are required to open new LC towards grant of LTA from Kanti Bijlee Utpadan Nigam Limited Stage –II (2x195 MW) :

**Amount(in Cr.)**

SI No	Name of DIC's	Value of LC to be open
(i)	DVC	0.42
(ii)	GRIDCO	0.92
(iii)	Jharkhand Bijli Vitran Nigam Limited(JBVNL)	0.22
(iv)	Power Deptt. Govt. of Sikkim	0.03
(v)	West Bengal State Electricity Distribution Company Ltd.(WBSEDCL)	0.83
	<b>Total</b>	<b>2.42</b>

The above LC for requisite value and validity required as per CERC Regulations , non availability causing serious problem for POWERGRID to comply with the provisions of CERC Regulations and Loan Covenants.

**Deliberation in the Meeting:**

*ERPC Secretariat assured to write letters to the concerned utilities to resolve the issue.*

- b) Payment of Outstanding dues more than 60 days :**

**Amount (in Cr.)**

SI No	Name of DIC's	Total Outstanding dues	Outstanding due more than 60 days
(i)	Vedanta Ltd.	11.59	11.59

(ii)	GMR Kamalanga Energy Ltd.	<b>52.50</b>	<b>38.62</b>
(iii)	Jindal India Thermal Power Limited	<b>2.55</b>	<b>2.55</b>
(iv)	Ind-Bharat Energy (Utkal) Limited	<b>208.61</b>	<b>205.74</b>
(v)	Dans Energy Pvt. Limited	<b>70.76</b>	<b>64.60</b>
(vi)	Jal Power Corporation Limited	<b>45.84</b>	<b>43.95</b>
(vii)	Damodar Valley Corporation(DVC)	<b>177.61</b>	<b>163.14</b>
(viii)	West Bengal State Electricity Distribution Company Ltd.(WBSEDCL)	<b>85.35</b>	<b>7.78</b>
(ix)	GRIDCO Ltd	<b>99.58</b>	<b>23.26</b>
(x)	TeestaValley Power Transmission Ltd(TPTL)	<b>5.75</b>	<b>5.75</b>
(xi)	Teesta Urja Limited(TUL)	<b>8.50</b>	<b>8.50</b>
(xii)	Power Deptt. Govt. of Sikkim	<b>3.30</b>	<b>1.63</b>
(xiii)	Jharkhand Bijli Vitran Nigam Limited(JBVNL)	<b>34.66</b>	<b>15.91</b>
(xiv)	North Bihar Power Distribution Company Limited(NBPDCL)	<b>105.44</b>	<b>42.10</b>
(xv)	South Bihar Power Distribution Company Limited(SBPDCL)	<b>107.80</b>	<b>16.05</b>
	<b>Total</b>	<b>1019.84</b>	<b>651.17</b>

(viii) The outstanding pertaining to WBSEDCL (Surcharge @ 6.7 Cr & Bill # 4 @ 1.89 Cr). WBSEDCL has agreed to pay Surcharge bill in 24 monthly installment & started making payment in the month of August'18. Till date they had paid Sixth (6) installments. However, WBSEDCL has not admitted 1.89 Cr towards Bill # 4.

(ix) The outstanding pertaining to GRIDCO (Surcharge @ 23.26 Cr)

**Deliberation in the Meeting:**

*ERPC Secretariat assured to write letters to the concerned utilities to resolve the issue.*

c) List of Assets commissioned by POWERGRID (As enclosed at Annexure - XXXII) :

**Deliberation in the Meeting:**

*Members noted.*



भारत सरकार  
Government of India  
विद्युत मंत्रालय  
Ministry of Power  
पूर्वी क्षेत्रीय विद्युत समिति  
**Eastern Regional Power Committee**  
14, गोल्फ क्लब रोड, टॉलीगंज, कोलकाता-700033  
14 Golf Club Road, Tollygunj, Kolkata-700033



Tel No.:033-24239651, 24239657 FAX No.:033-24239652, 24239652 Web: [www.erpc.gov.in](http://www.erpc.gov.in)

No: ERPC/COM - I/REA/ 2018/ 3682-3700

Date: 11.01.2018.  
12

FAX MESSAGE NO. - 17

**From: Member Secretary, ERPC, Kolkata.**

**To: (As per list.)**

CERC in its order dated 20.09.2016 in the Petition No. 130/MP/2015 along with I.A. No. 67/2017 has set aside the COD of 15/11/2014 in respect of unit – IV of Barh Super Thermal Power Station Stage – II (660 MW) and has fixed 08/03/2016 as the revised date of COD.

Accordingly, the REA, DSM and RTA for the period from 15.11.2014 to 07.03.2016 has been revised and given in Annexure – I, II & III respectively for kind information and necessary action by all concerned.

Regards,

*Jaydev Bandyopadhyay* 11/01/18  
(J.Bandyopadhyay)  
Member Secretary

## **DISTRIBUTION LIST:**

### **BIHAR**

1. Chief Engineer, Transmission (O&M), BSPTCL, Vidyut Bhavan, Bailey Road, Patna-800021 (Fax 0612-2504557/2227557)
2. ESE (Interstate), BSEB, Vidyut Bhavan, 3<sup>rd</sup> Floor, Bailey Road, Patna-800 021. (Fax 0612-2504557)

### **JHARKHAND**

1. CE (Comml & Revenue), JBVNL, Engineering Building, H.E.C. Township, Dhurva, Ranchi-834004, Jharkhand . (Fax : 0651-2490486 / 2400799)
2. GM-cum-CE (Trans), JSEB, Kusai Colony, Duranda, Ranchi, Jharkhand (Fax:0651-2490486)

### **ODISHA**

1. Sr. GM(PP), GRIDCO, 4<sup>th</sup> floor, Vidyut Bhawan, Janpath, Bhubaneswar-22. (Fax : 0674-2547180/2547261)
2. Sr. GM (PS), OPTCL, SLDC Bldg, PO Mancheswar Rly Colony, Bhubaneswar-17. (Fax: 0674-2748509)
3. Regional Executive Director (East-II), 3<sup>rd</sup> Floor, OCHC Building (New), 24, Janpath, Bhubaneswar - 751001 (Fax No. 0674-2394857)
4. Chief General Manager (RT & C), OPTCL, Janpath, Bhubaneswar-751022. (Tel FAX-0674 2542 120)

### **SIKKIM**

1. CE (Trans.), Deptt. Of Power, Govt. of Sikkim, Gangtok.-737 101 (Fax: 03592-201148 / 202927)
2. Addl. Chief Engineer (SLDC/EHV), Deptt. of Power, Govt. of Sikkim, Kazi Road, Gangtok-737101 (FAX:03592 202927/209199)

### **WR (MP)**

1. Chief Engineer (Commercial), M.P. Power Management Co. Ltd., Shakti Bhawan, Vidyut Nagar, Rampur, Jabalpur-482008 (Fax No. 0761-2661884)
2. Member Secretary, WRPC, MIDC Area, Marol, Andheri(E), Mumbai-400093 (Fax : 022 2837 0193 ).

### **NTPC**

1. GM (Comml), NTPC Ltd, 7 Institutional Area, Lodhi Road, New Delhi-3 (Fax: 011-24360318 / 24368417)
2. AGM (Comml), NTPC Ltd, Loknayak Jaiprakash Bhawan, 2<sup>nd</sup> floor, Dak Banglow Chowk, Fraser Road, Patna-800 001. (Fax : 0612-2230035 / 2224287, 2211807 )

### **PGCIL**

1. AGM (Comml.), PGCIL, "Saudamini", Plot No.2, Sector -29, Gurgaon-122001, Haryana (Fax : 0124-2571760)
2. Addl. General Manager (Commercial), ERTS-I, POWERGRID, Boring Road, Alankar Place, Patna-800001. (FAX: 0612 2234097/2228984)

### **NLDC/RLDC**

1. ED-NLDC, POSOCO, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-16 (Fax:01126524525)
2. GM, WRLDC, MIDC Area, Marol, Andheri (E), Mumbai-490093 (Fax: 022-28235434)
3. ED, ERLDC, 14 Golf Club Road, Tollygunge, Kolkata-33 (Fax: 033-24235809, 2423 3648)



# REVISED REGIONAL ENERGY ACCOUNTING FOR BARH STPS STAGE-II FROM NOVEMBER,2014 TO MARCH,2016 (CAPACITY CHARGES, INCENTIVE, IF ANY & ENERGY CHARGES BILLING)

Month	Beneficiaries	Share Allocation	Previous Capacity Charges Payable(As per REA published)	Current capacity charges payable (Revised REA)	Capacity Charges to be Refunded to Beneficiaries	Previous Drawal Schedule (As Per REA published)	Current Drawal Schedule(Revised REA)	Difference in Drawal Schedule(Energy Charges to be Refunded to Beneficiaries)
		(%)	(Rs.)	(Rs.)	(Rs)	(MWH)	(MWH)	(MWH)
Nov,14	BIHAR	65.080000	225527082	0.0000	225527082	106978.08200	0.00000	108978.08200
	JHARKHAND	6.060000	21000217	0.0000	21000217	10548.73900	0.00000	10548.73900
	ODISHA	12.570000	43559856	0.0000	43559856	15552.25800	0.00000	15552.25800
	SIKKIM	1.290000	4470343	0.0000	4470343	2264.68200	0.00000	2264.68200
	MADHYA PRADESH	15.000000	51980735	0.0000	51980735	0.00000	0.00000	0.00000
Dec,14	BIHAR	67.673321	299089017	0.0000	299089017	157074.69700	0.00000	157074.69700
	JHARKHAND	6.301480	27850022	0.0000	27850022	14923.57000	0.00000	14923.57000
	ODISHA	13.070892	57768116	0.0000	57768116	20654.45400	0.00000	20654.45400
	SIKKIM	1.341404	5928469	0.0000	5928469	3083.04400	0.00000	3083.04400
	MADHYA PRADESH	11.612903	51324387	0.0000	51324387	0.00000	0.00000	0.00000
Jan,15	BIHAR	76.564706	587142025	0.0000	587142025	275636.55500	0.00000	275636.55500
	JHARKHAND	7.129412	54672415	0.0000	54672415	28149.72400	0.00000	28149.72400
	ODISHA	14.788235	113404657	0.0000	113404657	7737.11300	0.00000	7737.11300
	SIKKIM	1.517647	11638187	0.0000	11638187	4854.72500	0.00000	4854.72500
Feb,15	BIHAR	76.564706	651831026	0.0000	651831026	269763.03800	0.00000	269763.03800
	JHARKHAND	7.129412	60696007	0.0000	60696007	18116.13700	0.00000	18116.13700
	ODISHA	14.788235	125899137	0.0000	125899137	8317.27400	0.00000	8317.27400
	SIKKIM	1.517647	12920436	0.0000	12920436	184.72000	0.00000	184.72000
Mar,15	BIHAR	76.564706	704084000	0.0000	704084000	332094.87900	0.00000	332094.87900
	JHARKHAND	7.129412	65561604	0.0000	65561604	17647.25000	0.00000	17647.25000
	ODISHA	14.788235	135991636	0.0000	135991636	7049.18600	0.00000	7049.18600
	SIKKIM	1.517647	13956182	0.0000	13956182	285.94200	0.00000	285.94200
Apr,15	BIHAR	76.564706	306012356	0.0000	306012356	146310.18177	0.00000	146310.18177
	JHARKHAND	7.129412	28494698	0.0000	28494698	3875.54942	0.00000	3875.54942
	ODISHA	14.788235	59105335	0.0000	59105335	5613.95731	0.00000	5613.95731
	SIKKIM	1.517647	6065703	0.0000	6065703	705.78294	0.00000	705.78294
May,15	BIHAR	76.564706	618956902	0.0000	618956902	302179.75226	0.00000	302179.75226
	JHARKHAND	7.129412	57634895	0.0000	57634895	2768.03184	0.00000	2768.03184
	ODISHA	14.788235	119549602	0.0000	119549602	6428.57607	0.00000	6428.57607
	SIKKIM	1.517647	12268813	0.0000	12268813	708.85497	0.00000	708.85497
June,15	BIHAR	76.564706	642378699	0.0000	642378699	284145.32830	0.00000	284145.32830
	JHARKHAND	7.129412	59815843	0.0000	59815843	7931.49725	0.00000	7931.49725
	ODISHA	14.788235	124073449	0.0000	124073449	13798.58945	0.00000	13798.58945
	SIKKIM	1.517647	12733074	0.0000	12733074	363.76322	0.00000	363.76322
July,15	BIHAR	76.564706	652884624	0.0000	652884624	279450.47652	0.00000	279450.47652
	JHARKHAND	7.129412	60794114	0.0000	60794114	13771.79637	0.00000	13771.79637
	ODISHA	14.788235	126102636	0.0000	126102636	29863.79205	0.00000	29863.79205
	SIKKIM	1.517647	12941320	0.0000	12941320	1368.73657	0.00000	1368.73657
Aug,15	BIHAR	76.564706	588703170	0.0000	588703170	301499.63595	0.00000	301499.63595
	JHARKHAND	7.129412	54817783	0.0000	54817783	20565.44646	0.00000	20565.44646
	ODISHA	14.788235	113706188	0.0000	113706188	23329.86771	0.00000	23329.86771
	SIKKIM	1.517647	11669131	0.0000	11669131	1102.13943	0.00000	1102.13943
Sept,15	BIHAR	76.564706	561787150	0.0000	561787150	323481.50868	0.00000	323481.50868
	JHARKHAND	7.129412	52311466	0.0000	52311466	29015.61987	0.00000	29015.61987
	ODISHA	14.788235	108507442	0.0000	108507442	6961.22535	0.00000	6961.22535
	SIKKIM	1.517647	11135608	0.0000	11135608	1668.06700	0.00000	1668.06700
Oct,15	BIHAR	76.564706	561787150	0.0000	561787150	313121.95818	0.00000	313121.95818
	JHARKHAND	7.129412	52311466	0.0000	52311466	21728.43208	0.00000	21728.43208
	ODISHA	14.788235	108507442	0.0000	108507442	6956.55040	0.00000	6956.55040
	SIKKIM	1.517647	11135608	0.0000	11135608	1565.94612	0.00000	1565.94612
Nov,15	BIHAR	76.564706	561787150	0.0000	561787150	273379.99962	0.00000	273379.99962
	JHARKHAND	7.129412	52311466	0.0000	52311466	24521.74265	0.00000	24521.74265
	ODISHA	14.788235	108507442	0.0000	108507442	21516.18991	0.00000	21516.18991
	SIKKIM	1.517647	11135608	0.0000	11135608	1248.75789	0.00000	1248.75789
Dec,15	BIHAR	76.564706	561787150	0.0000	561787150	285465.33450	0.00000	285465.33450
	JHARKHAND	7.129412	52311466	0.0000	52311466	26047.77536	0.00000	26047.77536
	ODISHA	14.788235	108507442	0.0000	108507442	10837.82772	0.00000	10837.82772
	SIKKIM	1.517647	11135608	0.0000	11135608	862.40432	0.00000	862.40432
Jan,16	BIHAR	76.564706	561787150	0.0000	561787150	308084.99415	0.00000	308084.99415
	JHARKHAND	7.129412	52311466	0.0000	52311466	33458.15994	0.00000	33458.15994
	ODISHA	14.788235	108507442	0.0000	108507442	2819.17963	0.00000	2819.17963
	SIKKIM	1.517647	11135608	0.0000	11135608	212.12911	0.00000	212.12911
Feb,16	BIHAR	76.564706	6741445799	168529117	6572916682	348494.74386	76963.27402	271531.46985
	JHARKHAND	7.129412	627737597	15692785	612044812	35174.22811	7592.11450	27582.11361
	ODISHA	14.788235	1302089304	32550875	1269538428	11487.85161	3151.13132	8336.72028
	SIKKIM	1.517647	133627301	3340543	130286757	1004.52314	185.06747	819.45567
Mar,16	BIHAR	76.564706	1123574300	1120634193	2940106	594862.16673	527100.32574	67761.84099
	JHARKHAND	7.129412	104622933	104349161	273771	53685.81868	47041.08008	6644.73860
	ODISHA	14.788235	217014884	216447012	567872	83393.81805	82428.33243	965.48563
	SIKKIM	1.517647	22271217	22212939	58278	3722.91709	3706.72220	16.19489
Total					19252338930			4825310



## ANNEXURE-III

Revised RTA on account of change of COD of unit#4 of BARH St-II during the period of November-14 to March-16 as per CERC Order dated 20.09.17 in petition no. 130/MP/2015 with IA No. 67/2017

Month	Beneficiaries	As per RTA already issued by ERPC		Revised figure		Transmission Charges to be refunded to beneficiaries	
		MW share in Barh-II	Transmission Charges(in Rs.)	MW share in Barh-II	Transmission Charges(in Rs.)		
Nov-14	BIHAR	404.83	19014494	0	0	19014494	Transmission charges = station PoC charges
	JHARKHAND	37.7	1770557	0	0	1770557	
	ODISHA	78.19	3672590	0	0	3672590	
	SIKKIM	8.02	376901	0	0	376901	
	WR(M.P.)	93.31	4382566	0	0	4382566	
Dec-14	BIHAR	420.96	37072851	0	0	37072851	
	JHARKHAND	39.2	3452082	0	0	3452082	
	ODISHA	81.31	7160506	0	0	7160506	
	SIKKIM	8.34	734849	0	0	734849	
	WR(M.P.)	72.24	6361790	0	0	6361790	
Jan-15	BIHAR	476.27	58187427	0	0	58187427	
	JHARKHAND	44.35	5418190	0	0	5418190	
	ODISHA	91.99	11238721	0	0	11238721	
Feb-15	SIKKIM	9.44	1153377	0	0	1153377	
	BIHAR	476.27	58187427	0	0	58187427	
	JHARKHAND	44.35	5418190	0	0	5418190	
Mar-15	ODISHA	91.99	11238721	0	0	11238721	
	SIKKIM	9.44	1153377	0	0	1153377	
	BIHAR	476.27	58187427	0	0	58187427	
Apr-15	JHARKHAND	44.35	5418190	0	0	5418190	
	ODISHA	91.99	11238721	0	0	11238721	
	SIKKIM	9.44	1153377	0	0	1153377	
May-15	BIHAR	476.27	58187427	0	0	58187427	
	JHARKHAND	44.35	5418190	0	0	5418190	
	ODISHA	91.99	11238721	0	0	11238721	
Jun-15	SIKKIM	9.44	1153377	0	0	1153377	
	BIHAR	476.27	78183531	0	0	78183531	
	JHARKHAND	44.35	5826171	0	0	5826171	
Jul-15	ODISHA	91.99	15100894	0	0	15100894	Transmission charges = PoC charges+ Reliability Support Charges
	SIKKIM	9.44	621039	0	0	621039	
	BIHAR	476.27	78183531	0	0	78183531	
Aug-15	JHARKHAND	44.35	5826171	0	0	5826171	
	ODISHA	91.99	15100894	0	0	15100894	
	SIKKIM	9.44	621039	0	0	621039	
Sep-15	BIHAR	476.27	124118343	0	0	124118343	
	JHARKHAND	44.35	10212031	0	0	10212031	
	ODISHA	91.99	15598836	0	0	15598836	
Oct-15	SIKKIM	9.44	741389	0	0	741389	
	BIHAR	476.27	124118343	0	0	124118343	
	JHARKHAND	44.35	10212031	0	0	10212031	
Nov-15	ODISHA	91.99	15598836	0	0	15598836	
	SIKKIM	9.44	741389	0	0	741389	
	BIHAR	476.27	124118343	0	0	124118343	
Dec-15	JHARKHAND	44.35	10212031	0	0	10212031	
	ODISHA	91.99	15598836	0	0	15598836	
	SIKKIM	9.44	741389	0	0	741389	
Jan-16	BIHAR	476.27	142750502	0	0	142750502	Transmission charges= PoC Charges+ Reliability Support Charges+HVDC Charges
	JHARKHAND	44.35	9028063	0	0	9028063	
	ODISHA	91.99	12828557	0	0	12828557	
Feb-16	SIKKIM	9.44	711276	0	0	711276	
	BIHAR	476.27	142750502	0	0	142750502	
	JHARKHAND	44.35	9028063	0	0	9028063	
Mar-16	ODISHA	91.99	12828557	0	0	12828557	
	SIKKIM	9.44	711276	0	0	711276	
	BIHAR	476.27	144563662	0	0	144563662	
Jan-16	JHARKHAND	44.35	7220579	0	0	7220579	
	ODISHA	91.99	18213100	0	0	18213100	
	SIKKIM	9.44	872700	0	0	872700	
Feb-16	BIHAR	476.27	144563662	0	0	144563662	
	JHARKHAND	44.35	7220579	0	0	7220579	
	ODISHA	91.99	18213100	0	0	18213100	
Mar-16	SIKKIM	9.44	872700	0	0	872700	
	BIHAR	107.54	32642784	0	0	32642784	
	JHARKHAND	10.01	1630365	0	0	1630365	
Mar-16	ODISHA	20.77	4112560	0	0	4112560	
	SIKKIM	2.13	197068	0	0	197068	

## Annexure-II

Revised DSM Statement on account of change of COD of Unit 4 of Barh Stage-II in the period 15.11.14-07.03.16 as per CERC order dated 20.09.17 in Petition No. 130/MP/2015

### I. Calculation of Deviation Charge of Barh St-II Unit 4 INFIRM for the period 15.11.2014-07.03.2016

Deviation Charges receivable by Barh St-II Unit 4 INFIRM from the pool for the period 15.11.14-07.03.16 = **Rs. 636.8593474 Crore**

Charges to be paid by beneficiaries to the pool for the above period \*\*

Beneficiary	Rs. (Crore)
BSPHCL	564.8512231
JUVNL	41.0085656
GRIDCO	25.5745384
SIKKIM	2.7492379
MP(WR)	2.6757824
<b>Total</b>	<b>636.8593474</b>

\*\* However the beneficiaries will get refund of Energy Charges, Capacity Charges and Transmission Charges on account of Barh St-II Unit 4 INFIRM for the period 15.11.2014-07.03.2016 which are shown in different sheets.

### II. Adjustment of Deviation Charge of Barh St-II Unit 4 for the period 15.11.2014-07.03.2016

Period	Prerevised		Revised		Adjustment	
	Payable (Rs. in Crore)	Receivable (Rs. in crore)	Payable (Rs. in Crore)	Receivable (Rs. in crore)	Payable (Rs. in Crore)	Receivable (Rs. in crore)
15.11.14-17.02.16	63.1112737 <b>(Unit-4)</b>		0 <b>(Unit-4)</b>			63.1112737
18.02.16-07.03.16		0.0814222 <b>(Unit-4 + Unit-5)</b>		0.1185666 <b>(Unit-5)</b>		0.0371444

So Deviation Charges receivable by Barh from the Pool for the above period is =Rs. 63.1112737 Crore + RS. 0.037144 Crore = **Rs. 63.1484181 Crore**



भारत सरकार  
Government of India  
विद्युत मंत्रालय  
Ministry of Power  
पूर्वी क्षेत्रीय विद्युत समिति



**Eastern Regional Power Committee**  
14, गोल्फ क्लब रोड, टॉलीगंज, कोलकाता-700033  
14 Golf Club Road, Tollygunj, Kolkata-700033

Tel No.:033-24239651, 24239657 FAX No.:033-24239652, 24239652 Web: [www.erpc.gov.in](http://www.erpc.gov.in)

No: ERPC/COM- I/REA/ 2018/ 3780-3798

Date: 02.02.2018


FAX MESSAGE NO. - 48

**From: Member Secretary, ERPC, Kolkata.**

**To: As per list**

In continuation to even No. letter dated 11/12.01.2018, RTDA statement for the period from 15.11.2014 to 07.03.2016 has been revised and given in Annexure-I for kind information and necessary action by all concerned. The revision has been done on account of change in COD date of Unit 4 of Barh Stage-II to 08.03.16 as per CERC order dated 20.09.17 in Petition No. 130/MP/2015.

Regards,

 02/02/2018  
(J.Bandyopadhyay)  
Member Secretary

Fax sent  
5/2/18



**Revised RTDA Statement on account of change of COD of Unit 4 of Barh Stage-II in the period 15.11.14-07.03.16 as per CERC order dated 20.09.17 in Petition No. 130/MP/2015**

**I. Calculation of Transmission Deviation Charge of Barh St-II Unit 4 INFIRM for the period 15.11.2014-07.03.2016**

Month	BARH INFIRM	
	Energy(MWh)	Transmission Deviation Charges (Rs)
Nov-14	147838.6881	18198942.51
	-1001.672875	143339.3884
Dec-14	185896.4635	22883854.66
	-4998.82931	715332.4743
Jan-15	301117.2253	38814010.34
	-1930.76482	248875.5853
Feb-15	279582.4229	36038174.31
	-524.3484	67588.50876
Mar-15	328251.9161	42311671.99
	-268.27705	34580.91175
Apr-15	139435.3898	7613172.283
	-3961.351271	512994.9896
May-15	278920.8592	15229078.91
	-1521.841383	197078.4591
Jun-15	275556.5576	15045388.04
	-1027.89	133111.755
Jul-15	292565.5964	18753454.73
	-461.969	87173.5503
Aug-15	327311.3917	20980660.21
	-275.5693	51999.92691
Sep-15	339057.6225	21733593.6
	-750.76544	141669.4385
Oct-15	332389.3181	17649872.79
	0	0
Nov-15	303141.9391	16096836.97
	0	0
Dec-15	320102.028	16997417.69
	-729.599	159417.3815
Jan-16	343280.8588	21317741.33
	0	0
Feb-16	302312.54	18773608.73
	-1263.956	261386.1008
Mar-16	95940.83569	5957925.896
	0	0
<b>Total Rs</b>		<b>35.715 Crore</b>

(+)→ Injection of Energy  
(-)→ Drawl of Energy

So Transmission Deviation Charges payable by Barh St-II Unit 4 INFIRM for the period 15.11.14-07.03.16 = **Rs. 35.715 Crore**

**II. Adjustment of Transmission Deviation Charge of Barh St-II Unit 4 for the period 15.11.2014-07.03.2016**

Month	TRANSMISSION DEVIATION CHARGE UPTO PERMITTED LIMIT (Rs.)	TRANSMISSION DEVIATION CHARGE BEYOND PERMITTED LIMIT (Rs.)
Nov-14	154.01	204216
Dec-14	0	1019136
Jan-15	0	407633
Feb-15	0	110702
Mar-15	0	172998
Apr-15	0	836340
May-15	0	376275
Jun-15	0	246261
Jul-15	0	85002
Aug-15	0	68135
Sep-15	0	138141
Oct-15	0	0
Nov-15	0	0
Dec-15	0	180393
Jan-16	1723.04	0
Feb-16	1046.74	402886
Mar-16	263099.2	0
<b>Total Rs.</b>	<b>2.660 Lakhs</b>	<b>42.48118 Lakhs</b>

So the following adjustments have to be done

**A) Rs 2.66 Lakhs to be refunded to the beneficiaries for the above period**

Month	BSPHCL	JUVNL	GRIDCO	SIKKIM	WR(MP)
Nov-14	100.229708	9.333006	19.359057	1.986729	23.1015
Jan-16	1319.228346	122.8355216	254.837616	26.190208	0
Feb-16	801.4260136	74.6220946	154.812846	15.910448	0
Mar-16	201439.2715	18756.34197	38912.37168	3999.10784	0
<b>Total Rs</b>	<b>203660</b>	<b>18963</b>	<b>39341</b>	<b>4043</b>	<b>23</b>

**B) Rs 42.48118 Lakhs to be refunded to Barh for the above period**

## **Agenda Notes on Security Constrained Economic Dispatch (SCED) of Inter-State Generating Stations Pan-India**

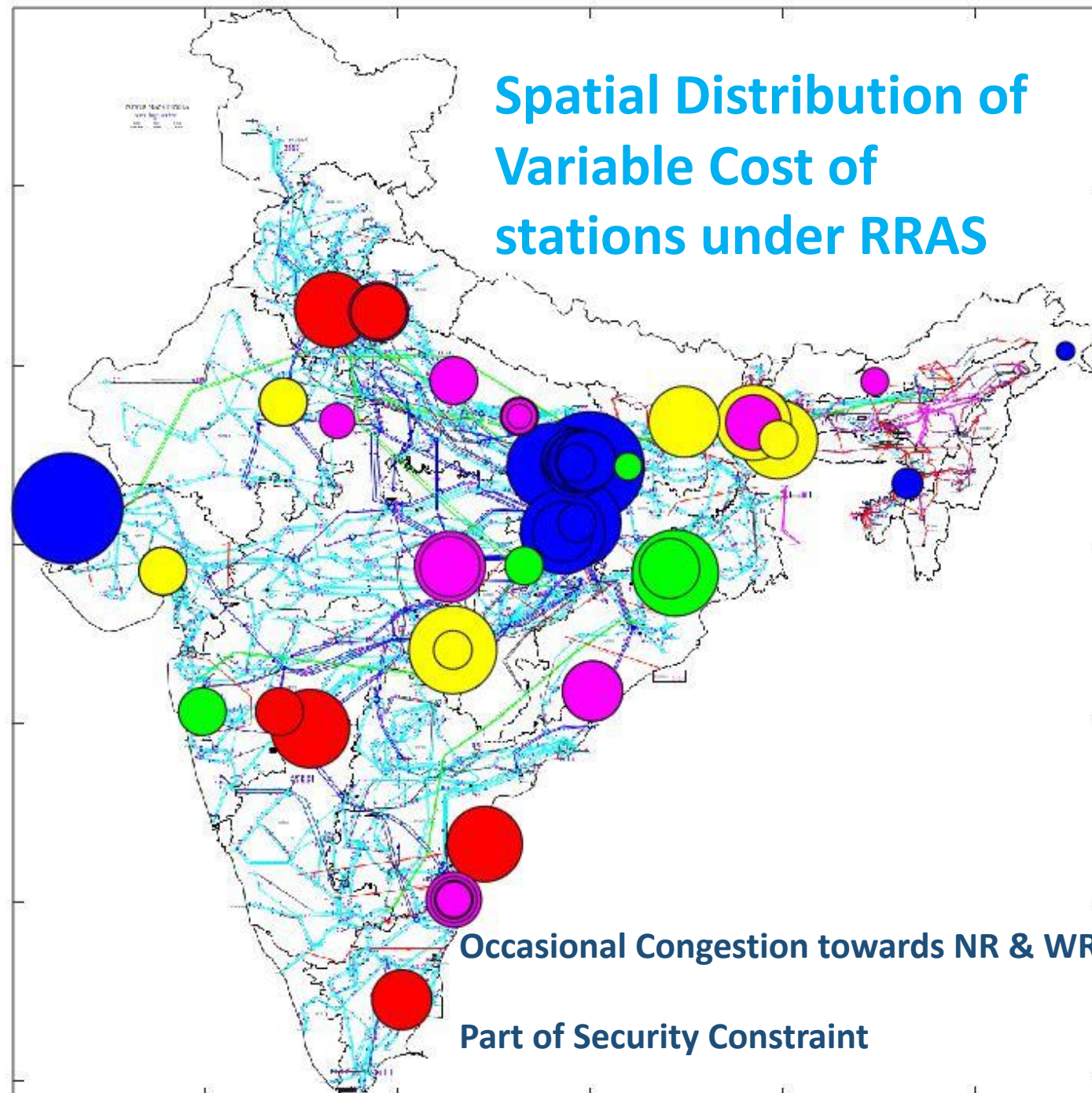
- Hon'ble Commission, vide Order in Petition No. 02/SM/2019 (Suo-Motu) dtd. 31st January, 2019, directed for Pilot on SCED of Inter-State Generating Stations (ISGS) Pan India <http://cercind.gov.in/2019/orders/02-SM-2019.pdf>
- The Central Commission observed that there is an overarching objective to optimize the Scheduling and dispatch of the generation resources and reduce the overall cost of Production of electricity without major structural changes in the existing System/framework. SCED is a desired step in the Indian grid operation towards optimization methodologies. SCED is an involved procedure requiring developing software, creating interfaces and establishing various protocols, information dissemination and streamlining settlement system etc.
- Accordingly, the Commission directed for pilot of SCED for the Inter-State Generating Stations, on pilot basis, **w.e.f. 01st April, 2019.**
- The SCED optimization model is for all the thermal Inter State Generating Stations (ISGS) that are regional entities and whose tariff is determined or adopted by the Commission for their full capacity without violating grid security and honouring the existing scheduling practices prescribed in the Indian Electricity Grid Code.
- A Detailed Procedure would be formulated that would contain the guidelines regarding operational aspects of SCED including scheduling, dispatch, accounting, settlement etc.
- The variable charges declared by the generators for the purpose of Reserve Regulation Ancillary Services (RRAS) would be considered in the optimization process.
- Schedules of the States/beneficiaries would not be changed and the beneficiaries would continue to pay the charges for the scheduled energy directly to the generator as per the existing practices.
- NLDC would open a separate bank account called "National Pool Account (SCED)". All payments to/from the generators on account of SCED schedules would flow to and from the said National Pool Account.
- For any increment in the injection schedule of a generator due to optimization, the generator would be paid from the National Pool Account (SCED) for the incremental generation at the rate of its variable charge.
- For any decrement in the schedule of a generator due to optimization, the generator would pay to the aforesaid National Pool Account (SCED) for the decrement generation at the rate of its variable charge after discounting compensation due to part load operation as certified by RPC as per the provisions of IEGC.
- The incremental changes in schedules on account of optimization would not be considered for incentive computation for the generating stations. The deviation in respect of such generators would be settled with reference to their revised schedule. The increment or decrement of generation under SCED would not form part of RRAS.
- RPCs would issue weekly SCED accounts along with the DSM, RRAS, FRAS and AGC accounts based on data provided to them by RLDCs.

- RPCs would issue the regional accounts including the SCED schedules and NLDC would issue a consolidated "National SCED Settlement Statement" comprising payment and receipts to/from all generators participating in the SCED.
- The savings obtained through SCED after settlement of all accounts of SCED would be recorded and maintained in the "National Pool Account (SCED) " by the NLDC.
- CTU is directed to ensure reliable communication between the respective generating stations and Load Despatch Centres.
- As and when the detailed procedure on implementation of SCED pan-India is finalized, the same would also be circulated in the forthcoming OCC meetings in the month of March, 2019.

# Introduction of *Security Constrained Economic Despatch* in *Indian Power System*

**Implementation of Pilot w.e.f 01<sup>st</sup> April, 2019**

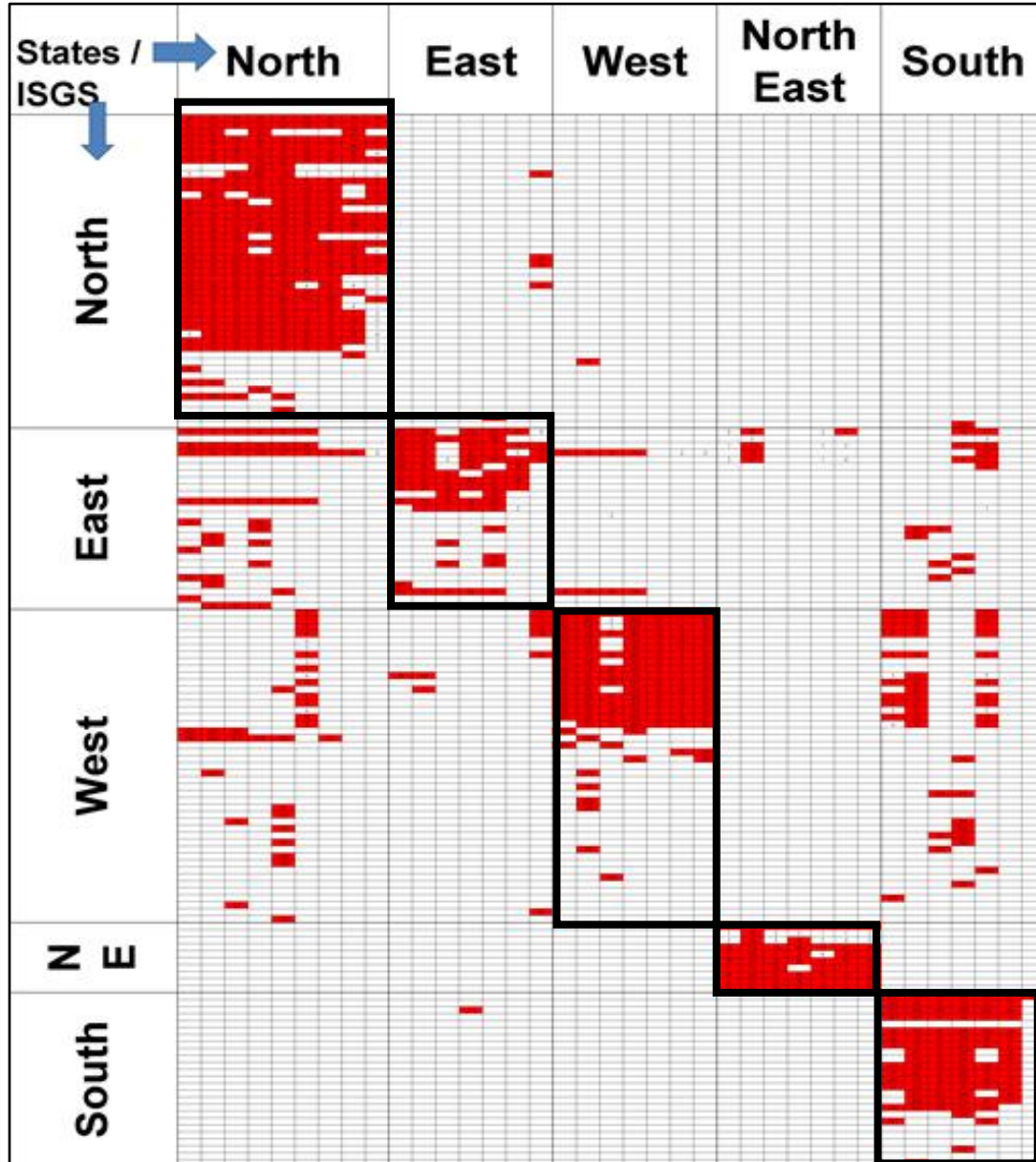
# Spatial Distribution of Variable Cost of stations under RRAS



RRAS: Reserves Regulation  
Ancillary Service



# Complexity of Allocations to Beneficiaries Portfolio



## Composition of Allocation Matrix

- ~150 Plants (Inter-State)
- 36 States/UTs
- Approx. half a Million contracts/day (~ 150x 36 x 96)

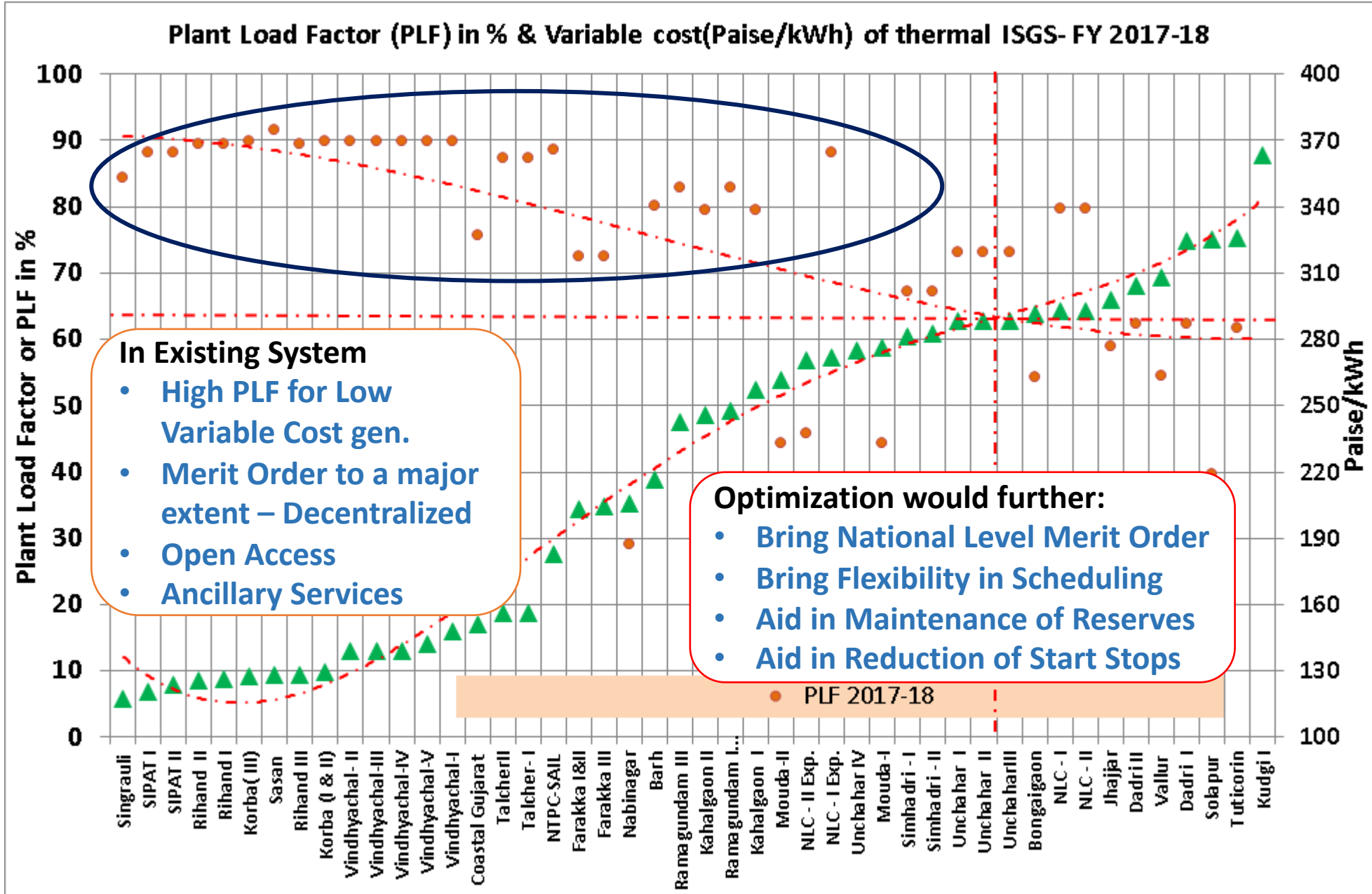
## Need for Optimization

- Fragmented allocation
- Savings in Total Production Costs
- Harness Flexibility from Rigid Contracts

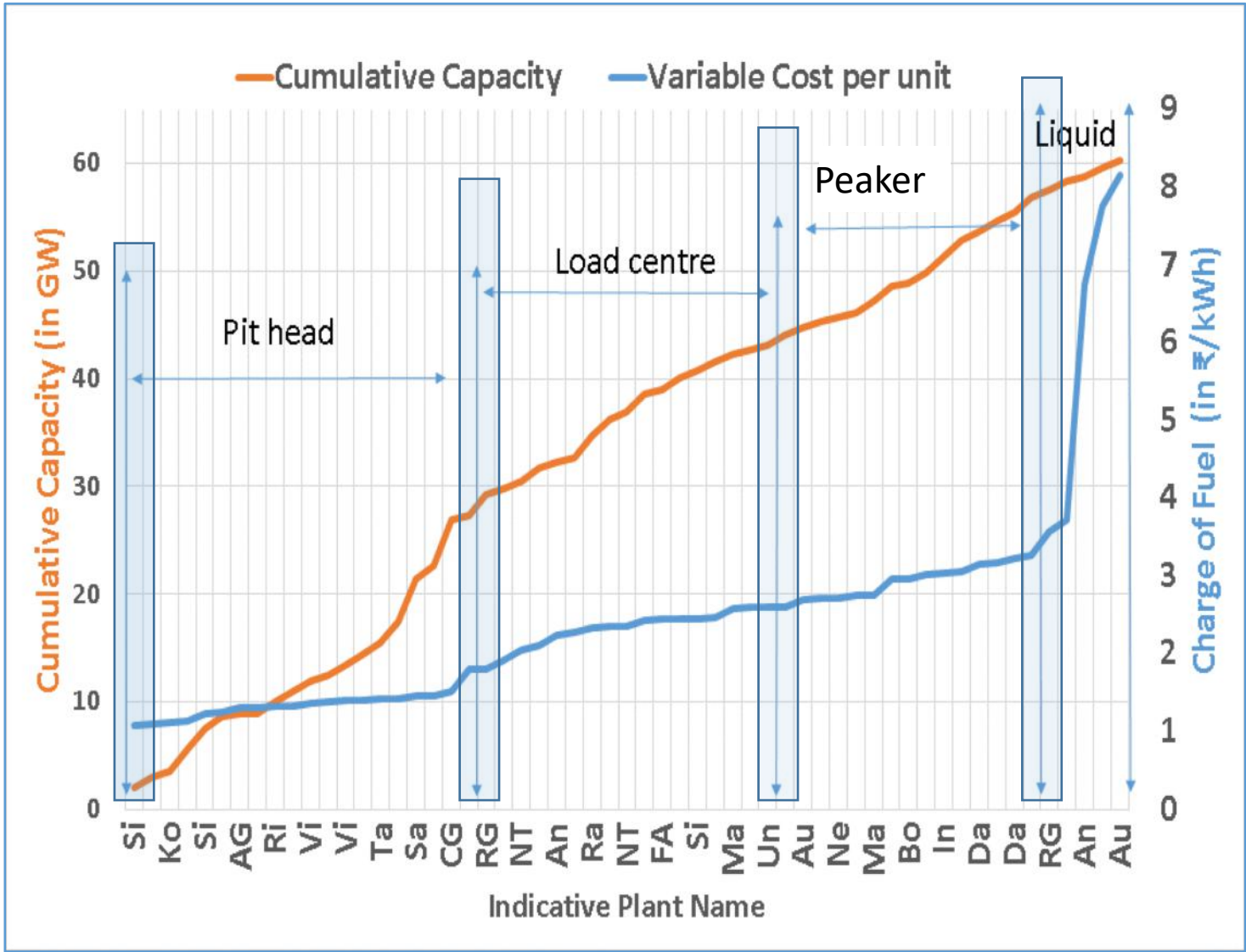
## Ease of Implementation

- Additional Inputs to Existing Multilateral Coordinated Scheduling System

# PLF & Variable Cost

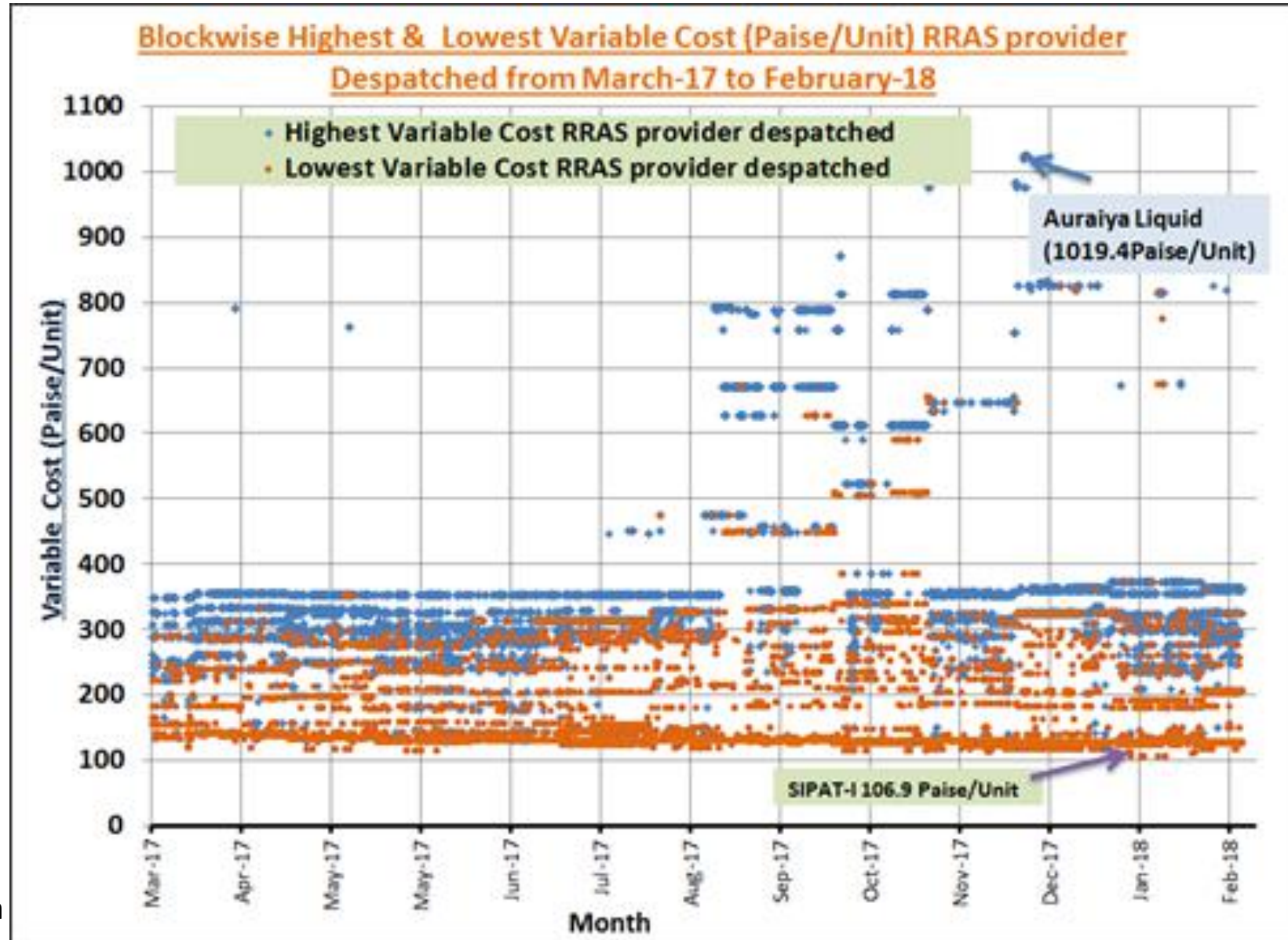


# Cumulative Installed Capacity of generation and Variable Cost per unit





# Variable Cost of RRAS Provider



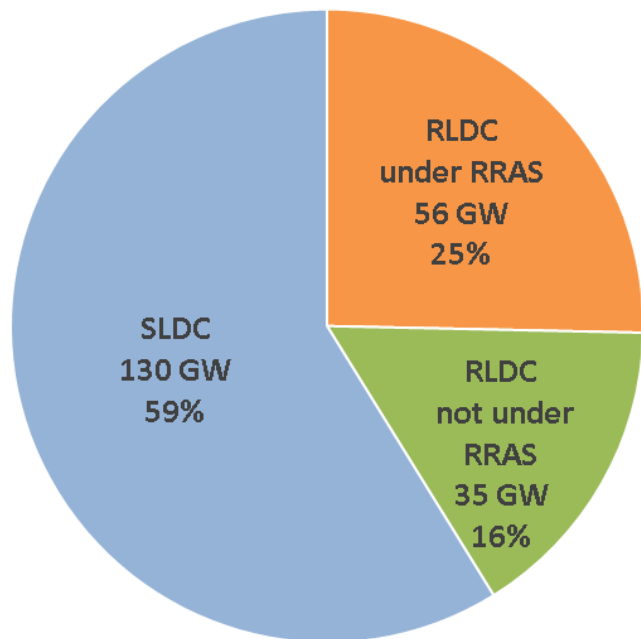
RRAS: Reserves Regulation  
Ancillary Service

# Present Scope

**All India Installed Thermal Capacity**

RLDC - under RRAS    RLDC - not under RRAS    SLDC

All India  
Total  
Installed  
Thermal  
Capacity  
221 GW



**All India Thermal Generation**

**~ 954 BU / year**

**Thermal Generation under RRAS**

**343 BU/ year**

**% Energy from Plants under RRAS**

**36%**

**Weighted average variable charges of  
Plants under RRAS as per actual  
dispatch**

**₹ 1.99 / kWh**

**Total variable charges for thermal  
@ ₹ 1.99 /kWh**

**₹ 190116 crores**

**Total variable charges for thermal  
plants under RRAS**

**₹ 68405 crores  
(~ 36% )**

**2022 Thermal Energy as per GtG  
studies, 1050 BU / year**

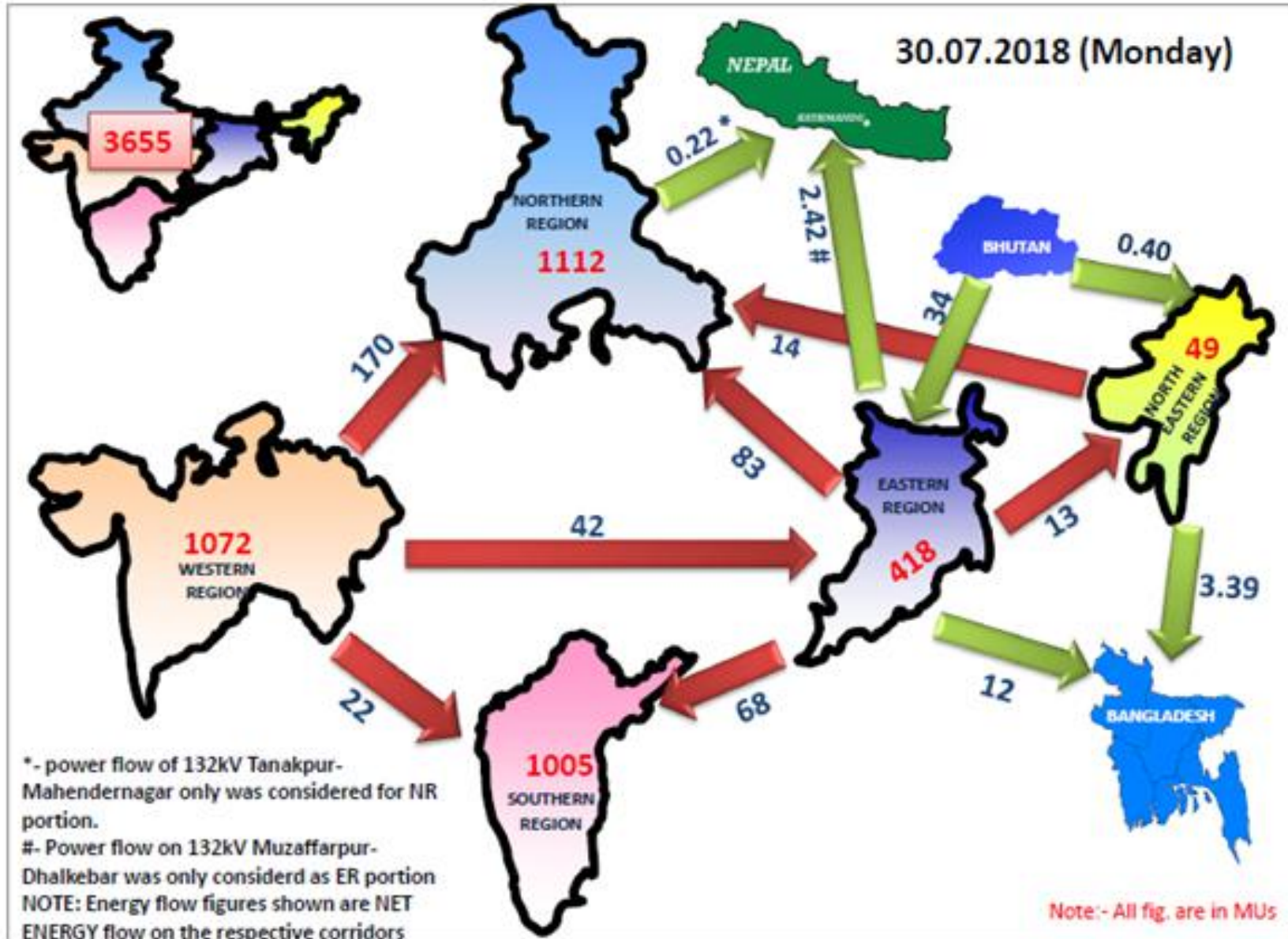
**₹ 230000 crores**

**RRAS – Reserve Regulation Ancillary Services**

**GtG – Greening the Grid, USAID**

**SCED – Security Constrained Economic Despatch**

# Inter Regional Power transfer

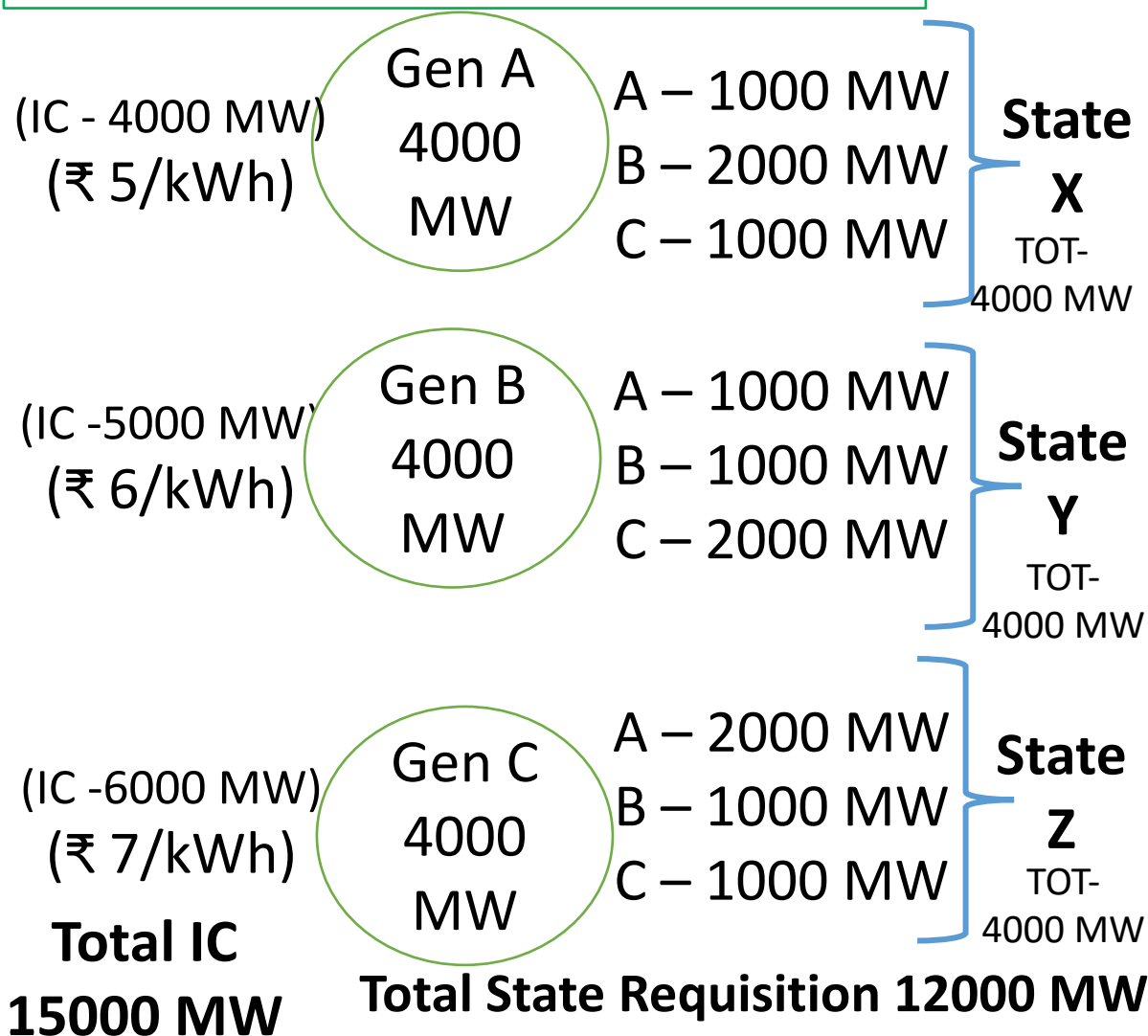


- Transfer Capability to be factored
- System Security
- Spatial distribution of generation
- Cheaper generation in WR
- Costly generation in NR & SR

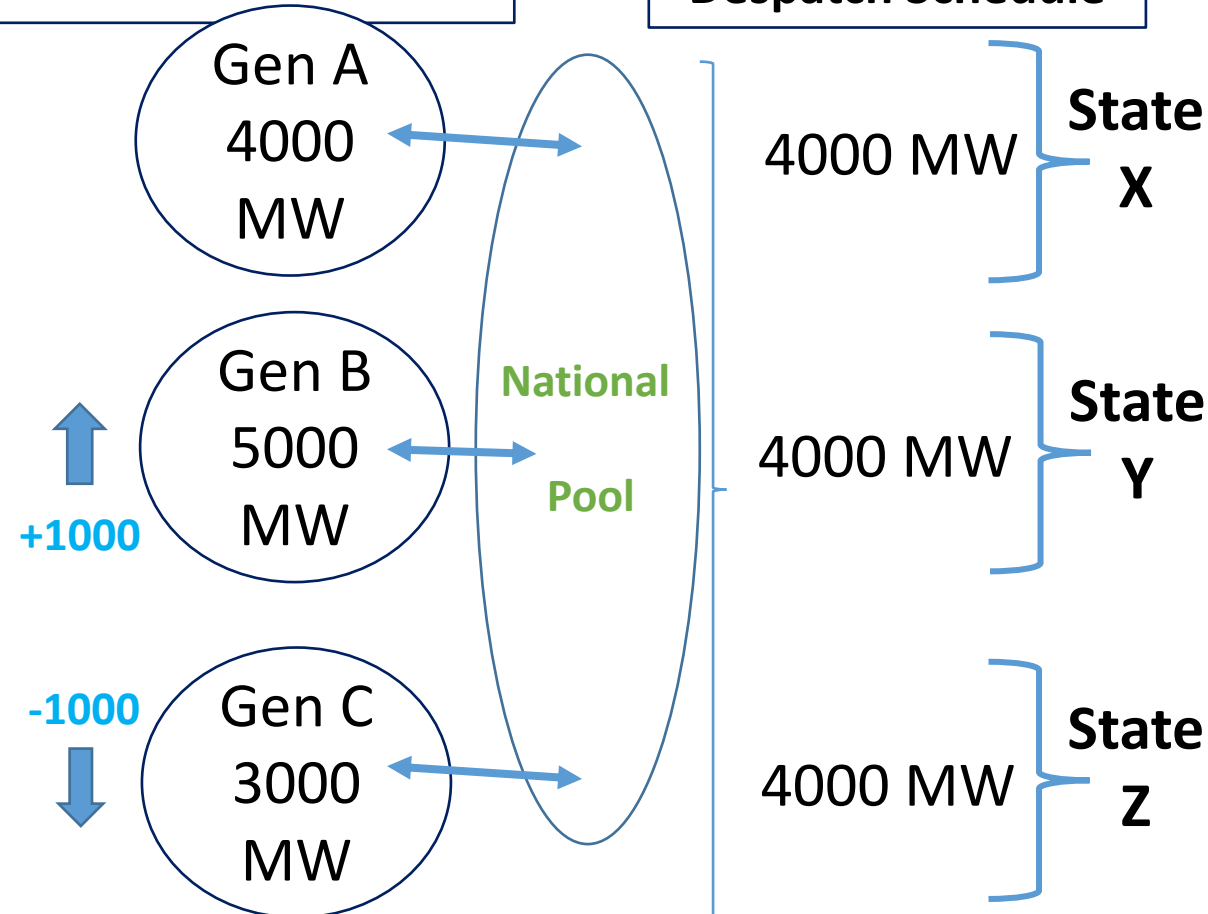
# Example

## Thin Centralized Optimization Layer

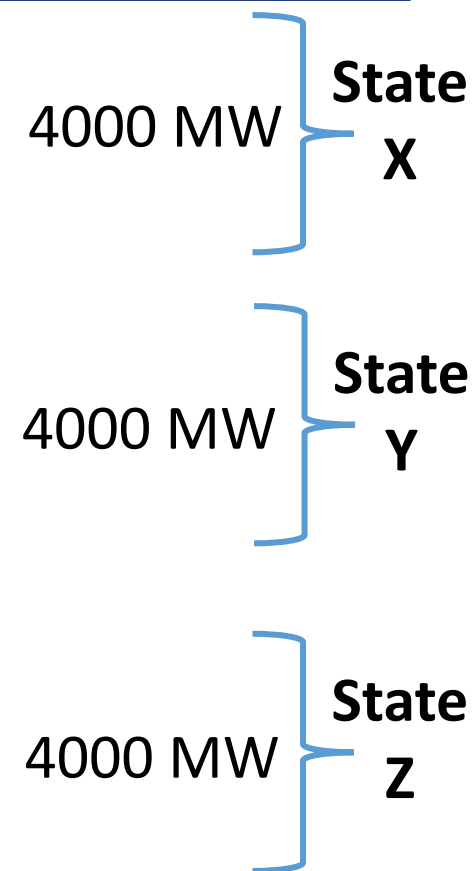
### Present Decentralized Scheduling Process



### Optimized Generation Schedule



### Optimized Despatch Schedule



**Total IC  
15000 MW**

**Total State Requisition 12000 MW**

**Total State Requisition 12000 MW**

**Total Production Cost ₹ 710 Lakhs/hour**

**Total Production Cost ₹ 720 Lakhs/hour > Total Potential Savings ₹ 10 Lakhs/hour**



# Economic Despatch - Mathematical Formulation

## Objective Function

- Minimize Pan India ISGS Variable Cost

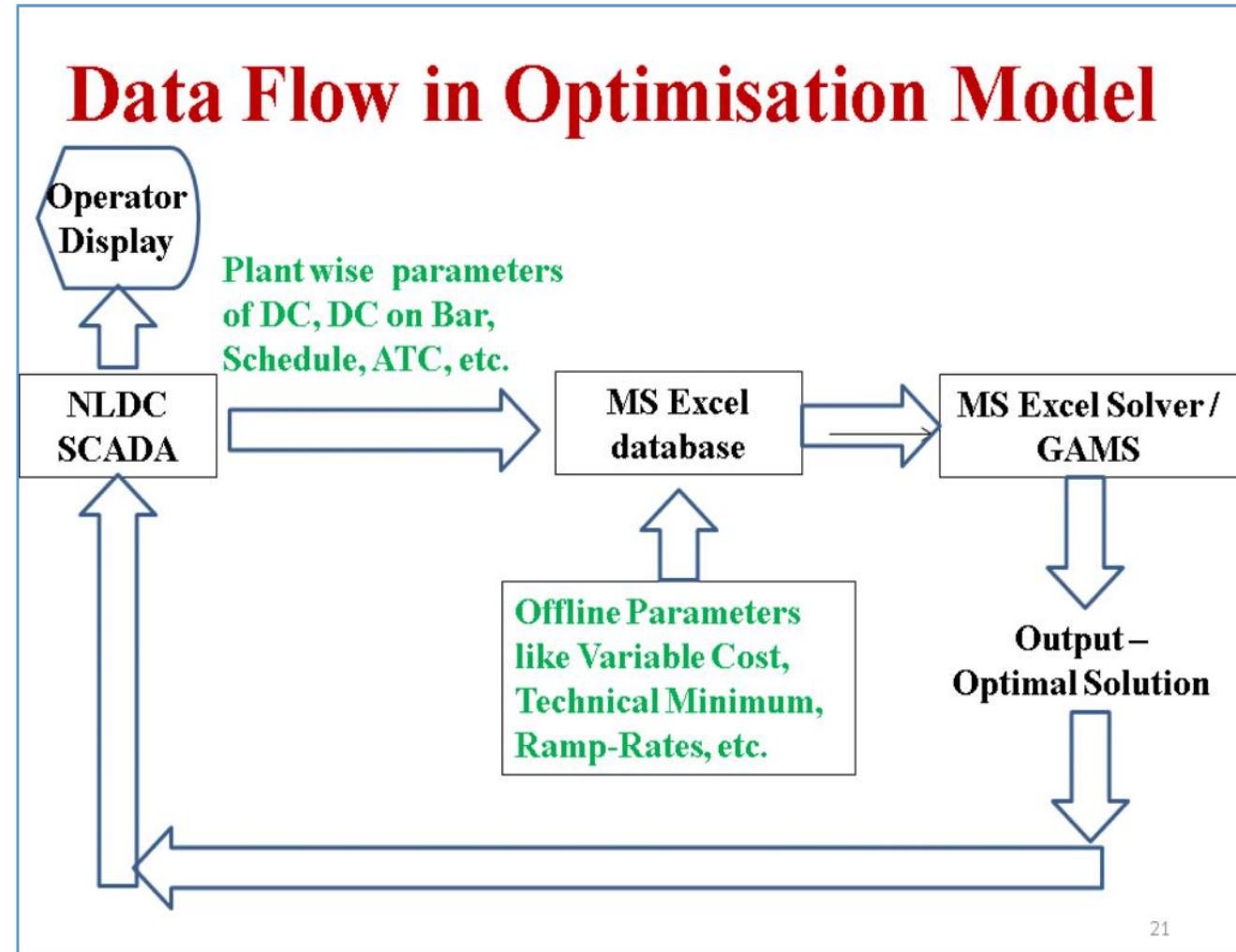
## Subject to Constraints

- Meeting Total Requisition by States from ISGS
- Transmission Constraints (ATC)
- Technical Minimum of Plants
- Maximum Generation (DC-on-bar)
- Ramp up and down rate
- Factoring Spinning Reserves/Heat Rate

- Minimise  $\sum_{i=1}^k C_i P_i$ 
  - $k$  = total number of Plants
  - Where  $C_i$  is the variable per unit cost of the  $i^{th}$  Plant
  - $P_i$  is the optimised scheduled power of the  $i^{th}$  Plant
- Subject to
  - $\sum_{i=1}^k P_i = \sum_{i=1}^k S_i$
  - $P_i \leq (DC \text{ on bar})$
  - $P_i \geq P_{i,min}$
  - $P_{i,t} \leq P_{i,t-1} + \text{Ramp up rate}$
  - $P_{i,t} \geq P_{i,t-1} - \text{Ramp down rate}$
  - $\forall r \in R, \sum_r (P_{i,r} - S_{i,r}) \geq (SCHIR_r - ATC_r)$ 
    - $S$ -is the scheduled power
    - $t$ -represents current time of execution
    - $R$ -represents each of the regions viz., North, East, West, South and North East
    - $ATC$ -is the Available Transmission Capability of each region  $R$
    - $SCHIR$ -is the Scheduled Net Interchange of the region  $R$
    - $P_{i,min}$  is the *technical minimum* for thermal power plants, considered 55% of  $DC \text{ on bar}$

# Modelling for Economic Despatch – Process Flow

- RRAS implementation since April 2016
- The plant wise database for parameters were populated.
- Mathematical model was solved using the linear programming technique.
- General Algebraic Modeling System (GAMS) language and powerful commercial solvers like IBM CPLEX accessed through GAMS, was also used.
- Program executed every five minutes.
- All the input and output data archived.
- Data Analysis
- ~>50 man-months of efforts



# Sample Snapshots – Economic Despatch...1

S. NO.	TYPE	PLANT NAME	REG.	INSTALLED CAPACITY	TOTAL (MW)	DC ON BAR (MW),	SCHEDULE (MW),	VAR. COST P/UNIT	OPT. SCH. (MW)	OPT.SAV. (LAKHS)	OPT.SCH. DIFF.(MW)
25	T	NABINAGAR TPP	E	1x250	250	228	167	191	228	1	61
26	G	NTPC GANDHAR	W	3x144+ 1x255	657	180	180	205	180	0	0
27	G	ANTA GPS	N	3x89 + 1x153	419	0	0	224	0	0	0
28	T	RAMAGUNDAM TPS-STG.-III	S	1x500	500	471	259	227	471	5	212
29	T	RAMAGUNDAM TPS-STG.-I, II	S	3x200+3x500	2100	1800	1078	233	1800	17	722
30	T	KAHALGAON STG-II	E	3x500	1500	1414	1365	236	1414	1	49
31	G	NTPC KAWAS	W	4x106 + 2x116	656	255	255	236	255	0	0
32	T	FARAKKA STG 1 AND 2	E	3x200 + 2x500	1600	1100	936	243	1100	4	164
33	T	FARAKKA STG-III	E	1x500	500	300	259	244	300	1	41
34	T	SIMHADRI-NTPC STAGE-I	S	2x500	1000	948	521	244	948	10	427
35	T	SIMHADRI-NTPC STAGE-II	S	2x500	1000	948	521	245	825	7	303
36	T	KAHALGAON STG-I	E	4x210	840	740	618	246	407	-5	-211
37	T	MAUDA-II	W	1x660	660	375	343	259	206	-4	-137
38	T	UNCHAHAH TPS-III	N	1x210	210	191	191	261	103	-2	-86
39	T	UNCHAHAH TPS-I	N	2x210	420	382	382	261	210	-4	-172
40	T	UNCHAHAH TPS-II	N	2x210	420	382	382	261	210	-4	-172
41	G	AURAIYA GPS	N	4x111+ 2x109	663	0	0	270	0	0	0
42	L	NEYVELI TPS-II (EXPN.)-NLC	S	2x250	500	185	124	271	102	-1	-22
43	L	NEYVELI TPS-I (EXPN.)-NLC	S	2x210	420	385	210	271	212	0	1
44	T	UNCHAHAH TPS-IV	N	1x500	500	0	0	275	0	0	0
45	T	MAUDA	W	2x500	1000	575	518	276	316	-6	-202
46	L	NEYVELI-II (ISGS)- NLC	S	7x210	1470	1256	723	296	691	-1	-32
47	T	BONGAIGAON	NE	1x250	250	455	350	297	250	-3	-100
48	T	DADRI STG-2	N	2x490	980	464	357	302	255	-3	-101
49	T	INDIRA GANDHI TPS JHAJJAR	N	3x500	1500	1421	1097	303	782	-10	-316
50	T	VALLUR NTECL	S	3X500	1500	933	513	306	513	0	0
51	G	DADRI GPS	N	4x130+ 2x154	830	200	181	316	110	-2	-71
52	T	NTPC SOLAPUR	W	2x660	1320	270	270	327	149	-4	-122
53	T	NTPL	S	2x500	1000	938	516	317	516	0	0
54	T	DADRI STG-1	N	4x210	840	769	632	323	423	-7	-209
55	G	RGPPIL IR	W		664	540	482	357	297	-7	-185

Database Covering Regulated  
Tariff Generating Plants available  
pan-India

Real time Data

Plant-wise and Region-wise  
Operator Display

Change from Positive to Negative

System Marginal Cost

# Sample Snapshots – Economic Despatch...2

PLANT NAME		TOTAL (MW)	DC (MW), A	DC ON BAR (MW), B	SCHEDULE (MW), C	ACTUAL (MW), D	COLD RESERVE E=(A-B)	ACTUAL MARGIN F=(B-D)	TOTAL URS G=(A-C)	SMP (Optimised)	POSSIBLE UP H=(B-C)	REGUALTN DOWN I=[C-(J*B)]	RRAS APPLIEI (VAE)	DEVTN. K=(D-C)	OPT. SCH. (MW) (L)	OP.COST. (LAKHS) (M)	PRE.COST (LAKHS) (N)	OPT.SAV. (LAKHS) (Q)	OPT.SCH. DIFF.(MW) (O)
NORTHERN REGION	43 UNITS	11282	9063	7884	7297	7182	1179	748	1766	245	587	2960	0	-125	6170	114	147	-33	-1127
EASTERN REGION	19 UNITS	7010	5968	5968	5432	5399	0	569	536	245	536	3001	0	-79	5635	121	117	4	203
WESTERN REGION	54 UNITS	23907	20057	20057	19327	19521	0	-309	189	245	189	8593	0	-246	18725	275	294	-19	-603
SOUTHERN REGION	32 UNITS	12290	10398	10398	6646	6886	0	3373	3752	245	3752	1139	0	428	8272	198	160	38	1626
NORTH-EASTERN REGION	18 UNITS	671	744	744	639	625	0	119	105	245	105	230	0	-12	539	11	14	-3	-100
ALL INDIA	167 UNITS	55160	46230	45051	39341	39612	1179	4501	6349		5170	15923	0	-34	39341	719	732	-12	0

Regional Summary Display

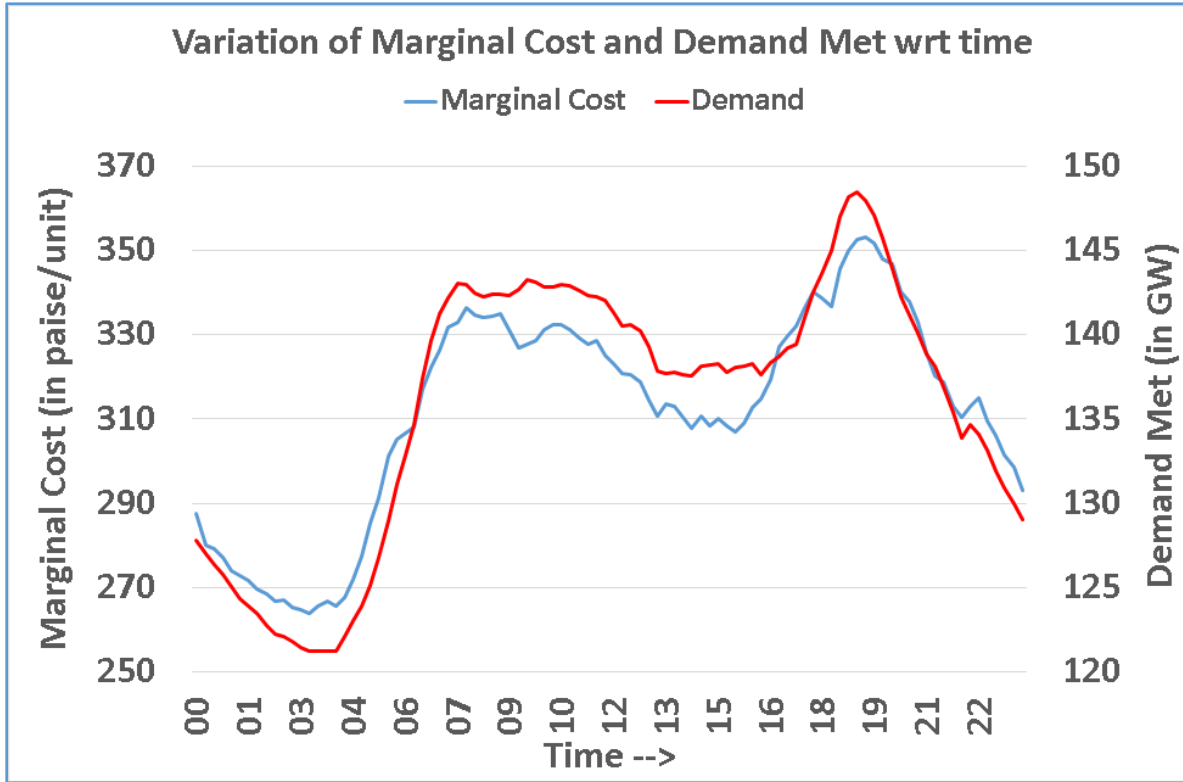
Net Zero



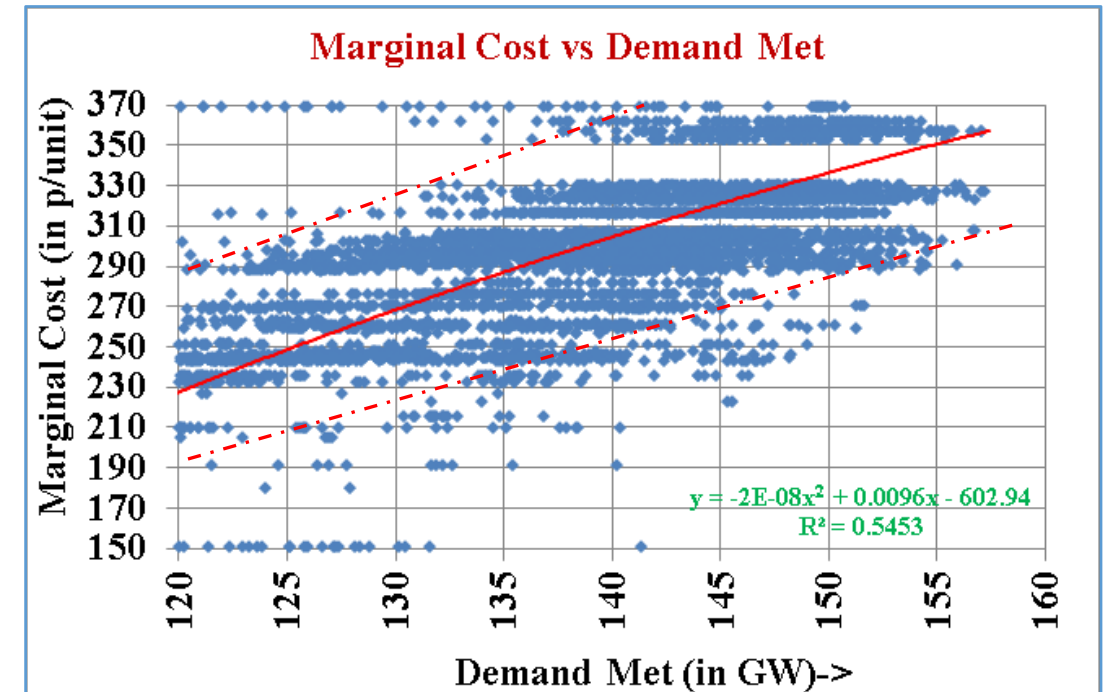
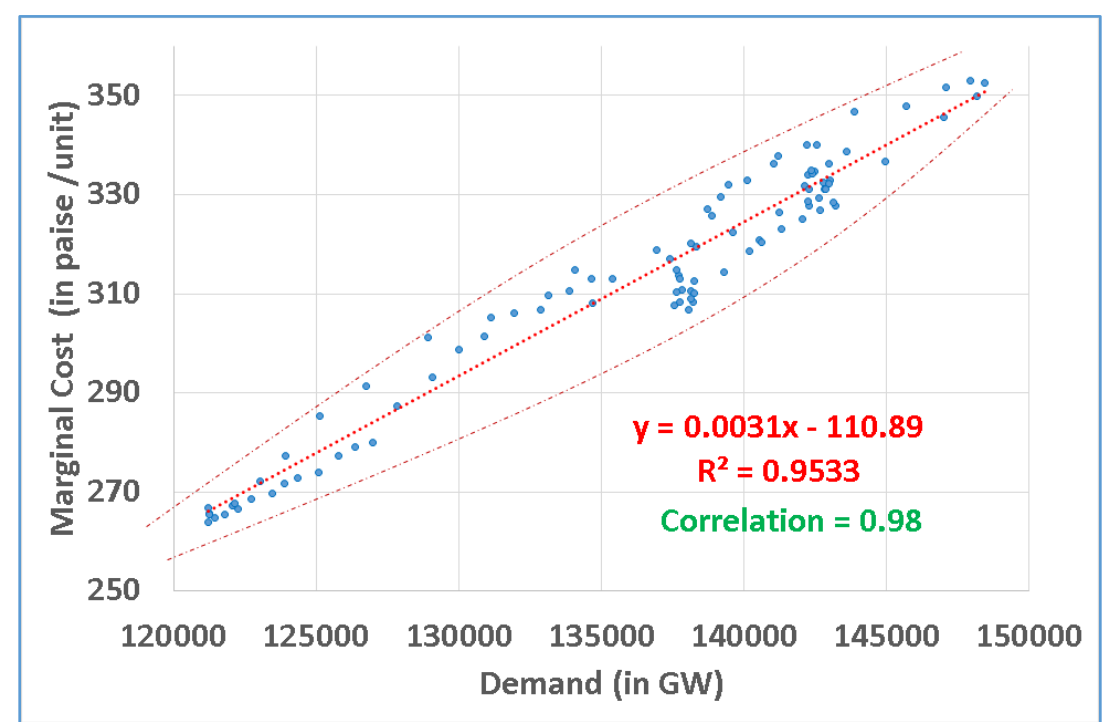
# Pan-India Optimization Results at a Glance

Interstate Thermal Generation Plants	57 Nos
Thermal Units	167 Nos
Total Installed Capacity	55160 MW
Range of Scheduled Power in a day	32000 MW – 46000 MW
Variable Cost range	₹ 1.12 -8.15 / kWh
Marginal Price range	₹ 2-4 / kWh
Weighted Average Variable Cost	₹ 1.89 / kWh
Average Production Cost per day	₹ 186 Crores / day
Average Potential Savings per day	₹ 2.4 Crores / day
Production Cost that can be saved	~ 1% to 2% ( ~1.3%)

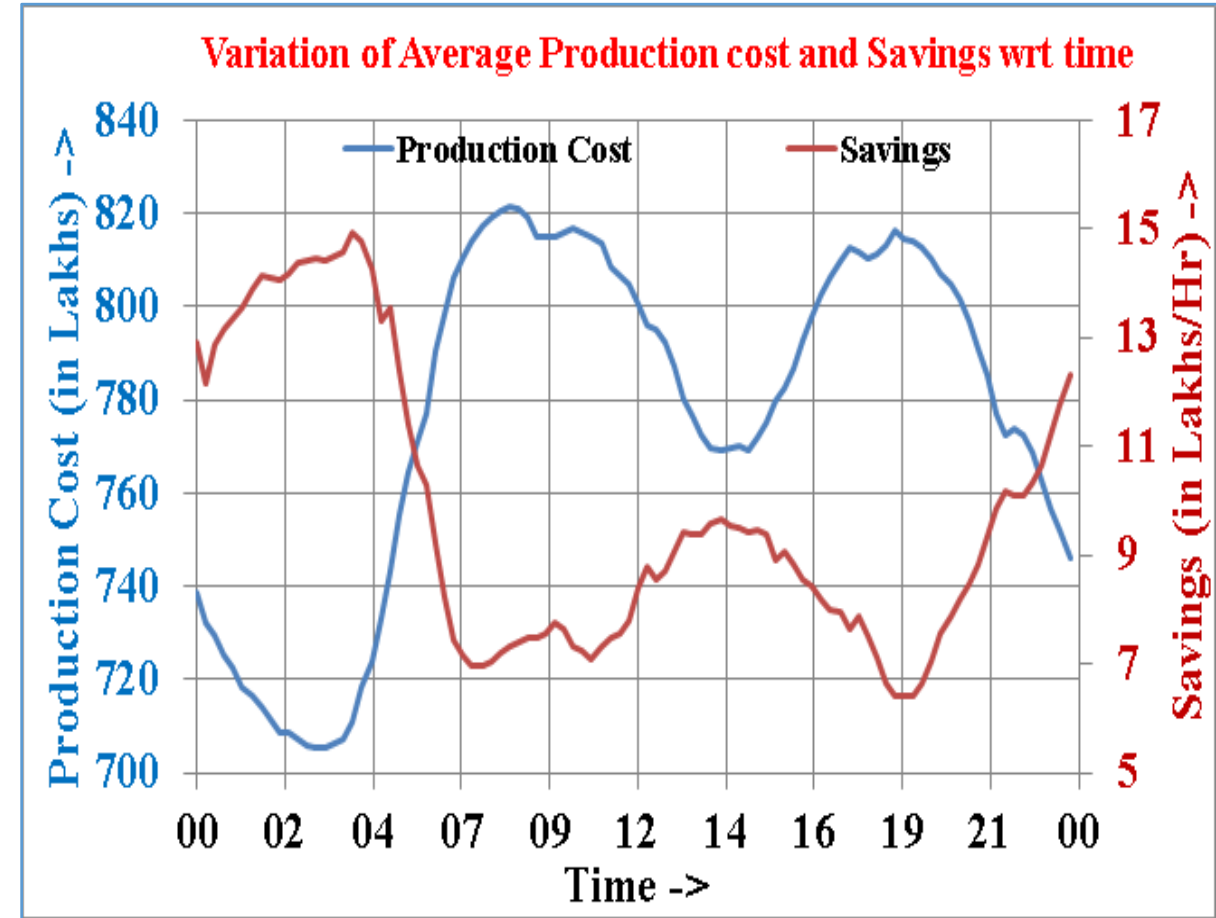
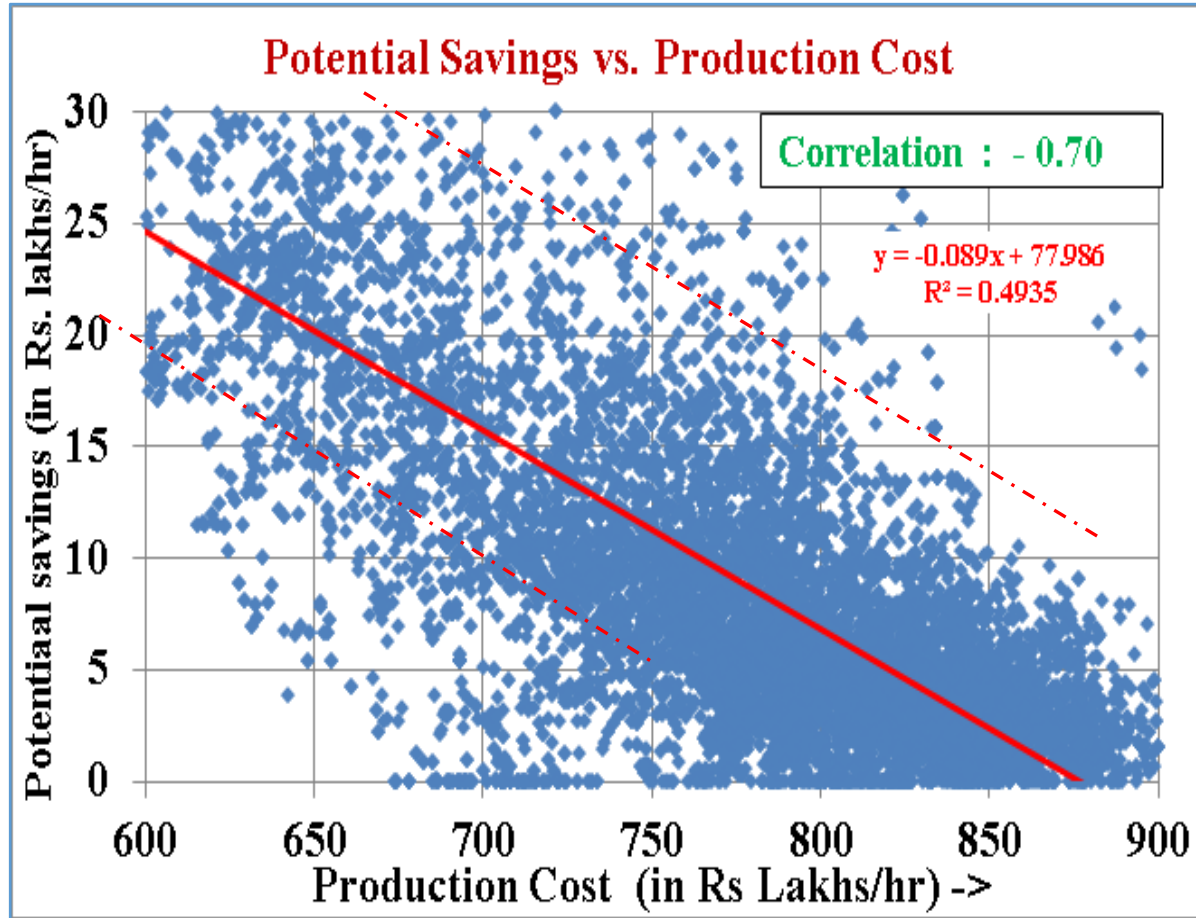
# System Marginal Cost and Demand



- During periods of high demand Production Cost and System Marginal Cost are high

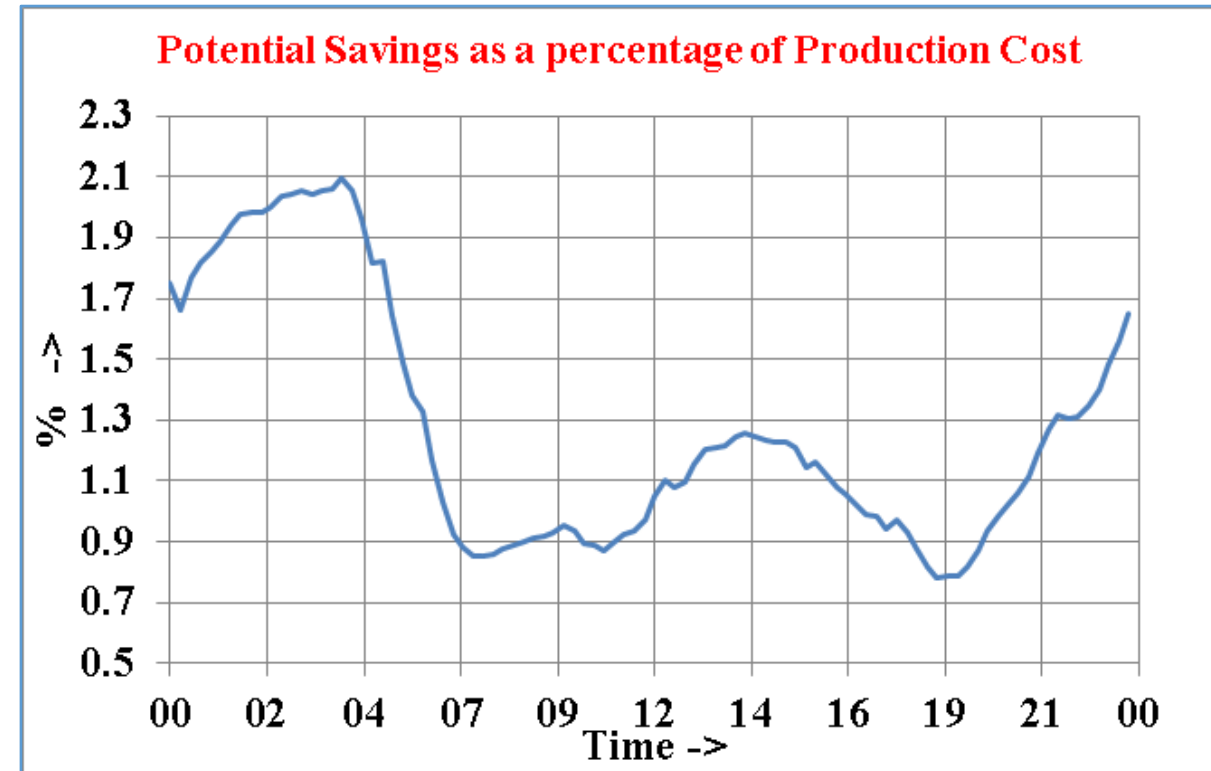
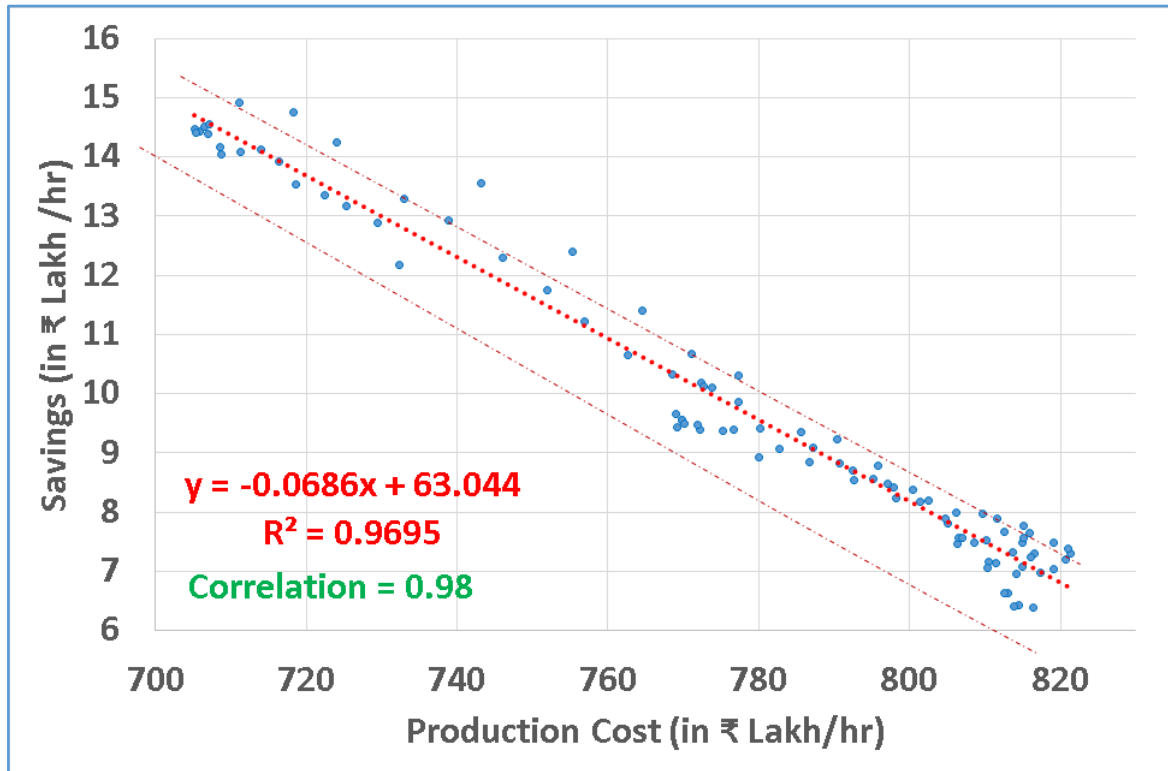


# Potential Savings ...1



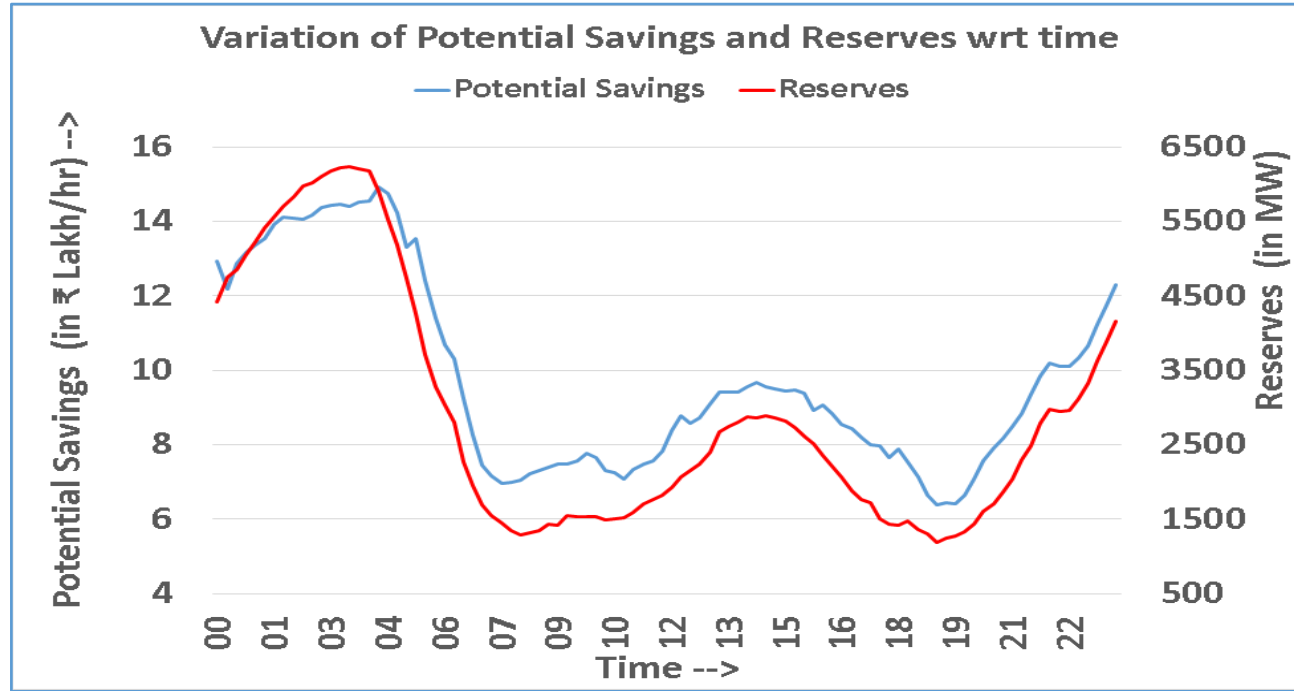
- Potential of savings inversely related to production cost
  - Possible Savings are the highest during off peak hours
- Compensation for increase in Net Heat Rate
  - Potential savings are slightly over estimated

# Potential Savings ...2

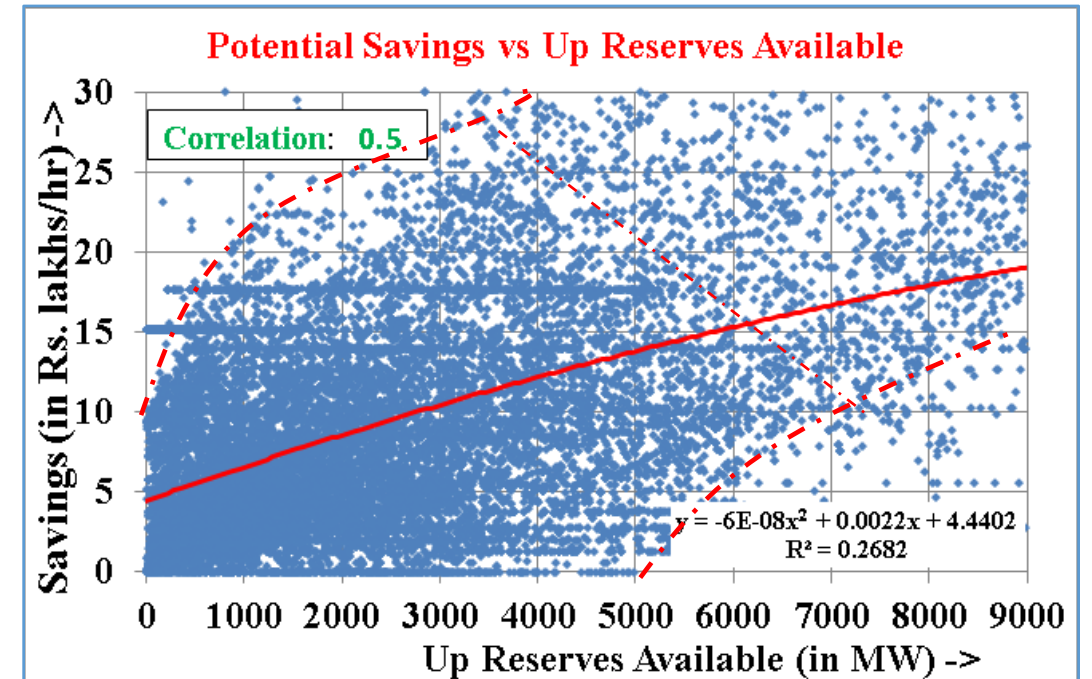
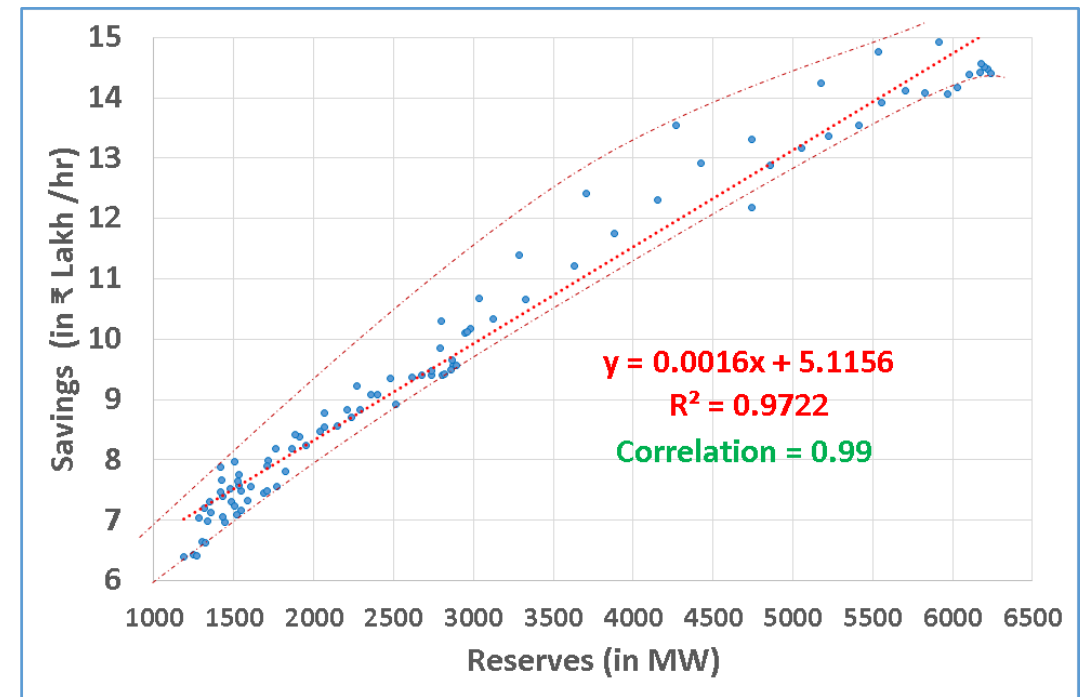


- Potential Savings is 1.3% of Production Cost
- Scope for incremental optimization and generating savings
  - Fragmented nature of allocations
  - Diversity
  - Decentralized scheduling
  - Transaction Cost

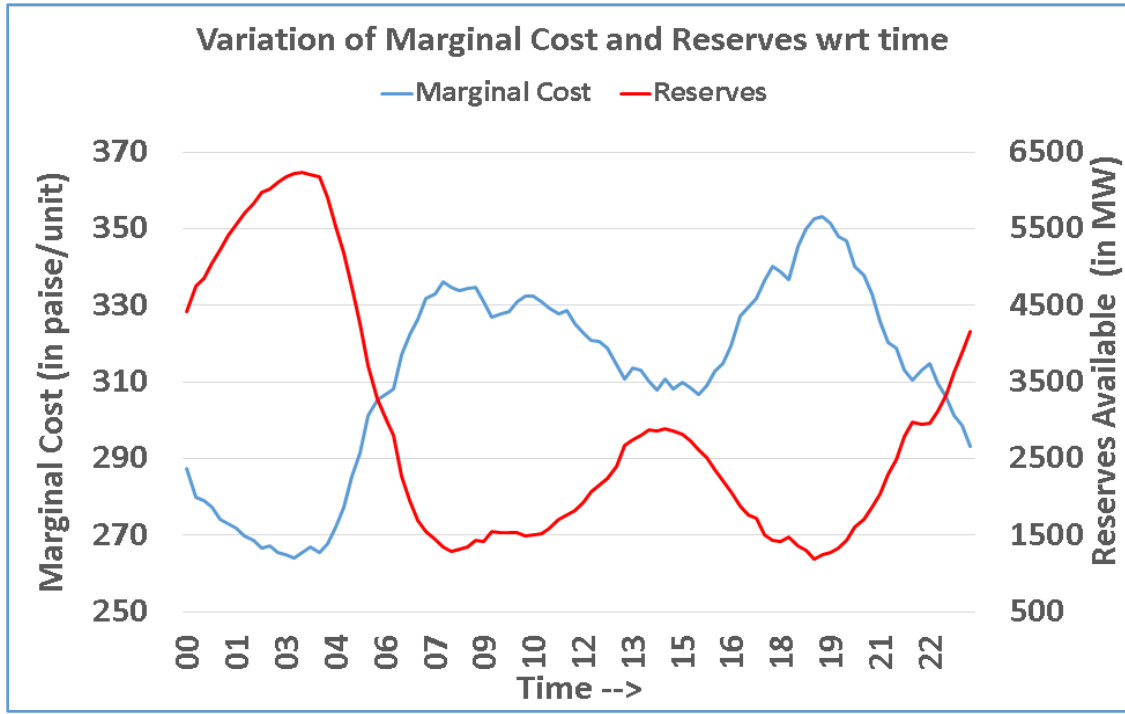
# Potential Savings and Flexibility



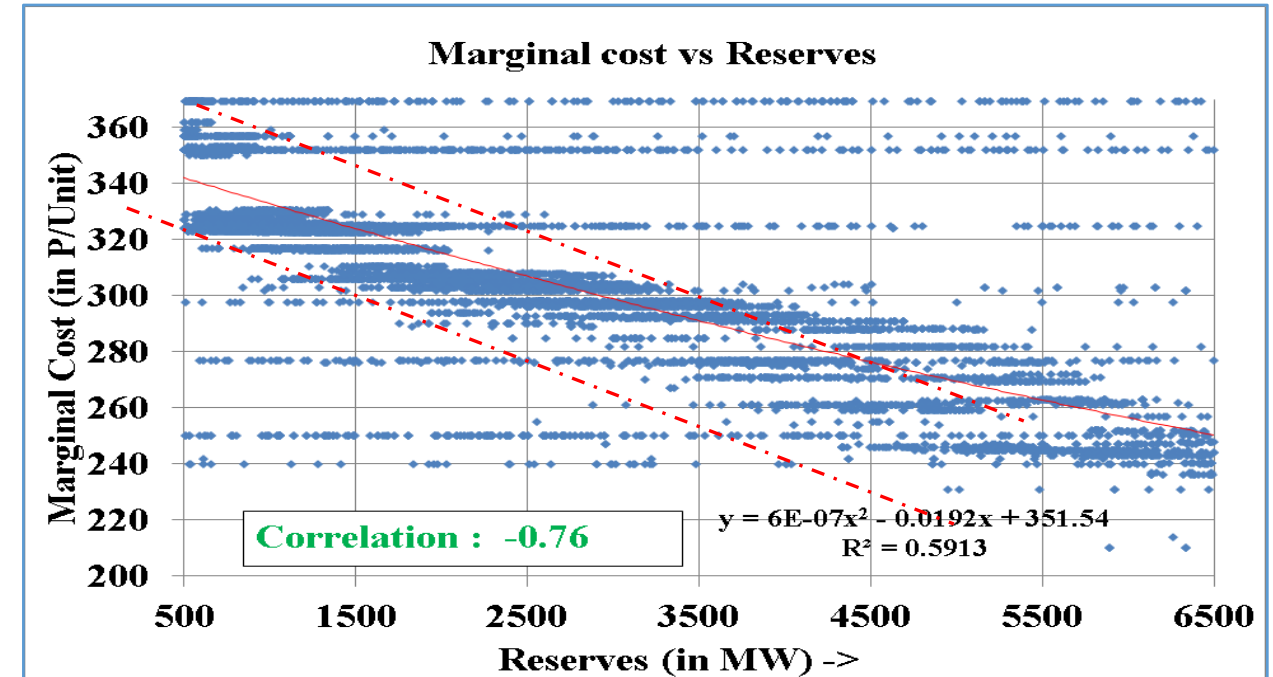
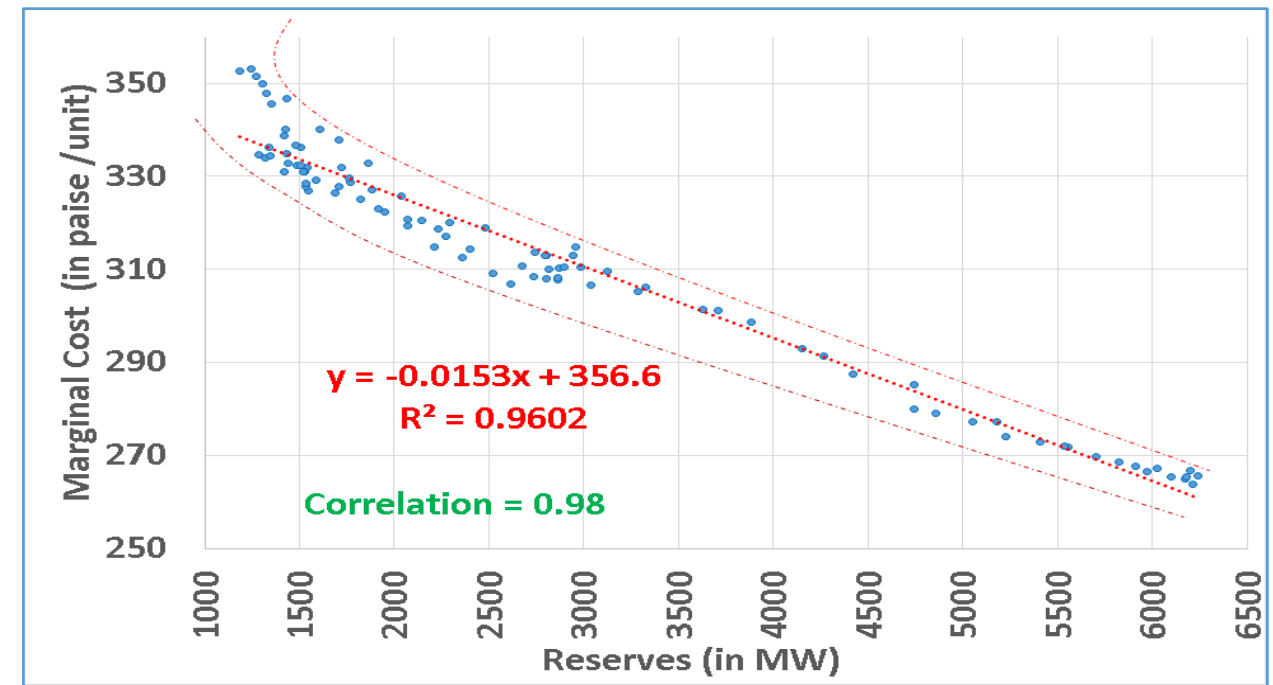
- Diversity in off peak and peak demand in the same day
- Some units were operated at technical minimum of 55%
- Flexible power plants provide higher savings potential



# Spinning Reserve

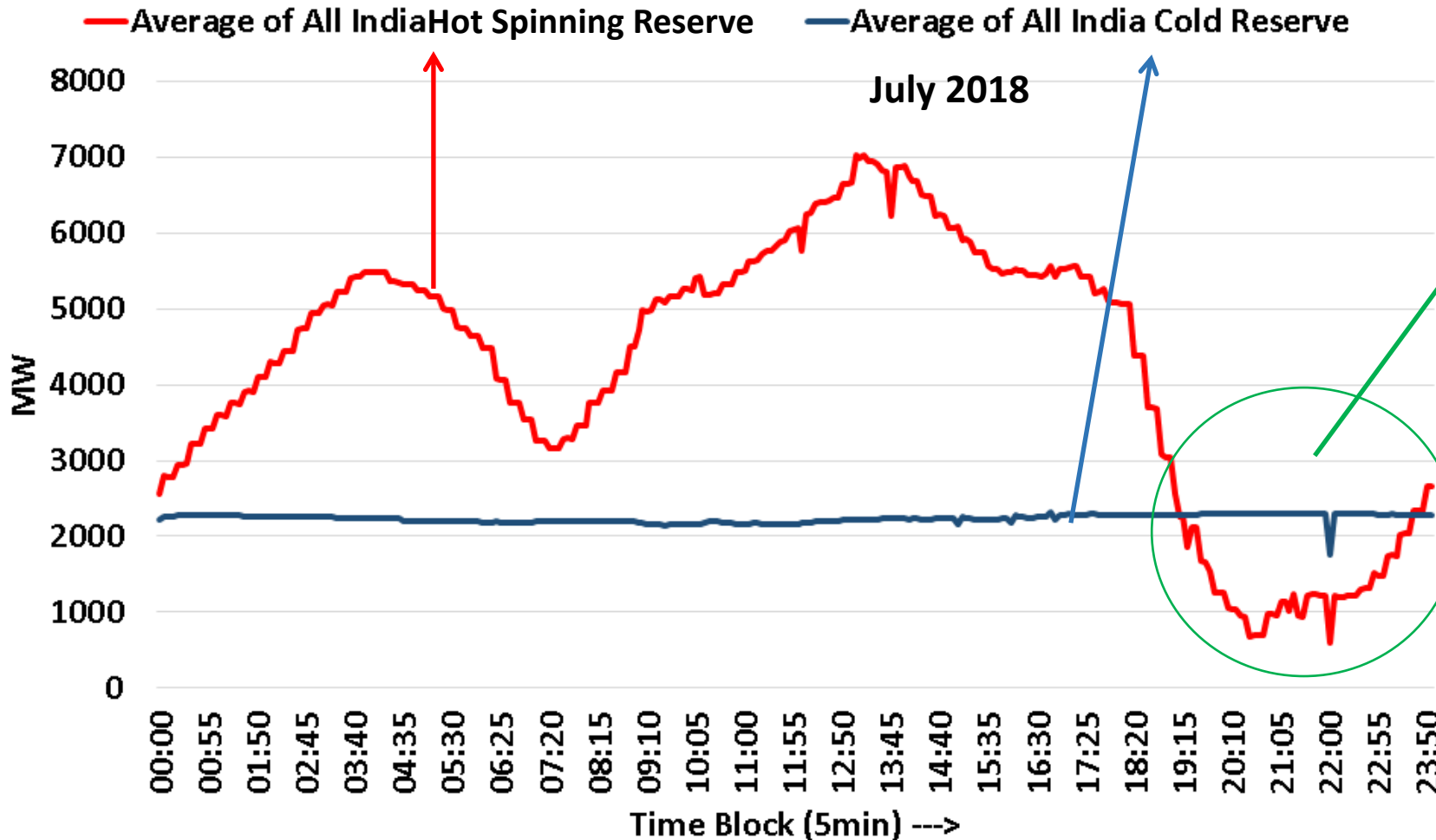


- System Marginal Cost inversely proportional to spinning reserve available
- System Marginal Cost during peak demand is high and Reserve is close to nil
- **Mandate needed for Reserves in Grid Code**



# Spinning (Hot) Reserve and Non Spinning (Cold) Reserve

Block Wise Average Cold Reserves

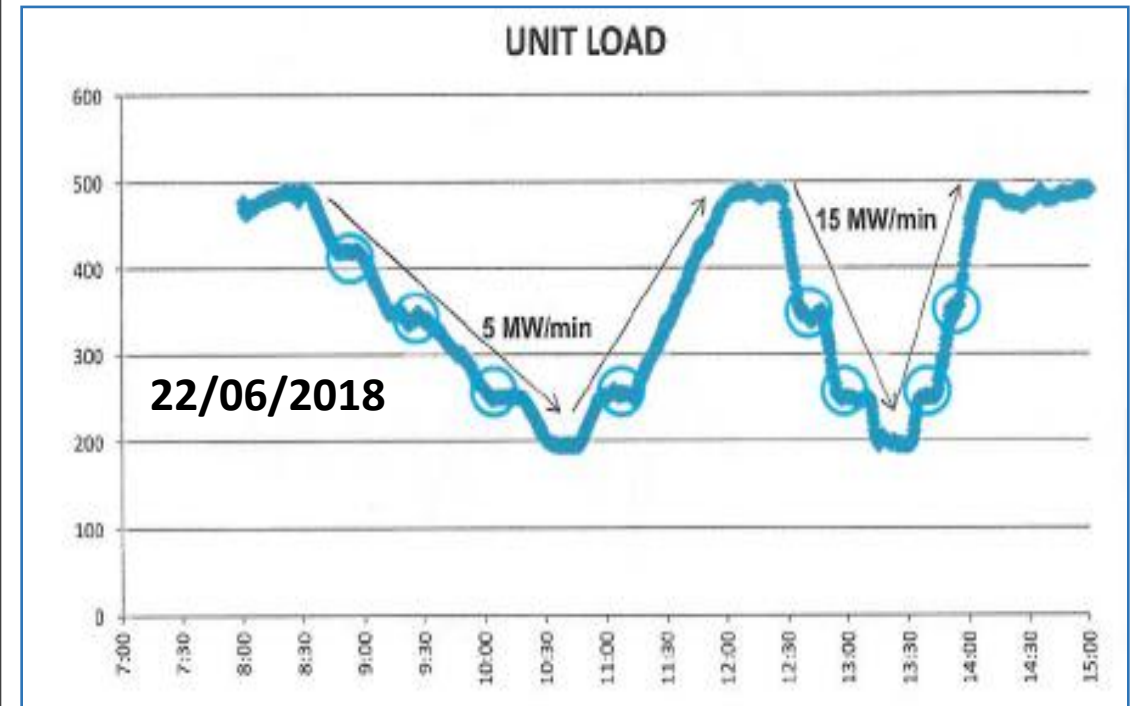
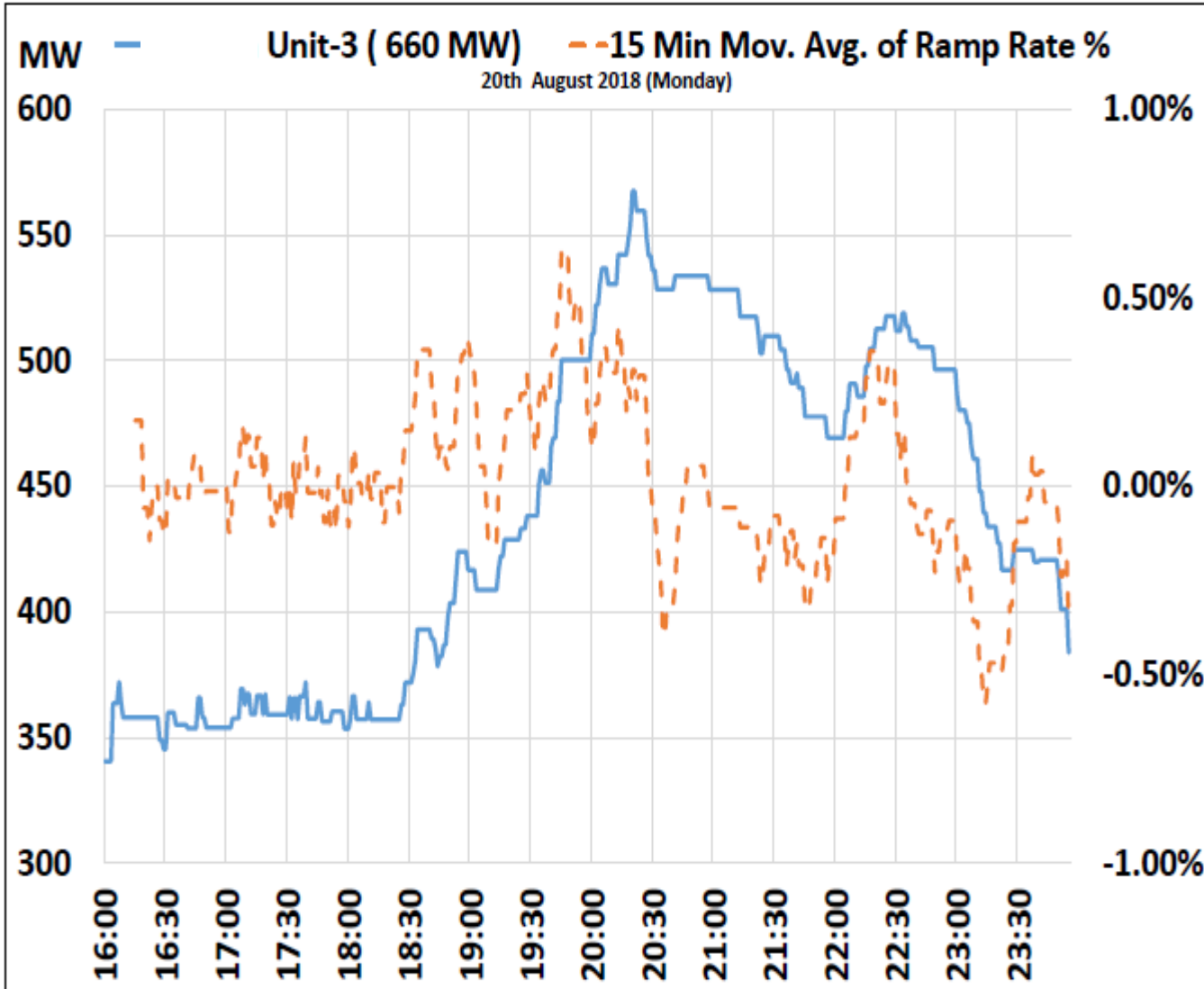


- Cold Reserve = DC-DConbar
- Time of necessity
- Cold Start up time
- Out of Merit generation
  - For majority of the day



# Unit Ramp Rate effect on SCED

- Relatively Slow Ramping observed for some units
- **Declared Ramp should be Honoured**
- Effects of non performance might be cumulative
- Dadri demonstrated 3%





# Action till Date

POSOCO report on  
'Security Constrained  
Economic Despatch  
pan India' submitted  
to Hon'ble CERC  
**03 August 2018**

POSOCO Consultation  
paper on "Security  
Constrained Economic  
Dispatch (SCED) of  
Inter-State Generating  
Stations pan India"  
submitted to  
Hon'ble CERC  
**12 September, 2018**

<https://posoco.in/download/consultation-paper-on-security-constrained-economic-dispatch-of-isgs-pan-india/?wpdmdl=19708>

Hon'ble CERC Order  
Petition No.  
02/SM/2019  
(Suo-Motu)  
**31st January 2019**

MoP scheme on  
'Flexibility in  
Generation and  
scheduling of thermal  
power stations to  
reduce the cost of  
power to the  
consumer'  
**30 August, 2018**

<https://posoco.in/download/posocos-observations-on-comments-on-the-consultation-paper-on-sced/?wpdmdl=21606>

Stakeholder  
Consultation  
**28 September 2018 -  
20 November 2018**  
  
(10 Nos. Responses)

**Operationalization  
01 April 2019**

# Participation in the Pilot

All the thermal Inter State Generating Stations (ISGS) that are regional entities and whose tariff is determined or adopted by the Commission for their full capacity.

Sl No	RRAS Provider Name	Region	Installed Capacity (MW)	Fixed cost (Paisa/kWh)	Variable cost (Paisa/kWh)	Ramp Up (MW/Block)	Ramp Down (MW/Block)	Technical Minimum (MW)
1	AGTPP - Agartala*	AR	130	172.1	159.8	8	8	70
2	AGBPP - Kathalguri	AR	291	199.5	214.8	34	34	264
3	BongaigaonGTPP	AR	250	271.42	301.9	15	15	138
Total Installed Capacity			AR 671					
Source- NERPC- <a href="http://www.nerpc.nic.in/Ancillary%20service.php">http://www.nerpc.nic.in/Ancillary%20service.php</a>								
4	Talcher STPS - I	ER	1000	96.4	158.4	48	48	518
5	Nabinagar Thermal Power Project	ER	500	242.6	180	40	40	275
6	Barh TPS	ER	1320	186.5	215.9	90	90	684
7	Kahalgaoon STPS - II	ER	1500	109.8	220.1	113	113	778
8	Farakka STPS - I & II	ER	1600	83.5	224.9	120	120	823
9	Farakka STPS - III	ER	500	150.4	225.5	38	38	259
10	Kahalgaoon STPS - I	ER	840	106.5	230.2	90	90	421
11	MTSP Stage-II	ER	390	234.9	248.8	30	30	195
Total Installed Capacity			ER 7650					
Source- ERPC- <a href="http://erpc.gov.in/as-3-formats">http://erpc.gov.in/as-3-formats</a>								
12	Singrauli STPS	NR	2000	65.7	137.1	135	197	1400
13	Rihand TPS Stage - II	NR	1000	71.2	138.4	100	150	518
14	Rihand TPS Stage - I	NR	1000	85.8	140.6	100	150	507
15	Rihand TPS Stage - III	NR	1000	145.6	141.5	100	150	518
16	Unchahar TPS Stage - IV	NR	500	165.1	284.3	35	35	275
17	Unchahar TPS Stage - I	NR	420	109.6	307.2	30	30	210
18	Unchahar TPS Stage - II	NR	420	101.3	307.2	30	30	210
19	Unchahar TPS Stage - III	NR	210	136.4	307.2	15	15	105
20	Auraiya Gas Power Project GF	NR	663	64.2	322.6	138	138	356
21	Anta Gas Power Project GF	NR	419	71.7	325	225	225	225
22	Dadri Gas Power Project GF	NR	830	58.2	333.7	50	50	445
23	Dadri TPS Stage - II	NR	980	145	341.4	100	100	509
24	Indira Gandhi STPS	NR	1500	162.8	345.7	150	150	782
25	Dadri TPS Stage - I	NR	840	98.7	364.1	80	80	422
26	Anta Gas Power Project RF	NR	419	71.7	885.7	225	225	225
27	Dadri Gas Power Project RF	NR	830	58.2	890.9	50	50	445
28	Auraiya Gas Power Project RF	NR	663	64.2	934.7	138	138	356
29	Dadri Gas Power Project LF	NR	830	58.2	1240	50	50	445
30	Auraiya Gas Power Project LF	NR	663	64.2	1255.3	138	138	356
31	Anta Gas Power Project LF	NR	419	71.7	1271.6	225	225	225
Total Installed Capacity			11782					
Source- NRPC- <a href="http://www.nrpc.gov.in/comm/ancillaryservices.html">http://www.nrpc.gov.in/comm/ancillaryservices.html</a>								

32	Talcher STPS - II	SR	2000	72.1	157.4	150	150	1037
33	NLC TPS - I Exp	SR	420	102.5	236.3	36	45	211
34	NLC TPS - II Exp	SR	500	234.7	236.8	36	27	248
35	Ramagundam STPS - III	SR	500	77.6	251.1	50	50	259
36	NLC TPS - I	SR	630	80.5	255.7	54	68	312
37	NLC TPS - II	SR	840	83.4	255.7	72	90	416
38	Ramagundam STPS - I & II	SR	2100	73.2	257.4	210	210	1078
39	Simhadri STPS - I	SR	1000	95.1	277.4	100	100	521
40	Simhadri STPS - II	SR	1000	153.3	277.9	100	100	521
41	NTPL - Tuticorin TPS	SR	1000	156.2	305.4	75	75	516
42	NTECL - Vallur TPS	SR	1500	178.4	373.2	113	113	770
43	Kudgi STPS I	SR	2400	155.2	385.2	180	180	1244
Total Installed Capacity			SR 13890					
Source- <a href="http://www.srpc.kar.nic.in/html/all_uploads.html">http://www.srpc.kar.nic.in/html/all_uploads.html</a>								
44	SIPAT TPS Stg-I	WR	1980	131.54	116	90	90	1026
45	SIPAT TPS Stg-II	WR	1000	124.87	120.3	69	69	518
46	Korba STPS STG ( III)	WR	500	139.6	129.7	30	30	256
47	Korba STPS STG ( I & II)	WR	2100	68.9	131.5	135	135	820
48	Sasan Power Ltd	WR	3960	17	131.7	180	180	2400
49	Vindhyachal-III	WR	1000	105.5	140.2	70	70	518
50	Vindhyachal-II	WR	1000	70.1	140.6	70	70	518
51	Vindhyachal-IV	WR	1000	158	140.6	70	70	518
52	Vindhyachal-V	WR	500	168.65	141.2	35	35	256
53	Vindhyachal-I	WR	1260	86.4	150.1	90	90	631
54	Costal Gujarat Power Ltd	WR	4150	90.31	179.65	150	150	2090
55	Ratnagiri Gas & Power Pvt Ltd GF	WR	663.54	130	249.0	300	300	354
56	Gandhar Gas Power Project GF	WR	657.39	105.7	258.9	293	293	354
57	Kawas Gas Power Project GF	WR	656.2	85.4	262.5	208	208	352
58	NTPC-SAIL Power Company Pvt. Ltd	WR	500	172.5	264.5	30	30	250
59	Mouda STPP Stage-I	WR	1000	189.4	277	70	70	518
60	Mouda STPP Stage-II	WR	1320	142.2	283.4	70	70	686
61	Gandhar Gas Power Project NAPM	WR	657.39	105.7	288.1	293	293	354
62	Kawas Gas Power Project NAPM	WR	656.2	85.4	288.6	208	208	352
63	Ratnagiri Gas & Power Pvt Ltd IR	WR	540	130	407.0	300	300	288
64	RGPP-Maharashtra	WR	68	130	407.0	300	300	36
65	RGPP-Others	WR	32	130	407.0	300	300	17
66	Solapur Super Thermal Power Project	WR	660	215.6	418.9	30	30	343
67	Ratnagiri Gas & Power Pvt Ltd RF	WR	1122	130	465.0	300	300	354
68	Gandhar Gas Power Project RF	WR	657.39	105.7	739.2	293	293	354
69	Kawas Gas Power Project RF	WR	656.2	85.4	747.5	208	208	352
70	Kawas Gas Power Project LF	WR	656.2	85.4	1115.5	208	208	352
Total Installed Capacity			WR 23907					
<a href="http://www.nrpc.gov.in/Commercial_rras_dat.asp?nuc">http://www.nrpc.gov.in/Commercial_rras_dat.asp?nuc</a>								
All India Total Installed Capacity			57901					

All thermal RRAS Providers would also participate in the SCED pilot.

The latest list of RRAS Providers is available at <https://posoco.in/download/rras-providers-rate-from-16th-jan19-to-15th-feb19/?wpdmdl=21301>

# SCED Accounting & Settlement

## SCED Energy Accounting

- To be incorporated by RPCs on weekly basis along with DSM RRAS, FRAS and AGC accounts
- SCED Schedules to be provided by NLDC through the RLDCs
- NLDC would indicate consolidated "National SCED Settlement Statement"
  - Schedules on account of SCED.
  - Payment and receipts to/from SCED Providers.

## SCED Energy Settlement

- National Pool Account (SCED) to be operated by NLDC
- Settlement using variable charges declared under RRAS
- All payments shall flow from/to the National Pool Account (SCED)
  - For Increment in Scheduled Generation, SCED provider to be paid from the National Pool Account (SCED)
  - For Decrement in Scheduled Generation, SCED Provider to pay to National Pool Account (SCED)
- Compensation due to part load operation as certified by RPC in accordance with the provisions of IEGC to be factored
- No retrospective settlement
- Any deviation settled as per CERC DSM Regulation

# Implementation Actions

- Detailed Procedures to be issued by NLDC
- Schedules of the States/beneficiaries would not be changed and the beneficiaries would continue to pay the charges for the scheduled energy directly to the generator as per the existing practice
- NLDC to open a separate bank account - “National Pool Account (SCED)”
  - Savings obtained through SCED after settlement of all accounts of SCED would be recorded and maintained in the “National Pool Account (SCED)” by the NLDC.
  - The sharing of benefits/savings has been accepted in principle by the Commission. However, methodology of sharing shall be decided after the results of the pilot and the extent of savings are available.
- Web Based Energy Scheduling Software
  - Batch processing of schedules
  - Schedule data interchanges between the RLDCs/NLDC, synching of data
  - Pre-processing & validation being sent to the SCED engine
  - Core optimization (SCED) engine – development, testing and validation
  - Output of SCED to be incorporated in the schedules
- Creation of a counterparty to SCED
- Augmentation of Communication infrastructure

# Thank you





# DSM (4<sup>th</sup> Amendment) 2018

Eastern Regional Power Committee, Kolkata-33

S K Pradhan, AD(Comml.)

Email: [shishir.1505@gmail.com](mailto:shishir.1505@gmail.com), [eeecom1.erpc@gov.in](mailto:eeecom1.erpc@gov.in),

Phone: 8249244719

# DSM 4<sup>th</sup> Amendment:

- ▶ Frequency band has been tightened to 50.05 to 49.85.
- ▶ Deviation price vector linked to Daily Average Area Clearing Price(ACP) in Day Ahead Market of Power Exchange.
- ▶ Charges for deviation below 49.85 Hz is fixed at 800p/u, for freq 50.05 Hz and above charges for deviation is 0 p/u.
- ▶ Charges for deviation at 50.00 Hz will be Daily Average Area Clearing Price(ACP) discovered at DAM (Max ceiling being 800 p/u).
- ▶ Cap Rate for all generators (irrespective of fuel source)
  - a) For CERC regulated generators- @ECR of Previous month .
  - b) For Other generators- @ 303.04 Paisa/KWH



# DSM 4<sup>th</sup> Amendment:

- In the event of sustained deviation from schedule in one direction (positive or negative) by any regional entity, such regional entity (buyer or seller) shall have to make sign of their deviation from schedule changed, at least once, after every 6 time blocks. Addl. Charges of 20% of the daily base DSM payable/receivable shall be applicable in case of said violation.

*Provided that in case of run of river projects without pondage, payment of additional charge for failure to adhere to sign change requirement shall apply from such date as may be notified by the Commission. Such generators shall, however, be required to follow the sign change requirement and report to POSOCO the reasons for non-adherence to the requirement”*

# CHARGES FOR DEVIATION(4<sup>TH</sup> Amendment):

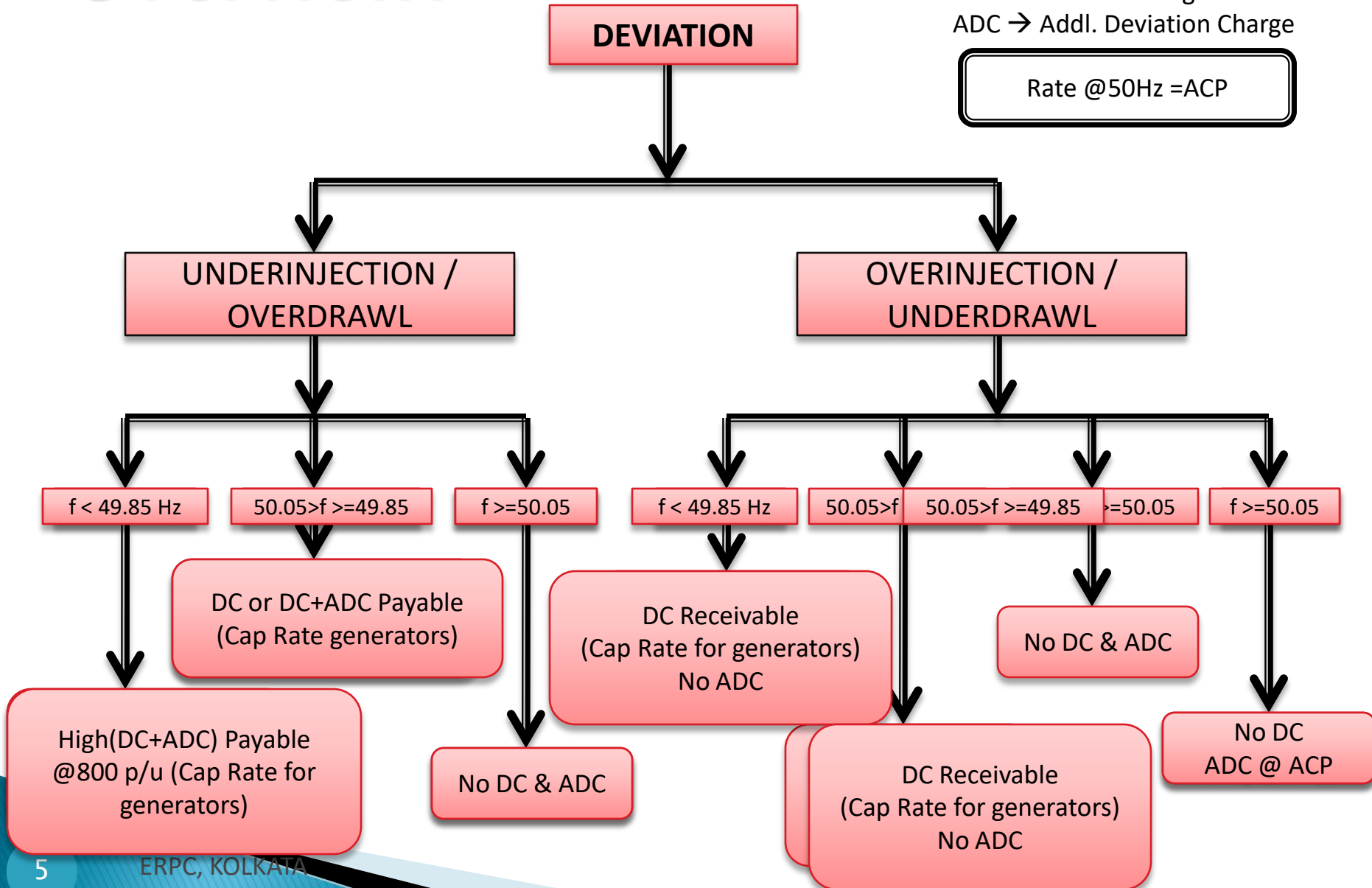
Average freq of the time block (Hz)		Charges for Deviation
Below	Not below	Paise/kWh
	<b>50.05</b>	<b>0.00</b>
50.05	50.04	1x(P/5)
50.04	50.03	2x(P/5)
-----	-----	-----
<b>50.01</b>	<b>50.00</b>	<b>P</b>
50.00	49.99	50.00+15x(P/16)
49.99	49.98	100.00+14x(P/16)
-----	-----	-----
49.87	49.86	700.00+2x(P/16)
<b>49.86</b>	<b>49.85</b>	<b>750.00+1x(P/16)</b>
<b>49.85</b>		<b>800.00</b>

P=Average Area Clearing Price

# Overview:

DC → Deviation Charge  
ADC → Addl. Deviation Charge

Rate @50Hz = ACP

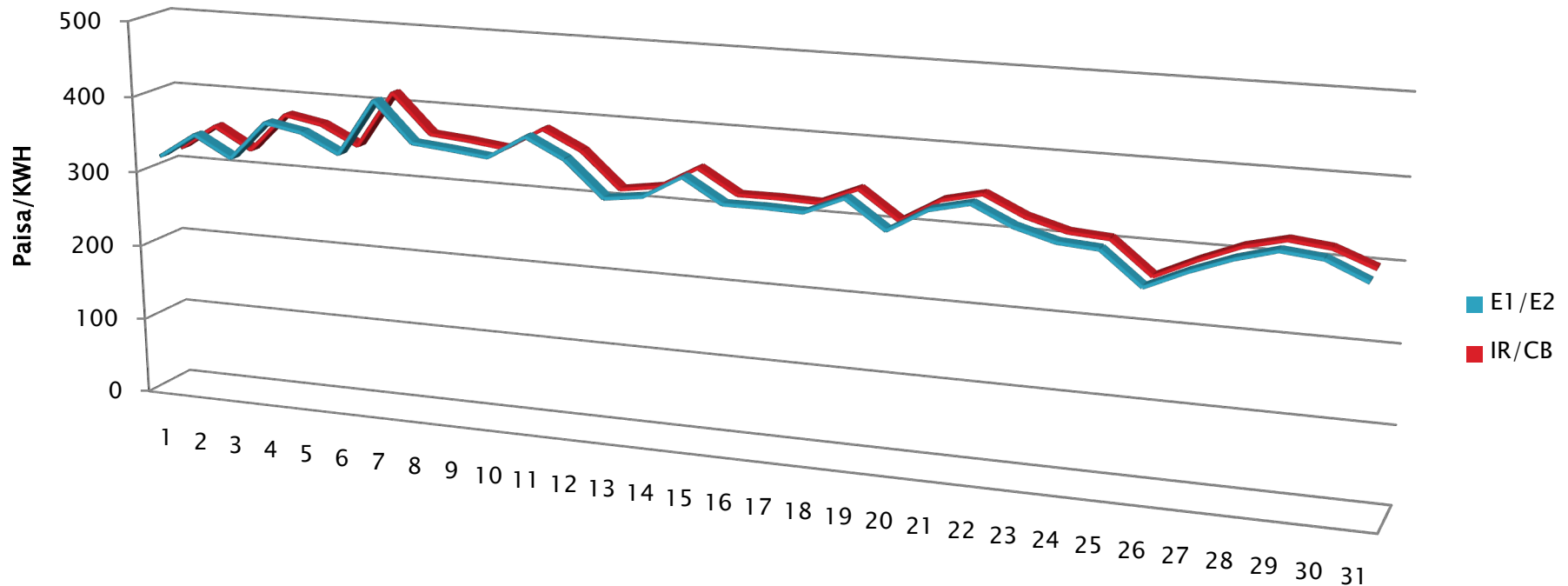


# Inputs Used for Computation of DSM Account.

- ▶ ACP values for computation of deviation rate vector has been taken from NLDC website. DSM rate is rounded off to two decimal places as per regulation.
- ▶ For computing cap rate of CERC regulated generators, ECR data from AS-1 / AS-3 format of RRAS has been used as per clarification of NLDC vide letter no. POSOCO/NLDC/2018/381 dated 31.12.2018.
- ▶ Dagachhu HEP has been considered as pure Run of River without pondage as per TPTCL letter dated 06.02.2019, hence exempted from adherence to sign change violation requirement. For all other HEP, ADC due to sign change violation charged as per regulation.

# ACP of January'2019

## ACP of January'2019

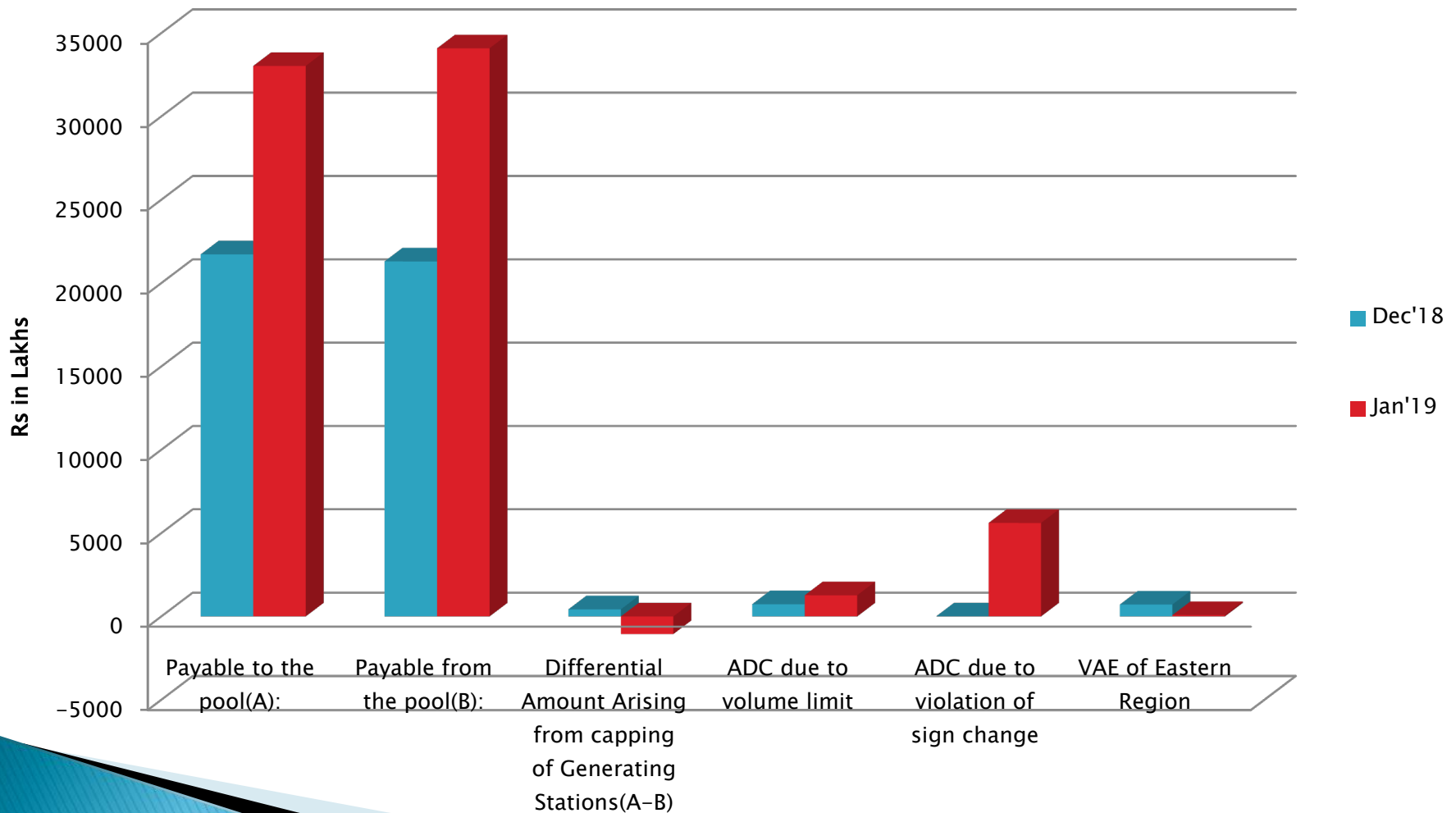


# Comparative DSM A/c of Dec'2018 & Jan'2019

	Dec'18(Before 4 <sup>th</sup> Amend)(Rs in Lakhs)	Jan'19(4 <sup>th</sup> Amend)(Rs in Lakhs)
No of Sign Change Violation	<b>0</b>	<b>4391</b>
Payable to the pool(A):	<b>21724.34313</b>	<b>33028.98184</b>
Payable from the pool(B):	<b>21299.18657</b>	<b>34086.19650</b>
Differential Amount Arising from capping of Generating Stations(A-B)	<b>425.15656</b>	<b>-1057.21466</b>
ADC due to volume limit	<b>733.03478</b>	<b>1270.38321</b>
ADC due to violation of sign change	<b>0</b>	<b>5608.30361</b>
VAE of Eastern Region	<b>714.55182</b>	<b>80.07133</b>



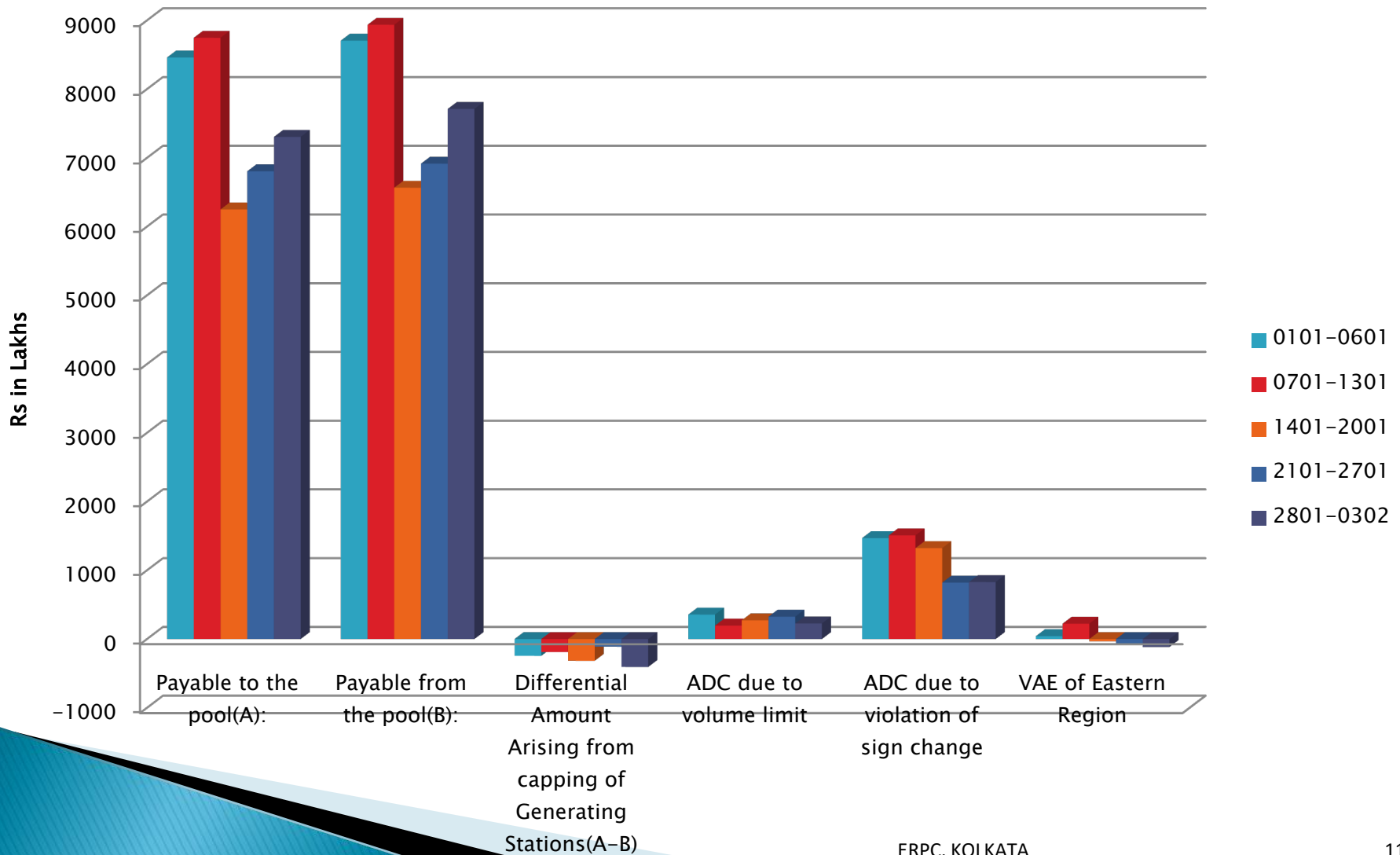
# Comparative DSM A/c of Dec'18 & Jan'19



# Comparative DSM Account of First 5 Weeks(4<sup>th</sup> Amendment)

	DSM Account of First 5 weeks				
	0101-0601	0701-1301	1401-2001	2101-2701	2801-0302
Payable to the pool(A):	<b>8460.29215</b>	<b>8746.86712</b>	<b>6249.07785</b>	<b>6804.81964</b>	<b>7305.02144</b>
Payable from the pool(B):	<b>8705.21708</b>	<b>8935.68160</b>	<b>6565.72182</b>	<b>6915.89596</b>	<b>7711.55306</b>
Differential Amount Arising from capping of Generating Stations(A-B)	<b>-244.92493</b>	<b>-188.81448</b>	<b>-316.64398</b>	<b>-111.07632</b>	<b>-406.53162</b>
ADC due to volume limit	<b>356.07016</b>	<b>195.70562</b>	<b>272.51698</b>	<b>325.64019</b>	<b>226.70687</b>
ADC due to violation of sign change	<b>1468.24739</b>	<b>1508.42276</b>	<b>1323.14395</b>	<b>821.37799</b>	<b>829.05648</b>
VAE of Eastern Region	<b>41.12632</b>	<b>223.14943</b>	<b>-32.97901</b>	<b>-68.27679</b>	<b>-116.06738</b>

# Comparative DSM A/c of 5 weeks(4<sup>th</sup> Amendment)

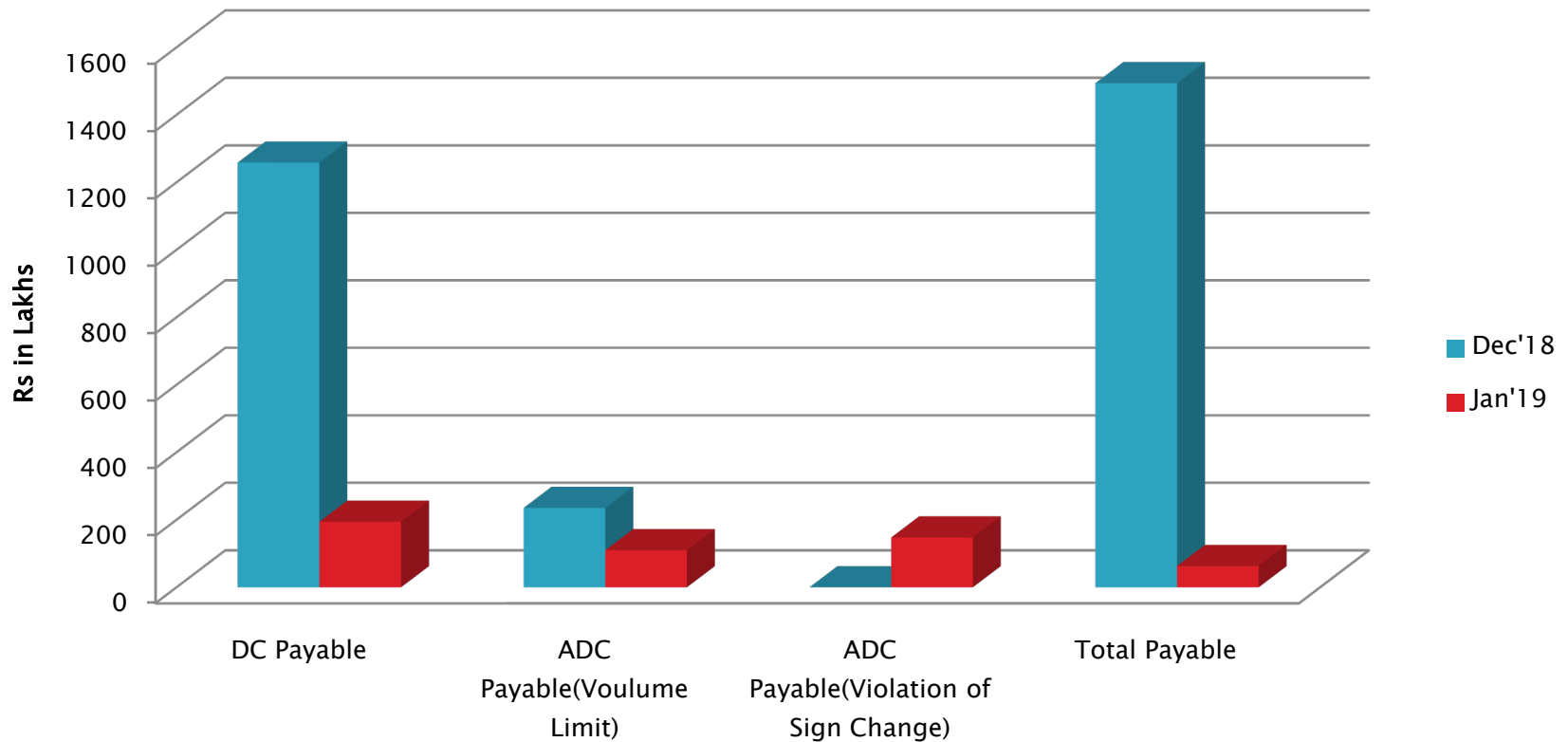


# Comparative DSM A/c of GRIDCO, DVC, JUVNL & SIKKIM for Dec'18 & Jan'19

	Dec'2018(Before 4 <sup>th</sup> Amend)				Jan'2019(4 <sup>th</sup> Amend)			
	GRIDCO	DVC	JUVNL	SIKKIM	GRIDCO	DVC	JUVNL	SIKKIM
Deviation (MWH)	-47183	-56988	-19888	455	-919	-6977	-30025	4300
No of Violation					44	91	242	370
DC Payable	1258.68096	1558.85478	745.09078	-2.13982	-194.37245	361.40615	1245.41736	-144.49829
ADC Payable(Volume Limit)	235.11296	190.20279	84.38342	0.45995	109.91902	143.70147	266.76462	21.36554
ADC Payable(Violation of Sign Change)	0	0	0	0	147.60142	253.99032	2155.77720	460.01736
Total Payable	1493.79392	1749.05757	829.47420	-1.67987	63.14799 ERPC, KOLKATA	759.09794	3667.95917	336.88460 12

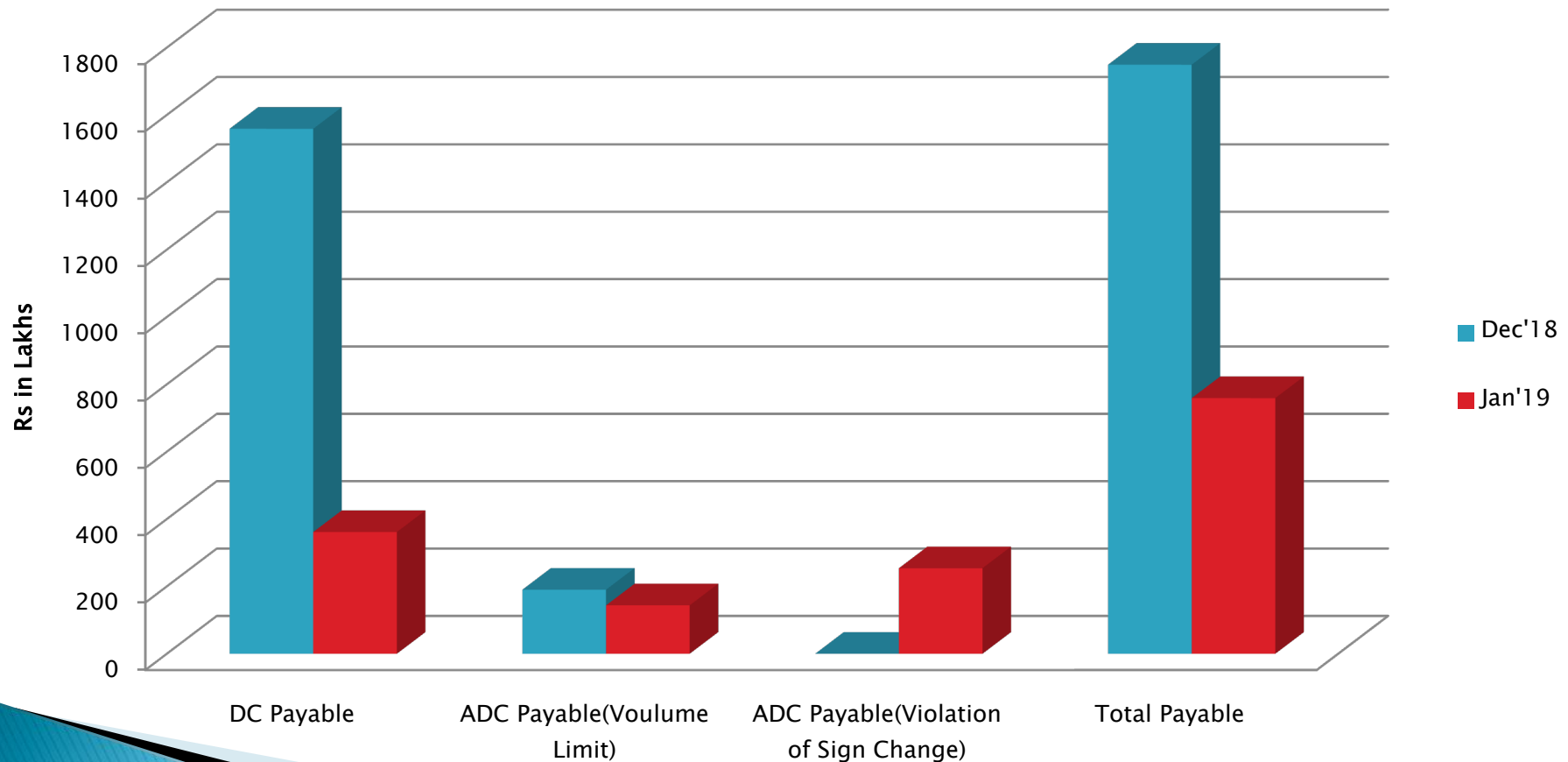
# DSM A/c of GRIDCO for Dec'18 & Jan'19

## GRIDCO



# DSM A/c of DVC for Dec'18 & Jan'19

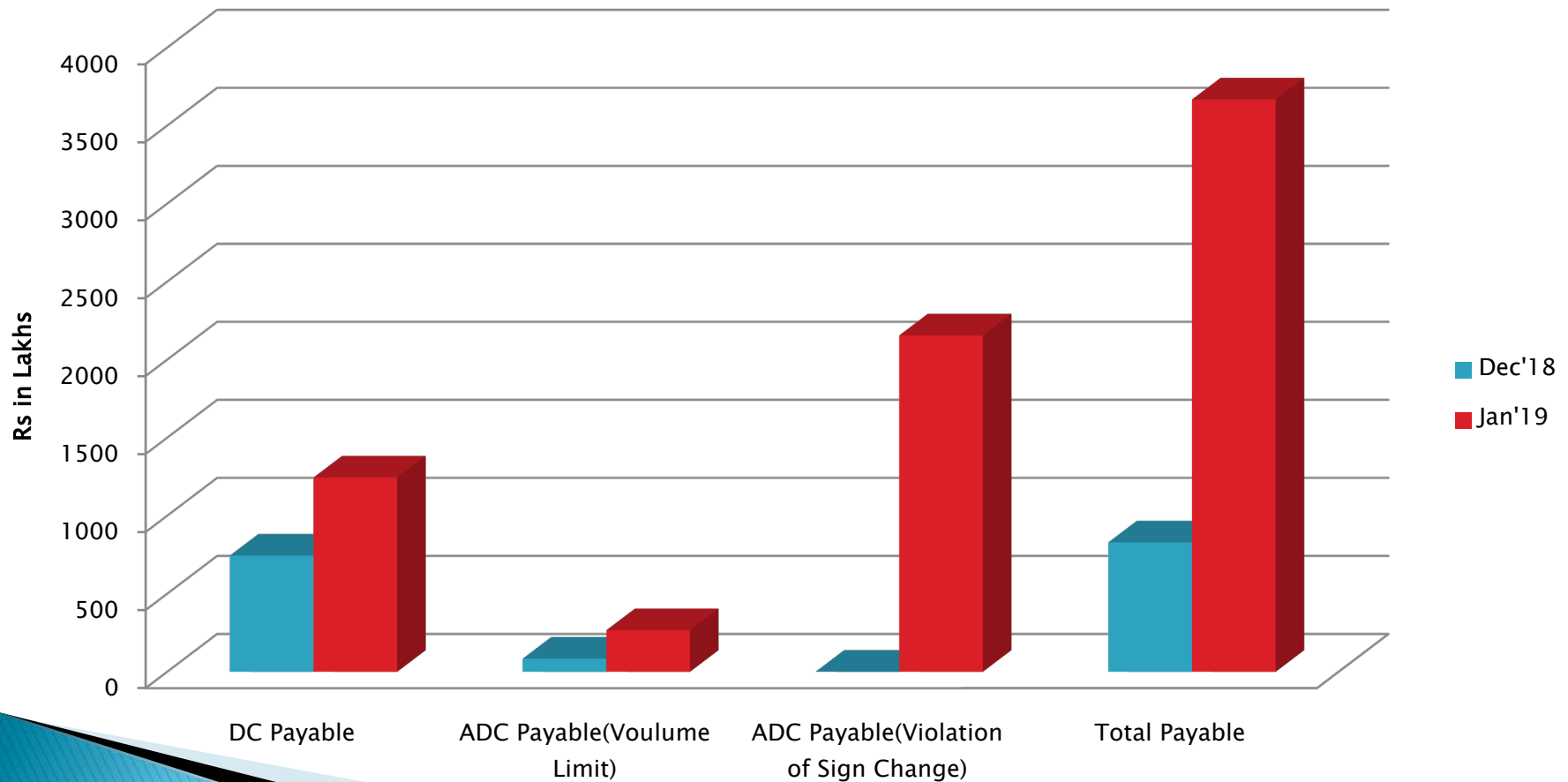
## DVC





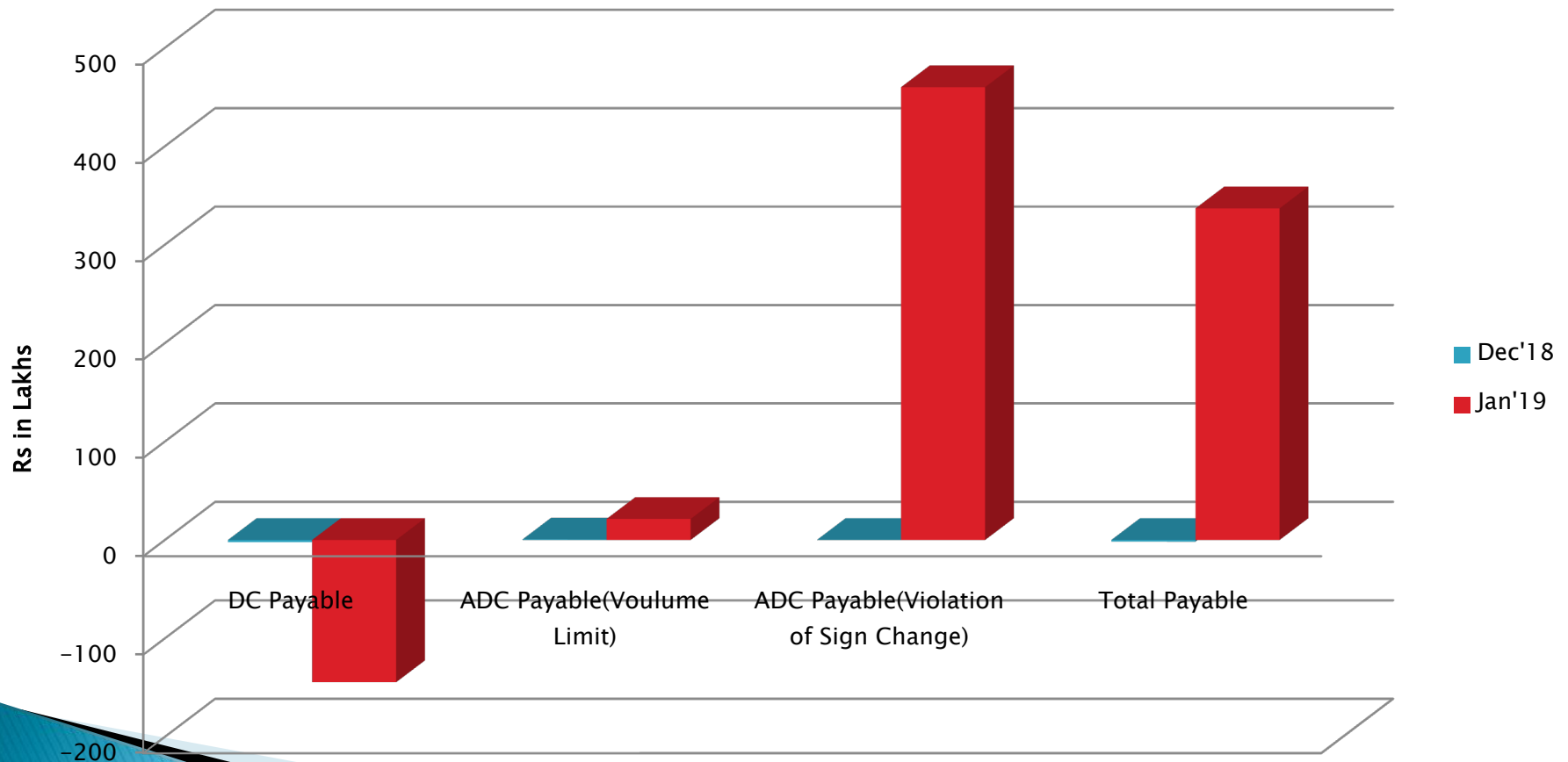
# DSM A/c of JUVNL for Dec'18 & Jan'19

## JUVNL



# DSM A/c of SIKKIM for Dec'18 & Jan'19

## SIKKIM

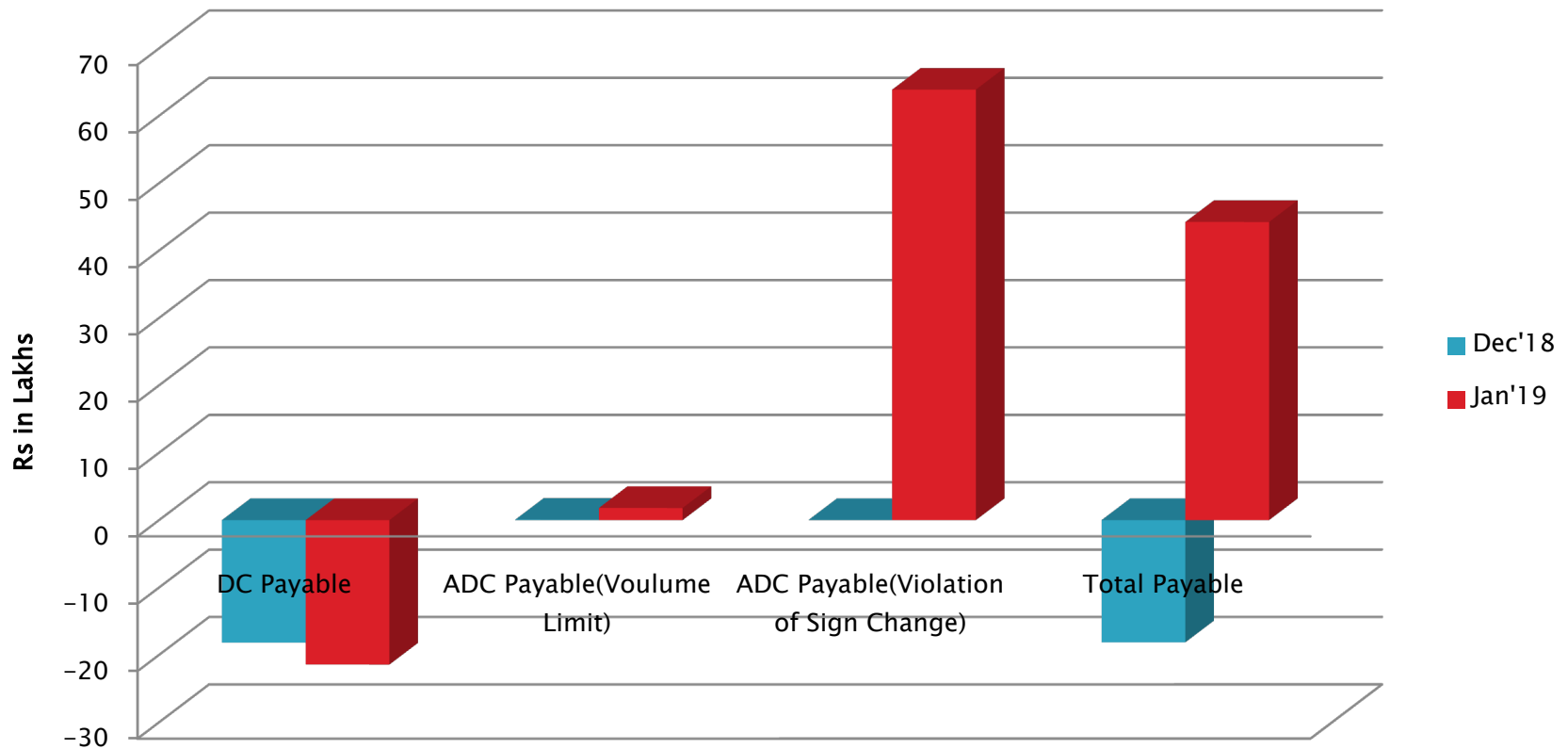


# Comparative DSM A/c of HVDC SASARAM, HVDC ALIPURDAR, NVVN-Nepal, CHUZACHEN for Dec'18 & Jan'19

	Dec'2018(Before 4 <sup>th</sup> Amend)				Jan'2019(4 <sup>th</sup> Amend)			
	HVDC SASARAM	HVDC Alipurdar	NVVN-NEPAL	CHUZACHEN	HVDC SASARAM	HVDC Alipurdar	NVVN-NEPAL	CHUZACHEN
<b>Deviation( MWH)</b>	<b>739</b>	<b>1176</b>	<b>-17939</b>	<b>298.13</b>	<b>603</b>	<b>1334</b>	<b>-9860</b>	<b>100</b>
<b>No of Violation</b>					<b>450</b>	<b>465</b>	<b>384</b>	<b>411</b>
<b>DC Payable</b>	<b>-18.18554</b>	<b>-29.19239</b>	<b>460.68736</b>	<b>-9.36857</b>	<b>-21.43607</b>	<b>-46.60901</b>	<b>357.57474</b>	<b>-3.74870</b>
<b>ADC Payable(Volume Limit)</b>	<b>0.04957</b>	<b>0.08685</b>	<b>1.98830</b>	<b>0.05033</b>	<b>1.80057</b>	<b>3.89728</b>	<b>34.45287</b>	<b>0.89430</b>
<b>ADC Payable(Violation of Sign Change)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>63.87471</b>	<b>139.82704</b>	<b>929.74429</b>	<b>11.36562</b>
<b>Total Payable</b>	<b>-18.13596</b>	<b>-29.10553</b>	<b>462.67566</b>	<b>-9.31824</b>	<b>44.23921</b>	<b>97.11530</b>	<b>1321.77190</b>	<b>8.51122</b>

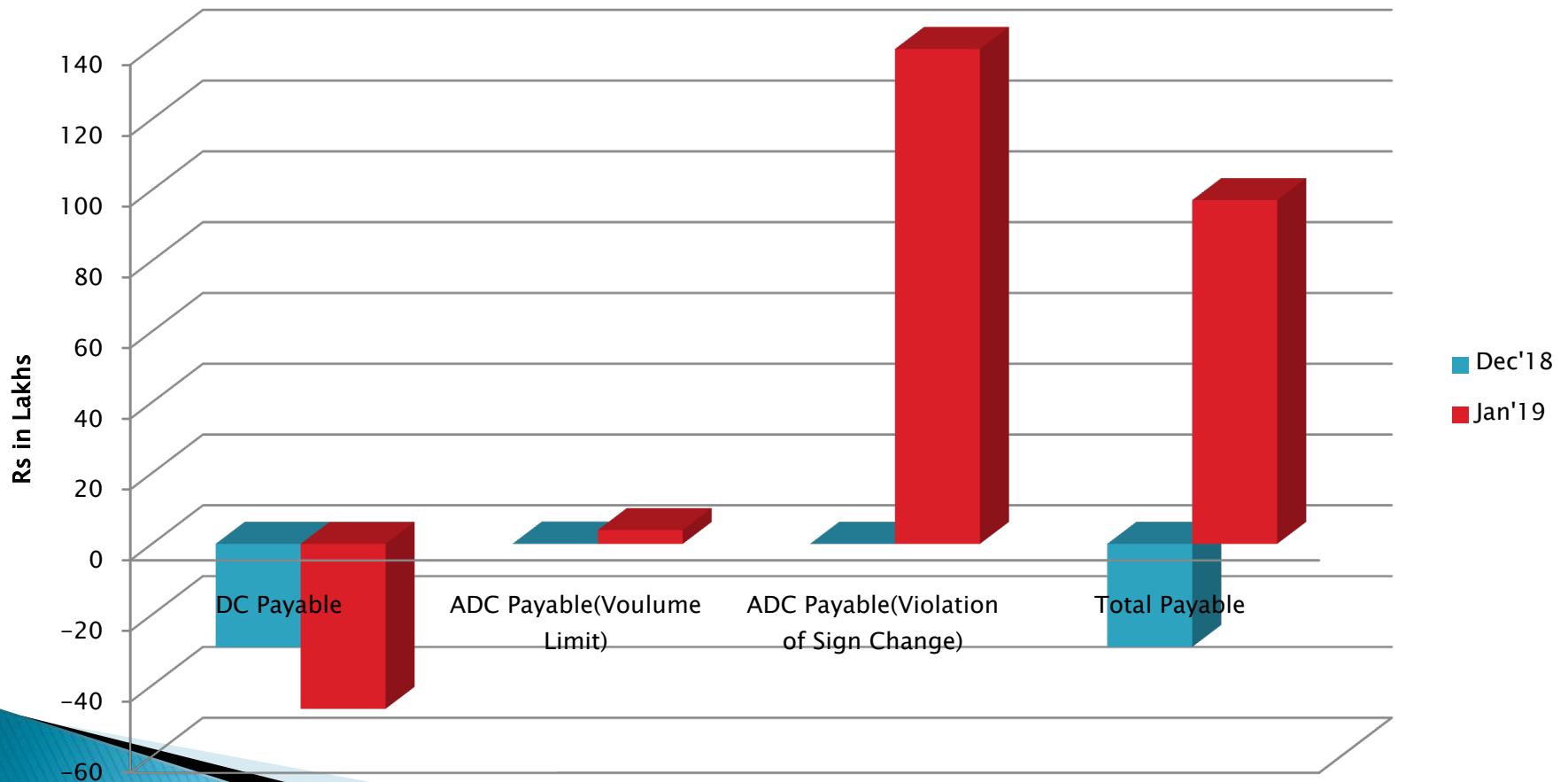
# DSM A/c of HVDC SASARAM for Dec'18 & Jan'19

## HVDC SASARAM



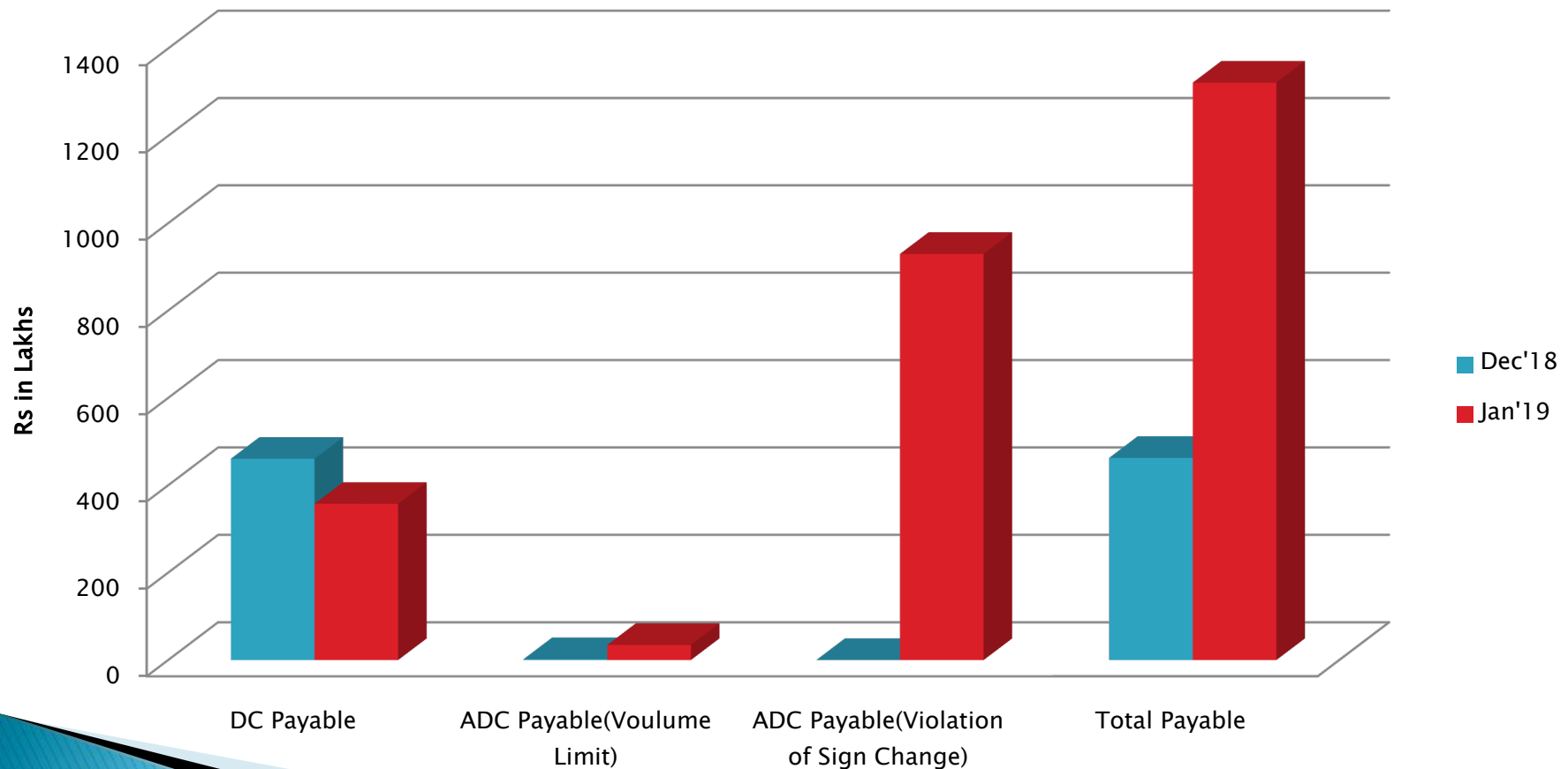
# DSM A/c of HVDC ALIPURDAR for Dec'18 & Jan'19

## HVDC ALIPURDAR



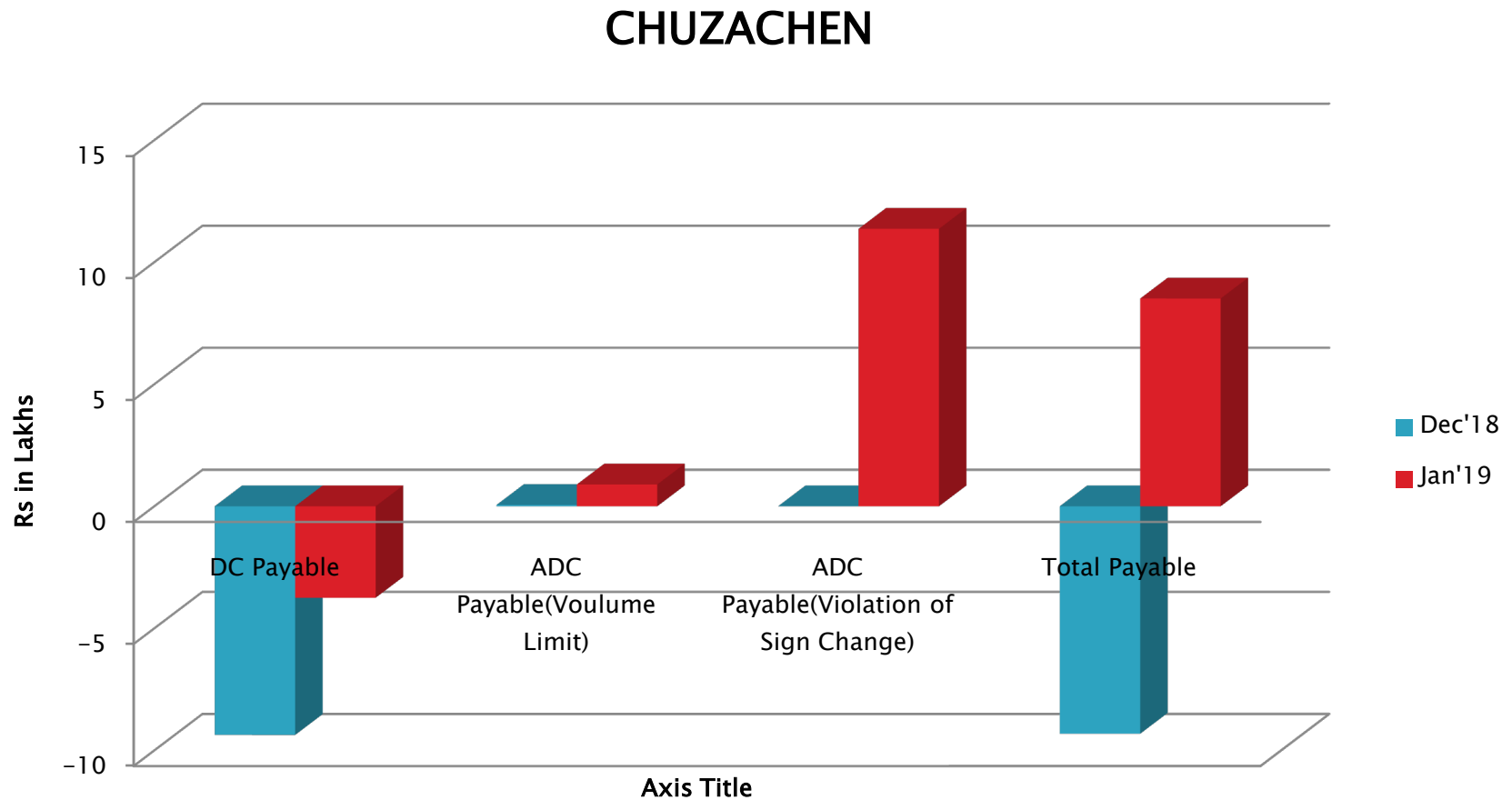
# DSM A/c of NVVN-NEPAL for Dec'18 & Jan'19

## NVVN NEPAL





# DSM A/c of CHUZACHEN for Dec'18 & Jan'19

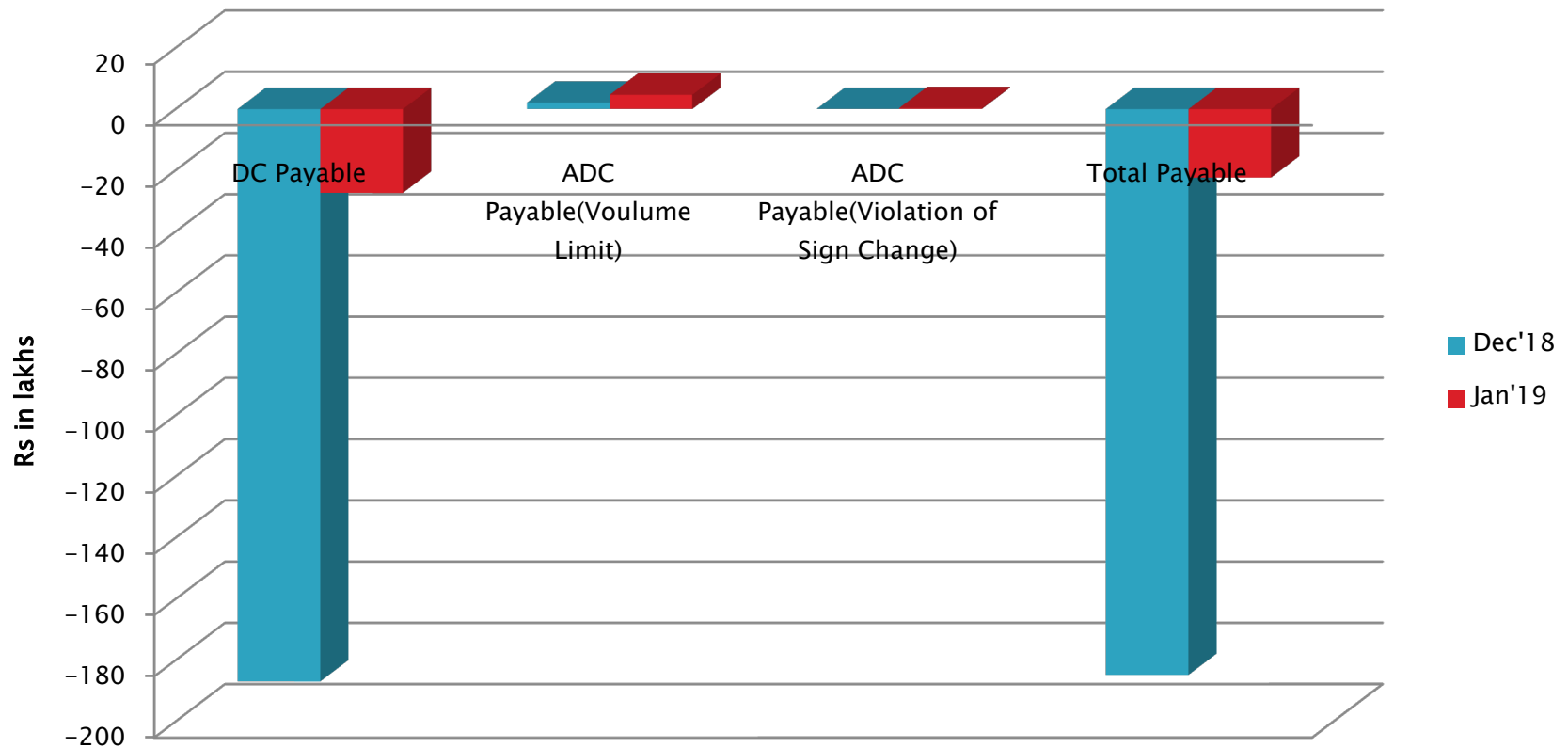


# Comparative DSM A/c of TEESTA, BARH, GMRKEL & CHUZACHEN for Dec'18 & Jan'19

	Dec'2018(Before 4 <sup>th</sup> Amend)				Jan'2019(4 <sup>th</sup> Amend)			
	TEESTA	BARH	GMRKEL	RANGIT	TEESTA	BARH	GMRKEL	RANGIT
Deviation (MWH)	6967	-4685	-10889	546	2420	-4841	-1075	144
No of Violation					2	16	17	179
DC Payable	- 186.92925	57.05217	132.06829	-16.06429	-27.35761	60.69884	8.24901	-3.10917
ADC Payable(Volume Limit)	2.12824	0.82245	6.69093	0.01344	4.66674	9.66155	5.70824	0.79601
ADC Payable(Violation of Sign Change)	0	0	0	0	0.32738	7.95020	12.84218	4.24884
Total Payable	- 184.80101	57.87462	138.75922	-16.05085	-22.36350	78.31058	26.79943	1.93568

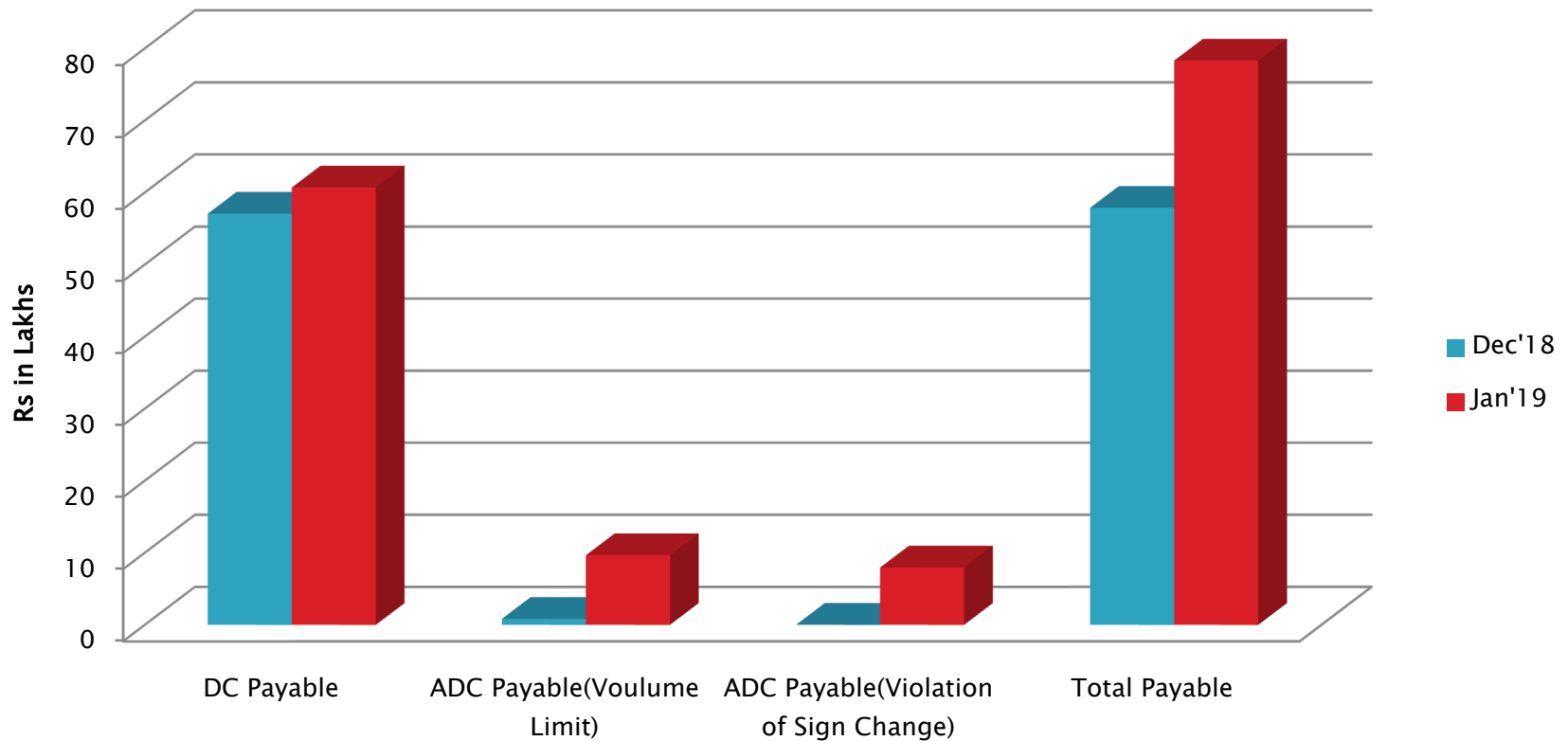
# DSM A/c of TEESTA for Dec'18 & Jan'19

## TEESTA



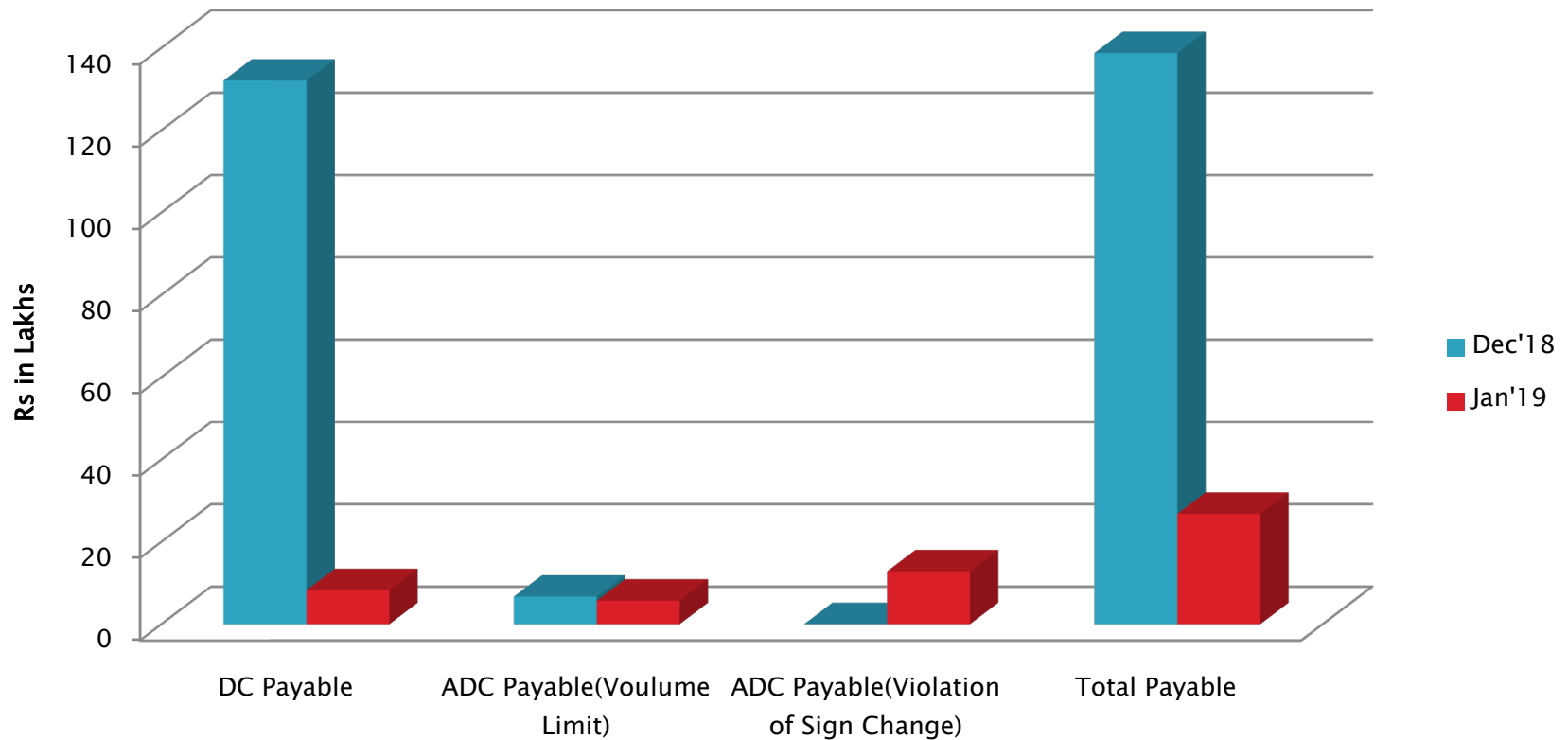
# DSM A/c of BARH for Dec'18 & Jan'19

## BARH



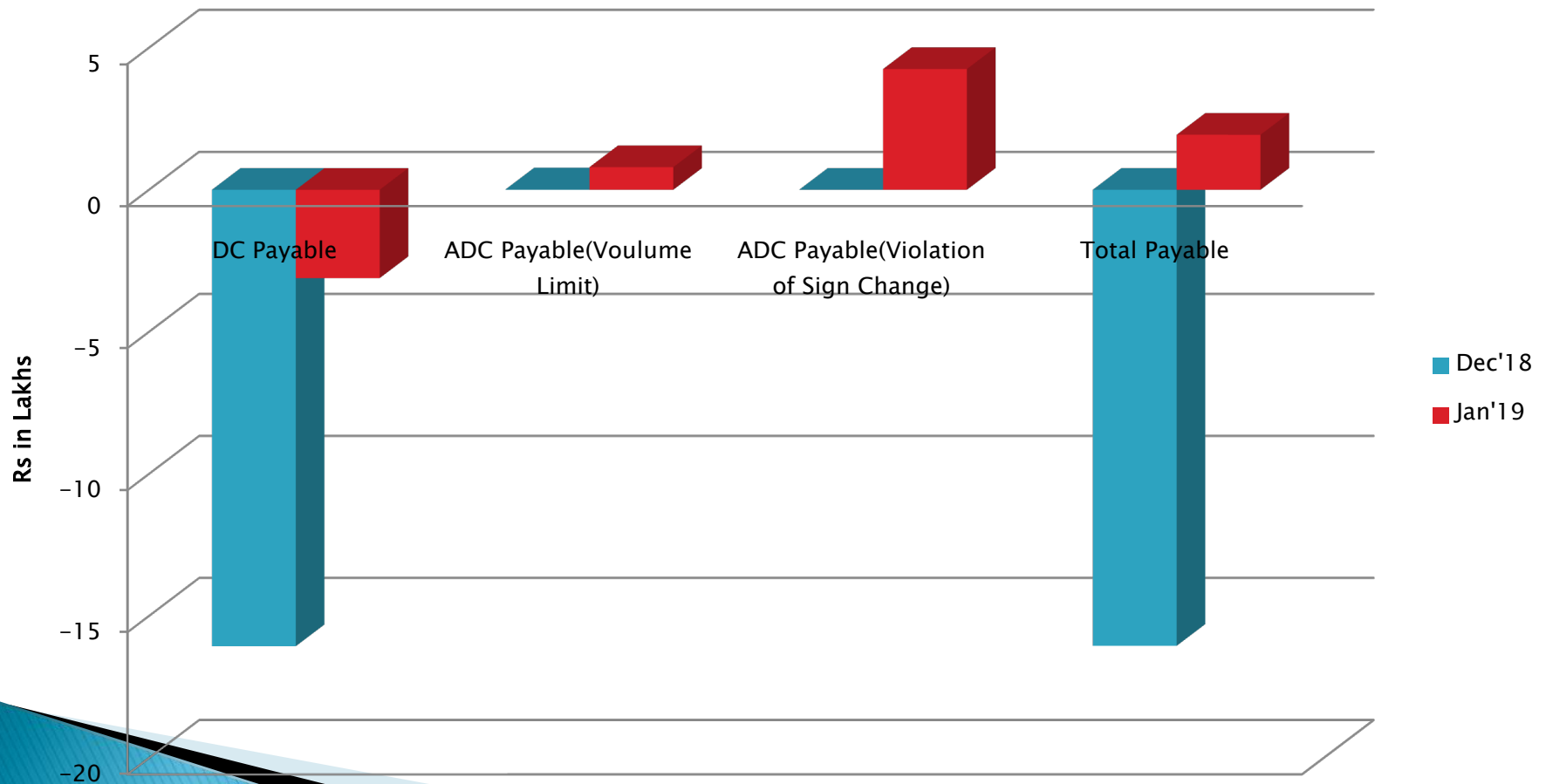
# DSM A/c of GMRKEL for Dec'18 & Jan'19

## GMRKEL



# DSM A/c of RANGIT for Dec'18 & Jan'19

## RANGIT







# THANK YOU



**एनएचपीसी लिमिटेड**  
(भारत सरकार का उद्यम)

**NHPC Limited**  
(A Government of India Enterprise)

फोन/Phone : \_\_\_\_\_

दिनांक/Date : **24/01/2019**

संदर्भ सं./Ref. No. **एनएच/ओ&एम/जीएमसी/२२३**

**Member Secretary,  
Eastern Regional Power Committee (ERPC)  
14, Golf Club Road,  
Tolleyganj,  
Kolkata-700033**

**Sub: 39<sup>th</sup> Commercial Sub-Committee Meeting to be held on 18<sup>th</sup> February 2019:  
Agenda thereof.  
Ref.: ERPC Letter No. ERPC/COM-I/CCM/2018-19/8046-79 Dated 22/01/2019.**

**महोदय,**

This is in reference to your referred letter on the captioned subject. The Agenda Point of NHPC is attached herewith as Annexure-I for inclusion in 39<sup>th</sup> Commercial Meeting of ERPC to be held on 18<sup>th</sup> February 2019.

Thanking You.

Encl.: As above.

भवदीय,

*V K Sinha*  
24/1/19  
(V K Sinha)

**General Manager (O&M)-I**

**39<sup>th</sup> Commercial Sub-Committee Meeting of ERPC to be held**  
**18<sup>th</sup> February 2019.**

**Agenda: CERC DSM Regulation, (4<sup>th</sup> Amendment)- Discrepancy in Actual Transmission data of Rangit Power Station, NHPC.**

As per CERC DSM Regulation, (4th Amendment issued by CERC vide order No. L-1/132/2013-CERC dated 20/11/2018) in the event of sustained deviation from schedule in one direction by any regional entity, such Regional entity shall have to change sign of their deviation from schedule at least once after every 6 time blocks. The violation under this clause attracts additional charges of 20% on the daily DSM payable/receivable. In case of Rangit Power Station (3X20MW) of NHPC when machines are not operational (Off peak hour in lean season) and schedules is zero the actual transmission figures are non-zero resulting in deviation from schedule. In this scenario, when there is no injection of Power from Rangit, the actual transmission figures are beyond control of Power Station, therefore it is not possible to do the sign reversal of deviation from schedule as stipulated in the above said regulations resulting in additional charges to NHPC.

Similar case also existed in Northern Region, which was taken up with NRPC in the 155th OCC Meeting of NRPC held on 17<sup>th</sup> January 2019, wherein it was decided that ***“where injection schedule given to the generator is zero and the power from the grid is being drawn by the generator for their auxiliary consumption, in such scenario, no “additional Charge” for sustained deviation shall be imposed”***.

Accordingly, the Deviation Settlement Account for the week 31<sup>st</sup> December 2018 to 06<sup>th</sup> January 2019 has also been issued by NRPC on above assumptions (Copy attached).

In view of above, it is requested that in above condition when there is no injection from Rangit Power House or in such cases, the additional charge as Penalty on sign change may not be considered.

It is also requested that the supporting file of Deviation Settlement Account may also be provided to the utilities so that the data considered for calculation of deviation charges can be verified by the utilities. The same is being provided by NRPC/NERPC.



Subject: **REG: Additional deviation charges imposed on TUL by ERPC during zero schedule** Date: 02/08/19 06:35 PM  
 To: "mserpc-power@nic.in" <mserpc-power@nic.in>, "dk.jain@posco.in" <dk.jain@posco.in>  
 From: DP Bhargava <dpbhargava@teestaurja.com>  
 Cc: BD Kumar <devendra.b@teestaurja.com>, Yogendra Kumar <ykumar@teestaurja.com>, Jaideep Lakhtakia <jaideep.l@teestaurja.com>

Sir,

Subject: Additional deviation charges imposed on TUL by ERPC during zero schedule

We would like to highlight that when the generation schedule of Teesta-III HEP is '0', only grid power is flowing through Teesta-III HEP bus-bar. During such period additional deviation charges has been imposed on Teesta-III HEP ,due to no sign change. We have been penalized to the tune of Rs. 1.75 lacs as DSM charges for the the period of 01-Jan-2019 to 20-Jan-2018 by ERPC. Summary of the same is given below:

Additional deviation charges (ADC) during 01-Jan-19 to 20-Jan-19							
Sl.No	Description		1-Jan-19 to 6-Jan-19	7-Jan-19 to 13- Jan-19	14-Jan-19 to 20- Jan-19	Total value(Rs)	Remarks
1	During Machine Idle Condition (Generation SCH-Zero)	ADC due to sign change when Machine is Idle	-200578.45	-96807.53	-66992.29	-364378.27	<b>By considering both ADC due to sign change and revenue during machine was in idle condition ,Penalty of Rs 1.75 Lakhs was paid from TUL to ERPC for the period of 1-Jan-19 to 20-Jan-19</b>
		ADC due to volume limit when machine is Idle	-42128.82	-31731.31	-35419.15	-109279.28	
2	Total revenue earned when Machine is in Idle Condition(Generation SCH-Zero)		105189.02	147299.89	45189.66	297678.57	

Since our generation schedule is zero, we should not be penalized due to flow of grid power through Teesta-III bus bar. Therefore, it is requested that above issue may kindly be included as an agenda item for the following meetings

39th Commercial Sub committee on 18th Feb-2019 at ERPC, Kolkata  
 154th OCC Meeting on 21-Feb-2019 at MejiaTPS, DVC, Mejia, WB

With Regards,  
 D.P. Bhargava  
 Chief Consultant (Operations & Maintenance)  
 Teesta Urja Limited

Subject: **Reg : 39 ERPC Commercial Meeting**  
To: eecom1.erpc@gov.in  
Cc: sanjeev.upadhyay@gatiinfra.com, r.sharma@gatiinfra.com,  
ved.goyal@gatiinfra.com

Date: 02/05/19 05:33 PM  
From: manoj.sen@gatiinfra.com

Sir,

In reference to the letter bearing No. ERPC/COM-II/CCM/2018-19/8046-79 dated 22-01-2019; two agenda points could be included on behalf of Chuzachen Hydro Electric Project for the 39<sup>th</sup> Commercial Sub-committee meeting of ERPC scheduled to be held on 18-02-2019 11 a.m. At ERPC Conference Room, Kolkata.

The agenda points to be included are as below:

1. When the generation schedule for Chuzachen HEP is zero; Chuzachen HEP acts as a LILO for the 132 KV Rangpo-Chuzachen-Gangtok Circuit. The direction of power flow on this circuit is dependent on the grid conditions due to which **Chuzachen HEP should be exempted from the sign change rule as we have no role to play in the import or export of power under this condition on this circuit.**
2. Chuzachen is a run-of -river plant with restricted pondage. During the transitional months of May to June; there are sudden increases of hydrology in the Himalayan region and a 1% cap for additional generation is not enough to utilize the water potential available then as reservoir storage will be exceeded. **Hence for transitional months; additional generation cap should be sufficiently increased** as loss of water is a loss of revenue for the company as well as the nation.

Regards

**MANOJ SEN**

Project Head

Gati Infrastructure Pvt Ltd.

Lower Bering Karabari, Pakyong

East Sikkim, 737106

+91-8170012388

[www.gatiinfra.com](http://www.gatiinfra.com)

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DANS ENERGY PRIVATE LIMITED

Site Office: Housing Complex, Jorethang,

South Sikkim - 737121

Tel.: +91-3595-276408

Dated : 12<sup>th</sup> February, 2019  
DEPL/JLHEP/O&M/18-19/ERLDC/001

To  
The Member Secretary  
Eastern Region Power Committee (ERPC)  
14, Golf Club Road, Tollygunj  
Kolkata-700033

Kind Attn: Mr. J. Bandyopadhyaya

Subject: DSM Sign Change penalty getting by DANS Energy Pvt. Ltd. due to negative power being captured by Special Energy Meters at New Melli Grid-reg.

Dear Sir,

With reference to the above subject, this is to bring to your kind notice that the error in the Special Energy Meters (SEM) at New Melli end, which has been installed by PGCIL and its showing negative power during the declaration of zero scheduled power by Us. (attached Jan-2019 data).

As per Central Electricity Regulatory commission (CERC) 4<sup>th</sup> Amendment DSM regulations dated 20-11-2019,

Clause no. 4.19 "In the event of sustained deviation from schedule in one direction (positive or negative) by any regional entity (buyer or seller), such regional entity shall have to change sign of their deviation from schedule, at least once, after every 6 time blocks. To illustrate, if a regional entity has positive deviation from schedule from 07.30 hrs to 09.00hrs, sign of its deviation from schedule shall be changed in the 7th time block i.e. 09.00hrs to 09.15hrs from positive to negative or vice versa as the case may be."

Provided that violation of the requirement under this clause shall attract an additional charge of 20% on the daily base DSM payable / receivable as the case may be."

Clause no. 4.20 "(11a) the additional charge for violation of sign change stipulation shall be leviable for each such violation during a day."

To illustrate, the change of sign should take place at least once after every six time blocks. Accordingly, the entity, starting from time block t1, should change the sign after time block t6. In case, sign change does not take place immediately after time block t6, but takes place from time block t7 upto time block t12, additional charge shall be levied equivalent to one violation. In case, sign change does not take place immediately after time block t12, but takes place from time block t13 upto time block t18, additional charge shall be levied equivalent to two violations.



**DANS ENERGY PRIVATE LIMITED**

Site Office: Housing Complex, Jorethang,

South Sikkim - 737121

Tel.: +91-3595-276408

With reference to the above clauses, DEPL receiving the DSM sign change penalty charges during the negative power captured time blocks in the SEM, which is connected at New Melli by PGCIL.

Hence, we request you to ERPC to please check and resolve the technical error in the SEM on priority basis to avoid DSM Sign change penalty and negative power being captured at receiving end, without any import/start up power from grid to DEPL during the plant shut down period.

Thanking You,

Yours faithfully,  
For DANS Energy Pvt. Ltd.

Authorized Signatory



Enclosures:

- 1) DSM Bills period from 1-06-2019 to 27-1-2019
- 2) Calculation sheet of Negative Power captured by SEM during the period from 1-1-2019 to 27-01-2019.

Copy To:

1. The Deputy General Manager (SO), Eastern Region Load Dispatch Centre (ERLDC), 14, Golf Club Road, Tollygunj, Kolkata-700033
2. The Deputy General Manager (MO), Eastern Region Load Dispatch Centre (ERLDC), 14, Golf Club Road, Tollygunj, Kolkata-700033





**Kanti Bijlee Utpadan Nigam Limited**  
(A Wholly Owned Subsidiary of NTPC Ltd.)



**Muzaffarpur Thermal Power Station**

Ref. No. KBUNL/COMML/1584

Date: 14-02-2019

To,  
The Member Secretary  
Eastern Regional Power Committee (ERPC)  
14, Golf Club Road, Tollygunge  
Kolkata – 700033

**Subject: Methodology for Calculation of Additional Deviation Charge for Over Injection by CGS when Grid Frequency is 50.05 Hz & above.**

Dear Sir,

This is with reference to the Weekly DSM Account, being issued by ERPC w.e.f 01.01.2019, on the basis of Amended DSM Regulations dated 20<sup>th</sup> November, 2018.

It has been observed that while calculating the ADC for over injection by Central Generating Station (CGS) when grid frequency is 50.05 Hz & above, the Rate of DSM is being taken as ACP but in our views it should be ACP or ECR (lesser of the two). In this regards please refer the following references:

**“Quote”**

**DSM Principal Regulations, Dated 6<sup>th</sup> January, 2014**

**7. Limits on Deviation volume and consequences of crossing limits**

*(4) In addition to Charges for Deviation as stipulated under Regulation 5 of these regulations, Additional Charge for Deviation shall be applicable for over-injection/under drawal of electricity for each time block by a seller/buyer as the case may be when grid frequency is „50.10 Hz and above” at the rates equivalent to charges of deviation corresponding to the grid frequency of “below 50.01 Hz but not below 50.0 Hz” (page-9).*

**DSM Amended Regulations, Dated 20<sup>th</sup> November, 2018**

3.7 Clause (3) of Regulation 5 of the Principal Regulations shall be substituted as under :-

*“(3) The Cap rate for the charges for deviation for the generating stations whose tariff is determined by the Commission shall be equal to its energy charges as billed for the previous month (page-5).*

*4.12 In clause (4) of Regulation 7 of the Principal Regulations, the words “50.10 Hz and above” shall be substituted by the words “50.05 Hz and above” (page-7).*

*Page 1/2*



**Kanti Bijlee Utpadan Nigam Limited**  
(A Wholly Owned Subsidiary of NTPC Ltd.)



**Muzaffarpur Thermal Power Station**


**"Unquote"**

So in our views, while calculating the ADC for over injection by a Generating Station, whose Tariff is determined by the Hon'ble CERC, when grid frequency is 50.05 Hz & above, the Rate of DSM at freq. 50 Hz should be applicable and the rate of DSM at 50.00 Hz in our case is ACP or ECR (lesser of the two).

It is, therefore, requested that the necessary corrections may please be done while calculating the ADC on the above case.

Matter may be taken as Additional Agenda Point for discussion in 39<sup>th</sup> Commercial Sub-committee Meeting (CCM) of ERPC to be held on 18<sup>th</sup> February, 2019, if required.

With Regards,

  
(R P Singh)  
AGM (Commercial)

Copy:

1. Chief Executive Officer, KBUNL: for Kind information Please.

Page 2/2



# Fast Response Ancillary Service

Eastern Regional Power Committee, Kolkata-33

S K Pradhan, AD(Comml.)

Email: [shishir.1505@gmail.com](mailto:shishir.1505@gmail.com), [eeecom1.erpc@gov.in](mailto:eeecom1.erpc@gov.in),

Phone: 8249244719

# FRAS Overview

- ▶ Hon'ble CERC vide its order dated 16.07.2018 in petition No.07/SM/2018/Suo-Motu directed for implementation of FRAS on pilot basis.
- ▶ FRAS pilot service implemented w.e.f 26.11.2018.
- ▶ Fast Response Ancillary Services (FRAS) is a Frequency Regulation service.
- ▶ FRAS instruction has been given for every discrete 5-min time block starting from 0000 hrs of the day (e.g. 1000-1005, 1005-1010...)
- ▶ Central sector Hydro Generating Station with pondage/Storage facility will participate in FRAS pilot service(i.e. TEESTA-V & RANGIT of Eastern Region).

# FRAS Regulations

- ▶ For implementing Hydro Power as FRAS, all constraints and commitments declared by the hydro stations shall be honoured and the total energy delivered over the day shall be maintained as declared by the hydro station..
- ▶ The total energy dispatched under FRAS shall be squared off by the end of the day.
- ▶ Triggering of FRAS shall be done on the stack prepared based on the balance energy available in the hydro station. The Schedules of the beneficiaries shall not be disturbed in the despatch of FRAS.
- ▶ Payment for FRAS shall be based on “mileage” basis. The mileage during the day shall be computed as follows:

Net energy  $E_{net} = S(E_{up}) - S(E_{down})$  (in MWh) (should be zero over the day)

Mileage  $E_m = S | E_{upt} | + S | E_{downt} |$  (in MWh)

# FRAS Regulations...cont

- ▶ No additional fixed charge or variable charges shall be paid for providing FRAS support.
- ▶ Existing fixed charges and variable charges shall continue to be paid by the beneficiaries for the normal schedules as per existing practice.
- ▶ The total energy despatched for hydro under FRAS shall be made zero and hence, no energy charges shall be payable to the hydro stations.
- ▶ Incentive shall be paid from the DSM pool on mileage basis at the rate of 10 paisa per KWH for both “up” and “down” regulation provided by Hydro station.



# FRAS instruction to TEESTA

Date	Eup (MWH)	Edown (MWH)	Em (MWH)	Incentive as per CERC	Difference (MWH)	Gain(+)/Loss(-) of FRAS provider
27.11.18	1.333	1.333	2.666	267	0	
29.11.18	8.25	8.25	16.5	1650	0	
05.12.18	10.833	10.833	21.667	2167	0	
06.12.18	0.833	0.833	1.666	167	0	
07.12.18	7	8.25	15.25	1525	-1.25	1450
17.12.18	16	15.5	31.5	3150	.5	-580
18.12.18	3	4.5	7.5	750	-1.5	1740
27.12.18	3.417	0.833	4.25	425	2.584	-2997
31.12.18	9.333	0	9.3333	933	9.333	-10826
01.01.19	1.5	1.5	3	300	0	
02.01.19	3.417	3.417	6.83	683	0	
22.01.19	5.75	5.75	11.5	1150	0	
23.01.19	0.75	5.75	6.5	650	-5	5800
28.01.19	0	4.167	4.167	417	-4.167	4834
31.01.19	0	19.5	19.5	1950	-19.5	22620
01.02.19	0	6.5	6.5	650	-6.5	7540
Total	65.666	96.917	168.333	16034	-25.503	29581



# FRAS instruction to RANGIT

Date	Eup (MWH)	Edown (MWH)	Em (MWH)	Incentive as per CERC	Difference (MWH)	Gain(+)/ Loss(-) of FRAS provider
15.12.18	5.667	0	5.667	567	5.667	-10767
19.12.18	0.5	0.5	1	100	0	
27.12.18	1	0	1	100	1	-1900
02.01.19	1	0	1	100	1	-1900
03.01.19	2.167	0	2.167	217	2.167	-4117
06.01.19	2.167	0	2.167	217	2.167	-4117
09.01.19	0.333	0	0.333	33	0.333	-632
<b>Total</b>	<b>12.834</b>	<b>0.5</b>	<b>13.334</b>	<b>1334</b>	<b>12.334</b>	<b>-23433</b>

# FRAS Scheduling & Accounting (Eup=Edown)– 05.12.18

FRAS Provi der	Sch (MW H)	FRAS Sch up(MWH )	FRAS Sch Down(W H)	Net Sch(M WH)	Schedule Energy Cost(Rs)	Net Schedule Energy Cost due FRAS imbalance	Gain/Loss of Energy cost of FRAS provider for participating in FRAS service	Incentive as per CERC order(10 Paisa/KWH)
<b>Teesta</b>	<b>3191</b>	<b>10.833</b>	<b>10.833</b>	<b>3191</b>	<b>3701560</b>	<b>3701560</b>	<b>0</b>	<b>2167</b>
<b>Rangit</b>	<b>633</b>	<b>0</b>	<b>0</b>	<b>633</b>	<b>1202700</b>	<b>1202700</b>	<b>0</b>	<b>0</b>

# FRAS imbalance Scheduling & Accounting(Eup>Edown)–27.12.2018

FRAS Provider	Sch (MW H)	FRAS Sch up(M WH)	FRAS Sch Down(W H)	Total Sch(MW H)	Schedule Energy Cost(Rs)	Net Schedule Energy Cost due FRAS imbalance	Loss Energy cost of FRAS provider for participating in FRAS service	Mileage(Em=Eup +Edown)	Incentive as per CERC order(10 Paisa/K WH)
Teesta	3059	3.416667	0.833333	3061.583	3548440	3551436.667	2996.666667	4.25	425
Rangit	519	1	0	520	986100	988000	1900	1	100

# FRAS imbalance Scheduling & Accounting (Edown>Eup)-18.12.2018

FRAS Provider	Sch (MW H)	FRAS Sch up(MWH)	FRAS Sch Down(WH)	Total Sch(MWH)	Schedule Energy Cost(Rs)	Net Schedule Energy Cost due FRAS imbalance	Gain Energy cost of FRAS provider for participating in FRAS service	Incentive as per CERC order(10 Paisa/KWH)
<b>Teesta</b>	<b>2765</b>	<b>3</b>	<b>4.5</b>	<b>2763.5</b>	<b>3207400</b>	<b>3205660</b>	<b>1739.999999</b>	<b>750</b>
<b>Rangit</b>	<b>551</b>	<b>0</b>	<b>0</b>	<b>551</b>	<b>1046900</b>	<b>1046900</b>	<b>0</b>	<b>0</b>

# Summary of observations

- ▶ For both TEESTA & RANGIT, FRAS schedule energy didn't zero for most of the day since implementation of the pilot scheme.
- ▶ When FRAS up schedule is more, FRAS provider didn't get any incentive for giving more "up" schedule. So loss of energy without getting any additional benefit except marginal incentive as per CERC regulation.
- ▶ When FRAS down schedule is more, FRAS providers get the energy cost without dispatching in reality.
- ▶ From DSM point of view, actual generation didn't follow FRAS instruction for most of the time. FRAS provider should follow "up" & "down" instruction in actual scenario.



# THANK YOU

## FRAS:Introduction

- ▶ CERC in its Suo-Motu order dated 16.07.2018 in petition No.07/SM/2018/Suo-Motu directed the implementation of FRAS (Fast Response Ancillary Service) on pilot basis w.e.f 26.11.2018.
- ▶ As per CERC order, total energy dispatched during a day for hydro stations under FRAS shall be made zero and hence, no energy charges shall be payable to the hydro stations.
- ▶ Incentive shall be paid on mileage basis from DSM pool at the rate of 10 paisa/KWH for both “up” & “down” Energy to FRAS provider.



# FRAS:Introduction

Ancillary services are indispensable part of the power system operation required to maintain integrity, stability and power quality.

Hydro generating stations are capable of providing a fast ramping capability.

Hydro Power Stations can be gainfully utilized for frequency regulation services to meet the system requirements.

# POWER STATIONS IN EASTERN REGION

- ▶ NHPC has two Hydro Power Stations in Eastern Region for FRAS implementation.
- ▶ 1. 510MW Teesta-V Power Station (170MWx3)
- ▶ 2. 60MW Rangit Power Station(20MWx3)

## Methodology of FRAS

- ▶ The FRAS alert is given by POSOCO to NHPC Control Room Faridabad through E-mail and Telephone.
- ▶ The alert is communicated to Power Stations by NHPC Control Room through E-mail and Telephone.
- ▶ Although NHPC Power Stations are smoothly implementing FRAS till date there are some constraints as well.

# Constraints Due to FRAS

- ▶ FRAS alerts are communicated for last 5 Minutes of the block. In a situation when the next block has increased schedule and machine needs to be synchronized, it becomes difficult for the operator to minimise the load in FRAS block, synchronise the unit and match the load for the next block. Sometimes it results in the reduced load in next block which leads to sign change violation as well.
- ▶ In order to avoid that, FRAS should be given when the units are stable, on bar and consecutive block does not have increased schedule.
- ▶ In those conditions where there is possibility of spillage or spillage is there, decrease in load on account of FRAS should not be done as it will lead to generation loss on account of spillage which is not in the interest of Nation.

# Some Instances of FRAS Schedule

1/02/2019

Time Block	Time	DC	Injection Schedule	FRAS
68	16:45-17:00	168	168	-26MW from 16:55-17:00
69	17:00-17:15	336	336	-52MW from 17:00 to 17:05

5/2/2019

Time Block	Time	DC	Injection Schedule	FRAS
70	17:15-17:30	336	336	-26MW from 17:25 to 17:30
71	17:30-17:45	529	529	

9/2/2019

Time Block	Time	DC	Injection Schedule	FRAS
70	17:15-17:30	336	336	-56MW from 17:25 to 17:30
71	17:30-17:45	529	529	

Net energy dispatch under FRAS is not zero

RANGIT POWER STATION	
Date	FRAS (MWH)
15-Dec-18	5.67
20-Dec-18	4.25
27-Dec-18	1.00
02-Jan-19	1.00
03-Jan-19	2.17
09-Jan-19	0.33

Net energy dispatch under FRAS is not zero

TEESTA-V POWER STATION	
Date	FRAS (MWH)
07-Dec-18	-1.25
17-Dec-18	0.50
18-Dec-18	-1.5
27-Dec-18	2.58
31-Dec-18	9.33
23-Jan-19	- 4.92
28-Jan-19	- 4.17
31-Jan-19	-19.5



FRAS considered is different from Alert given

## TEESTA-V POWER STATION

Date	As per NHPC (MU)	As per ERPC (MWH)	As per ERPC FRAS	As per NHPC FRAS	Remark
27-Dec-18	3059.00	3061.58	2.58	0	ERPC incorporated FRAS in DSM scheduled energy but no alert was given on said date for FRAS.
31-Dec-18	2471.00	2480.33	9.33	9.42	ERPC incorporated different FRAS in DSM scheduled energy however different alert was given on said date for FRAS

## Inclusion of FRAS in Schedule considered for DSM

TEESTA-V POWER STATION					
Date	As per NHPC (MU)	As per ERPC (MWH)	As per ERPC FRAS	As per NHPC FRAS	Remark
07-Dec-18	3111.00	3111.00	(-)1.25	(-)1.25	In ERPC accounting ,DSM Scheduled Energy excludes FRAS
17-Dec-18	3303.00	3303.50	0.50	0.5	In ERPC accounting ,DSM Scheduled Energy includes FRAS
18-Dec-18	2765.00	2763.50	(-)1.5	-1.5	In ERPC accounting ,DSM Scheduled Energy includes FRAS
23-Jan-19	3171.00	3166.00	(-) 4.917	(-) 4.917	In ERPC accounting ,DSM Scheduled Energy includes FRAS
28-Jan-19	2452.83	2452.83	(-)4.167	(-)4.167	In ERPC accounting ,DSM Scheduled Energy excludes FRAS
31-Jan-19	2343.00	2323.50	(-)19.5	(-)19.5	In ERPC accounting ,DSM Scheduled Energy includes FRAS

## Inclusion of FRAS in Schedule considered for DSM

RANGIT POWER STATION					
Date	As per NHPC (MWH)	As per ERPC (MWH)	As per ERPC FRAS (MWAH)	As per NHPC FRAS	Remark
15-Dec-18	541	541	5.67	5.67	In ERPC accounting ,DSM Scheduled Energy excludes FRAS
20-Dec-18	526	526	4.25	4.25	In ERPC accounting ,DSM Scheduled Energy excludes FRAS
27-Dec-18	469	469	1.00	0.00	In ERPC accounting ,DSM Scheduled Energy includes FRAS. Further there was no FRAS alert on said date.
02-Jan-19	478	479	1.00	1.00	In ERPC accounting ,DSM Scheduled Energy includes FRAS.
03-Jan-19	478	480.17	2.17	2.17	In ERPC accounting ,DSM Scheduled Energy includes FRAS.
09-Jan-19	459	459.33	0.33	0.33	In ERPC accounting ,DSM Scheduled Energy includes FRAS.

## Expectations / Addressal by ERPC

- ▶ Incentive paid on mileage basis at the rate of 10 paisa/KWH for both “up” & “down” Energy to FRAS provider is very less.
- ▶ FRAS schedule in transition blocks may be avoided.
- ▶ Total energy dispatched during a day for hydro stations under FRAS is not being made zero.
- ▶ No energy charge is being paid for the day when energy dispatched under FRAS is not zero and is positive which is an absolute loss to the generator.
- ▶ There is inconsistency in DSM schedule as some days FRAS schedule is being included and some day it is being excluded.
- ▶ Lot of time and energy is required for reconciliation of energy injection by generator

The background features abstract geometric shapes in various shades of green, primarily on the right side, creating a modern and dynamic feel. The shapes are layered and semi-transparent, forming a complex pattern.

▶ **THANK YOU**



पूर्वा क्षेत्रीय विद्युत समित  
Eastern Regional Power Committee  
डायरी सं०/Diary No- 1600  
दिनांक/Date 08/01/19  
भारत सरकार/Govt of India  
14, गोल्फ क्लब रोड टालीगंज  
14, Golf Club Road  
कोलकाता-33, Kolkata-33

नबीनगर पावर जेनरेटिंग कंपनी प्रा० लि०  
(एनटीपीसी की पूर्ण स्वामित्व सहायक कम्पनी)

Nabinagar Power Generating Co. Pvt. Ltd  
(Wholly owned Subsidiary of NTPC Ltd)

नबीनगर सुपर थर्मल पावर प्रोजेक्ट  
Nabinagar Super Thermal Power Project

Ref. No.0370/NPGC/EED

Dated: 07.01.2019

To,  
Member Secretary.  
ERPC, 14  
Golf Club Road, Tollygunge,  
Kolkata 700033  
WB, India

**Kind Attn: Sh. J Bandyopadhyay**

Sub: Reconciliation of Deviation charges & RTDA account of NPGC for the period of 10<sup>th</sup> May 2018 to 23<sup>rd</sup> December 2018.

Dear Sir,

We would like to request you for a reconciliation of deviation charges & RTDA account of NPGC for the period of 10<sup>th</sup> May 2018 to 23<sup>rd</sup> Dec 2018. It may be noted that during submission of first charging formats to the ERLDC, Special energy meter ratio was erroneously mentioned by NPGC as 1200:1. however in actual opted ratio of station transformer metering core CT is 600:1. and this can be verified with approved metering scheme of NPGC Nabinagar, approved cable schedule of station transformer bay and also with field testing reports of current transformer of 132kV ST bay 101.(enclosed)

Due to this typographical error, Meter charges levied by ERPC are being excessively charged i.e. more than consumption of actual MWH. The same can be verified by comparing the ST energy meters with Gaya Line-1 & Gaya Line -2 meters combined (enclosed Annexure-1).

Energy Drawl in MWH from 10 <sup>th</sup> May 2018 to 23 <sup>rd</sup> Dec 2018	ST SEM reading	(Gaya Line I +Line II) SEM reading
	28541.93	15504.93

In the beginning there were less electrical loading and due to inability of precise measurement of energy meter at lower load, difference between consumed load by ST and inflow by both lines were not double but SEM reading at ST was always higher than both the lines combined. We came to know about the said discrepancy in last December when commissioning activities were on full swing at NPGC and the readings of SEM at ST was double as compared to both inflows of Gaya Line I & Gaya Line II combined. It was immediately brought to kind notice of ERLDC.

Hence, it is a humble request to condone the typographical error and actual consumed energy charges according to actually opted CT ratio i.e. 600/1 may be considered from initial charging date 10<sup>th</sup> May 2018 upto 23<sup>rd</sup> December 2018. Accordingly necessary reconciliation of RTDA account & deviation charge of NPGC may be done and excessive payment may be considered as credit on account of NPGC.

Thanking You,

Yours Sincerely,

Virendra Prasad

Addl. General Manager (EE)

Nabinagar Power Generating Company Pvt. Ltd.

**Copies: -**

Mr. D K Jain, ED, ERLDC Kolkata.

प्रोजेक्ट : नवीनगर सुपर थर्मल पावर प्रोजेक्ट शिवपुर, पो-अंकोरा राव एच, जिला-औरंगाबाद-824303 (बिहार) / Project Office : Nabinagar Super Thermal Power Project Shivapur, P.O.-Ankora RS, Dist.-Aurangabad-824303 (Bihar), Ph. : 06332-231002-12  
मुख्यालय : विद्युत मंत्रालय, प्रधान मंत्री, बेली रोड, नया दिल्ली-800 001, फोन-0612-2504010, फैक्स-0612-2504098 / Head Qtr. : Head Office - 1st Floor, Vidyut Bhawan-II, Bailey Road, Patna - 800 001, Ph. : 0612-2504010, Fax: 0612-2504098  
पंजीकृत कार्यालय : एन टी सी सी ब्लॉक, कोयला कॉम्प्लेक्स, 7, इस्टीमेटोरस एरिया, लोदी रोड, नई दिल्ली-110 003 / Registered Office : NTPC Bhawan, SCOPE Complex, 7, Institutional Area, Lodhi Road, New Delhi - 110 003

CIN - U40104DL2008PTC183024





भारत सरकार  
Government of India  
विद्युत मंत्रालय.  
Ministry of Power  
पूर्वी क्षेत्रीय विद्युत समिति

**Eastern Regional Power Committee**  
14, गोल्फ क्लब रोड, टॉलीगंज, कोलकाता-700033  
14 Golf Club Road, Tollygunj, Kolkata-700033



Annexure-XIII

Tel No.:033-24239650, 24239651 FAX No.:033-24239652, 24239653 Web: [www.erpc.gov.in](http://www.erpc.gov.in)

NO. ERPC/ OPERATION/2018-19/ 3720-21

DATE: 01.02.2019

To,

1. Executive Director, ERLDC, POSOCO, 14 Golf Club Road, Kolkata -700 033
2. Addl. General Manager (EE), Nabinagar Power Generation Company Pvt. Ltd., Nabinagar STPP, Shivanpur, P.O. Ankorha RS, Dist. Aurangabad, Bihar- 824303

**Sub: Special meeting to discuss the issue related to erroneous CT ratio for Special Energy Meter (SEM) readings of NPGC for the period 10.05.18 to 23.12.18- reg.**

Sir,

Nabinagar Power Generation Company Pvt. Ltd. (NPGC) vide letter No. 0370/NPGC/EED dated 07.01.19 has informed that during submission of first charging formats to ERLDC, Special Energy Meter ration was erroneously mentioned as 1200:1 by them but in actual the opted CT ratio of Station Transformer is 600:1. Due to this error the Actual Energy drawl (MWH) considered for DSM & RTDA Accounts are much higher than the actual energy consumption.

Therefore notice is hereby given that a special meeting will be held on **7<sup>th</sup> February, 2019 (Thursday) at 15:30 hrs at ERPC, Kolkata** to discuss the **issue related to erroneous CT ratio for Special Energy Meter (SEM) readings of NPGC** for the subjected period.

You are requested to make it convenient to attend the meeting or depute a suitable officer with all the relevant details. Your participation in the meeting is highly solicited.

Thanking you,

Yours faithfully,

*J. Bandyopadhyay* 01/02/2019  
(J. Bandyopadhyay)  
Member Secretary



## Eastern Regional Power Committee, Kolkata

### **Minutes of Special Meeting to discuss the issue related to Special Energy Meter (SEM) readings of NPGC, Nabinagar held on 07.02.2019 at ERPC Kolkata**

Member Secretary, ERPC welcomed all the participants to the special meeting. He informed that this special meeting was convened on a short notice as per the request of NPGC to discuss the issue related to erroneous CT ratio for Special Energy Meter (SEM) readings of NPGC for the period 10.05.2018 to 23.12.2018.


NPGC representative explained that while submitting the documents for first charging, the CT ratio for metering was inadvertently declared as 1200:1 which is actually 600:1. He also clarified that in the scheme of metering and cable schedule documents, the CT ratio is 600:1. As a result, NPGC, Nabinagar ended up paying more for the DSM as well as RTDA Accounts.


ERLDC informed that the above issue has come into observation in December, 2018 and the corrected CT ratio of 600:1 has been considered w.e.f. 24.12.2018.


The issue was discussed in details and the documents provided by NPGC was verified. During the discussion it emerged that the actual CT ratio adopted is 600:1. The following decisions were taken:

1. NPGC will submit an affidavit mentioning the above inadvertent error and the actual CT ratio adopted for metering by 14.02.2019 with all supporting documents.
2. After receipt of the affidavit, ERPC will revise the affected account(s) for the period 10.05.2018 to 23.12.2018.
3. The DSM pool members would not be affected due to revision in DSM account.
4. The adjustment in DSM account would be done in maximum six installments subject to availability of fund in DSM pool.
5. NPGC was advised that this type of error should not be repeated in future.

The meeting ended with vote of thanks to the chair.

  
(N. Kumar)  
07/2/19  
Manager, NPGC

  
(G. Mitra)  
7/2/19  
Sr. GM, ERLDC

  
(J. Bandyopadhyay)  
7/2/19  
Member Secretary, ERPC

\*\*\*\*\*

February 04, 2019

Eastern Region Power Committee  
14, Golf Club Road  
Kolkata – 700 033

Dear Sir,

Though 720 MW Mangdechhu Hydroelectric Project (MHEP) was supposed to commission its 1<sup>st</sup> Unit in 2018, due to unavoidable circumstances beyond the control of the Project Authority, the 1<sup>st</sup> Unit is still not commissioned. It is now expected to be commissioned by end of February 2019 if all the works get executed as per the planned schedule.

During the meeting with ERPC in July 2018, we have informed that Bhutan may not become net importer of electricity in a month once MHEP gets commissioned. However, due to delay in the commissioning of MHEP within 2018, we have imported a net energy of 11.291923 MU in the month of January 2019. We may again become net importer of electricity during the months of February and March 2019, till the 1<sup>st</sup> Unit of MHEP is commissioned.

Therefore, we would like to inform ERPC on the above and to allow import of power by DGPC as and when required. ERPC shall be kept informed on the energy scenario in Bhutan and the progress of MHEP commissioning schedule. This shall be also deliberated during the 154<sup>th</sup> OCC Meeting.

Yours faithfully,

(Kuenga Namgay)  
Director (O&M)



## ERPC:: KOLKATA

### Minutes of the meeting held on 13.07.2018 at ERPC, Kolkata to finalize the treatment of import of power by Bhutan.

List of the participants is attached in Annexure.

Member Secretary welcomed Director(O&M), DGPC Bhutan, ED ERLDC, representative of PTC and the other participants in the meeting. He informed that the meeting among ERPC, ERLDC, PTC and Bhutan has been convened as per the decision of the last ERPC meeting held on 30.06.2018. He then requested that Director(O&M), DGPC to elaborate on the issue.

Director(O&M) DGPC in his presentation mentioned that, during the month of Feb-2018 & March-2018, Bhutan has imported power from India. In the month of April-2018 Bhutan has made a net export of power to India. Subsequent accounting issued by ERPC Secretariat after adjusting the import of power by Bhutan during Feb-2018 & March-2018 has put considerable loss to Bhutan. He pointed out that, as per the energy accounting methodology put in place after the mixing of power at Malabase substation, it indicates that the import of power in the February and March 2018 months have occurred in the THP system and thus the import has to be netted from THP energy.

ERPC Secretariat gave a detailed presentation highlighting the methodology adopted for accounting of import of power by Bhutan. During presentation, it was emphasized that the entire anomaly has arisen due to non-existence of any suitable tariff between India and Bhutan for import of power by Bhutan. So ERPC Secretariat had first adjusted the import of power by Bhutan during Feb-2018 and Mar-2018 from the export of power to India during April, 2018 and thereafter segregated the balance power into Tala & Chukha components. However, Bhutan has prepared the accounting based on segregation of export of power to India during April, 2018 into Tala and Chukha components first and thereafter made the adjustment of import of power during the month of Feb-2018 and Mar-2018.

Member Secretary, ERPC observed that due to absence of clear cut mechanism of treatment of import of power by Bhutan, it is difficult to say whether the methodology for accounting of import of power by Bhutan as adopted by Bhutan or by ERPC secretariat is correct or not. He also emphasized that Bhutan is an important and valued neighbour of India and there is a long standing relationship between the constituents of Eastern Region and Bhutan. He appealed the issue should be resolved in light of this.

After detailed deliberation the followings are decided unanimously:

1. The liability of Rupees fifty three lakhs as projected by Bhutan through revised accounting shall be shared between Bhutan and India on 50:50 basis as a one time settlement of import of power by Bhutan from India.
2. In the meeting Bhutan informed that Mangdechu units are expected to be commissioned by April-2019. Bhutan assured that, with the commissioning of Mangdechu units, cases of net import of power by Bhutan in a month shall not recur.



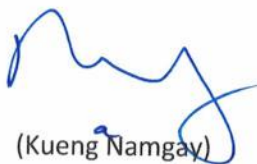
3. ERPC Secretariat shall indicate the additional amount to be paid by the each beneficiary of Eastern Region on account of this settlement in the accounting statement to be issued in the month of August-2018.

Member Secretary, ERPC hoped that, in future, there would be increased cooperation between India and Bhutan in the field of power for mutual benefits.

The meeting ended with vote of thanks to the chair.



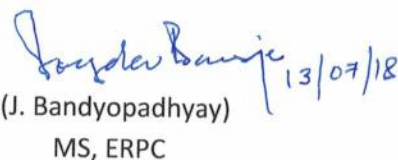
(Naveen Gadiyal)  
Manager, PTC



(Kueng Namgay)  
Director(O&M), DGPC



(P. Mukhopadhyay)  
ED, ERLDC

 13/07/18

(J. Bandyopadhyay)  
MS, ERPC

ERPC::KOLKATA

ATTENDANCE SHEET

MEETING WITH BHUTAN

VENUE: ERPC CONFERENCE ROOM, KOLKATA

TIME: 11:30 HRS

DATE: 13.07.2018 (FRIDAY)

Sl. No.	Name	Designation & Organisation	Contact Number	E-mail Id	Signature
1	J. BANDYOPADHYAY	MS, ERPC	9432326351	mserpc-power@gov.in	
2	P. MUKHOPADHYAY	ED, ERLDC			
3	G. Milne	DGM, ERLDC	9831297392		
4	Nadim Ahmad	MGR, ERLDC	9432351831	nadim@powerco.in	
5	Naveen Gochhayat	Manager, PTE INDIA LTD	9811546619	naveengochhayat@ptcindia.com	
6	M. PRASAD	HEAD(PMD), DGPL	975-13610621	m.prasad1900@drutgreen.bt	
7	P. P. Jena	AEE, ERPC	9776198991	ppjena.espc@gov.in	
8	D. K. Bauri	EE, ERPC	9883617236	eeecom L.espc@gov.in	
9	A. De.	AEE, ERPC	9681932906	alixpantha@gmail.com	
10	Lenin. B	AEE, ERPC	8335905973	lenin.nitc@gmail.com	
11	Shruti Mohan Jha	Consultant ERPC	9874938913	erpc@shah.ghar.com	
12	Karey Nany	Director (Gen)	17110014	k.nany82012@drutgreen.bt	
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# पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड

(भारत सरकार का उद्यम)

## POWER SYSTEM OPERATION CORPORATION LIMITED

(A Govt. of India Enterprise)



पंजीकृत एवं केन्द्रीय कार्यालय : प्रथम तल, बी-9, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली-110016

Registered & Corporate Office : 1st Floor, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi -110016

CIN : U40105DL2009GOI188682, Website : www.posoco.in, E-mail : posococc@posoco.in, Tel.: 011- 41035696, Fax : 011- 26536901

संदर्भ संख्या: पोसोको/एनएलडीसी/2018/

दिनांक: 09<sup>th</sup> November, 2018

सेवा मे,

Director,  
National Power Committee,  
NRPC Building,  
3<sup>rd</sup> Floor, Katwaria Sarai,  
New Delhi-110016

(Kind Attn: Sh. Irfan Ahmad)

विषय: Agenda Note on National Energy Account & National Deviation Pool Account  
for 8<sup>th</sup> Meeting of National Power Committee.

संदर्भ: NPC letter no: 4/MTGS/NPC/CEA/2018/1122-1123 dtd. 01<sup>st</sup> Nov, 2018

महोदय,

With reference to the above mentioned NPC communication dated 01<sup>st</sup> November 2018, an Agenda note on National Energy Account & National Deviation Pool Account for the forthcoming 8<sup>th</sup> Meeting of National Power Committee is enclosed.

सादर धन्यवाद,

भवदीय,

*समीर सक्सेना*  
09/11/18.

(एस. सी. सक्सेना)

उप महाप्रबंधक (एन एल डी सी)

Encl: As above

**Copy to:** Chief Engineer, National Power Committee, NRPC Building, 3<sup>rd</sup> Floor,  
Katwaria Sarai, New Delhi-110016

**National Energy Account & National Deviation Pool Account**  
*Agenda Note for 8<sup>th</sup> Meeting of the National Power Committee (NPC)*  
*30<sup>th</sup> November 2018, Guwahati*

**1. Establishment of National Grid**

In the sixties, the country's electricity grid was demarcated into five electrical regions and Regional Electricity Boards were formed. In order to facilitate inter-state power transactions and the development of regional grids, Govt. of India funded construction of a number of inter-state lines. Subsequently multi-beneficiary Central Sector generating stations were developed by utilities like NTPC, NHPC etc. along with associated transmission system for evacuation of power. The concept of regional energy accounting (earlier known as global accounting) was developed with boundary metering of all control areas.

Till late nineties, power system was planned on regional self-sufficiency basis and there were very few inter-regional links. With more and more inter-regional inter-connections coming up, the focus now shifted to formation of a strong National Grid. Initially, HVDC was used to interconnect two regions, e.g., NR-WR, NR-ER, WR-SR, etc. Gradually, AC interconnections also came up and by August 2006, all regional grids except SR were interconnected synchronously into two synchronous systems known as NEW and SR Grids. The strong HVDC links connecting the NEW grid to Southern region are extensively used for optimizing power flows in the NEW grid. With strong AC connections between the regions constituting the NEW grid as well as extensive use of HVDC links in real time operation, inter-regional schedules lost any physical relevance. All the five regional grids in the country were progressively interconnected using AC links and these are now operating as one synchronism system since December 2013. The situation has become more complicated with direct HVDC connections between NER and NR.

**2. Existing Scheduling, Metering, Accounting and Settlement Systems**

Availability Based Tariff (ABT) was implemented in stages, starting with Western Region in July 2002. With implementation of ABT, the concept of Unscheduled Interchange (UI) pool came up and all RLDCs started operating regional UI pool accounts, which were subsequently known as the "Regional Deviation Accounts". Deviations from the schedules are computed using the net injection/drawal for using boundary metering for each control area. Based on deviations from schedule, utilities pay UI charges to or receive UI charges from the regional UI pool account.

Short-term open access in inter-state transmission was introduced in May 2006 and with this, scheduling of market-based trades/transactions also commenced. Further, in 2008, multiple Power Exchanges were also implemented. Corridor wise margin declaration for market-based transactions was carried out along with net import/export capability for regions for administering the short-term open access transactions. Later from 2009 onwards, long-term and medium-term transactions also commenced within one region and between different regions. Corresponding scheduling on the inter-regional links was carried out for these transactions on a corridor-wise basis e.g., WR-NR, ER-SR, etc. Presently, while corridor wise TTC/ATC are being declared, net import/export margins for the region are being used for administration of short-term transactions.



Special energy meters have been installed at both ends of inter-regional / inter-state tie lines and all inter-connections of CTU system with ISGS as well as states / other entities whose accounting is done at regional level. As specified in the IEGC, meter readings are sent to respective RLDCs by different sub-stations of CTU / ISGS / states. The meter readings are processed at RLDCs and forwarded to respective RPC secretariat for preparation of weekly deviation account. The RPC secretariats issue deviation accounts based on which different utilities pay /receive deviation charges to / from deviation pool account. These also included settlement of inter-regional deviations between neighboring regions. The regional UI pools are being operated satisfactorily and have successfully served the purpose for the last many years.

The deviation rate vector is declared upfront by the CERC from time to time. Prior to 2008, with uniform rates for deviation, the total payable and receivables were supposed to be equal making it a zero-sum game. However, due to difference in estimated loss and actual loss as well as metering errors, total UI/deviation charges payable did not match with total UI/deviation charges receivable. Based on methodology decided in RPC forum, suitable adjustment is done to make total UI charges payable equal to the UI charges receivable. Thus, the UI pool accounts had been zero balance accounts traditionally since introduction of ABT up to 2008.

Regional UI pool accounts became a non-zero sum game since 7<sup>th</sup> January 2008 with introduction of UI rate cap for Central generating stations with coal or lignite firing and stations burning only APM gas. UI rate cap was retained in the UI regulations, 2009. Further, as per the UI regulations, 2009, additional UI charge is payable by over-drawing or under-injecting utilities based on specified volume limits and frequency bands. Thus a surplus is generated in the UI/deviation pool.

An important feature of the UI accounts issued by RPCs is treatment of inter-regional transactions. The following methodology is followed by the RPCs in this regard:

- No adjustment is done in UI charges payable to / receivable from other regions (otherwise this may lead to an iterative process)
- UI charges payable to other regions has highest priority i.e. UI charges received in UI pool account is used first to clear dues to other regions.

Schedules are reconciled between RLDCs and thereafter final schedules are issued. Moreover, same meter readings are used by both connected regions for computation of UI/deviations. Hence it is expected that normally there should not be any mismatch between UI charges payable / receivable by adjacent regions connected through AC links.

At present, RPCs of each region prepare and issue UI/deviation accounts considering neighboring region as control areas (similar to states within the region). Sometimes, there are cases of mismatch between UI/deviation payable/receivable as per accounts issued by two RPCs of adjacent Regions and reconciliation of accounts by RPCs prior to issuance is required to be done.

Settlement of UI/deviation charges is done between the regions on one to one basis. For example, UI/deviation pool of ER has to pay to or receive from 4 different UI pools (NER, NR, SR, WR). This leads to multiple financial transactions in terms of money flow between regions. There are

instances of circular flows of funds between regions which needs to be avoided. An example of such circular flow of funds between the regions is illustrated in Annex – 1.

The above methodology is gradually losing its relevance with the five regions connected synchronously as power can flow from one region to another via a third region leading to circular and multiple fund transactions. These ‘tandem’ money transactions between the regions at times also leads to issues in disbursal within the regions.

### 3. Mandate for NLDC

Section 26 of Electricity Act, 2003 mandates the following:

*“Section 26. (National Load Despatch Centre): --- (1) The Central Government may establish a centre at the national level, to be known as the National Load Despatch Centre for optimum scheduling and despatch of electricity among the Regional Load Despatch Centres.*

*(2) The constitution and functions of the National Load Despatch Centre shall be such as may be prescribed by the Central Government:*

*Provided that the National Load Despatch Centre shall not engage in the business of trading in electricity.*

*(3) The National Load Despatch Centre shall be operated by a Government company or any authority or corporation established or constituted by or under any Central Act, as may be notified by the Central Government.”*

Subsequently vide notification dated 2<sup>nd</sup> March 2005, the Central Government has notified National Load Despatch Centre Rules 2004, which prescribes functions of NLDC. The functions include following (relevant extracts):

- *Scheduling and dispatch of electricity over inter-regional links in accordance with grid standards specified by the Authority and Grid Code specified by the Central Commission in coordination with Regional Load Despatch Centres.*
- *Coordination with Regional Load Despatch Centres for achieving maximum economy and efficiency in the operation of National Grid.*
- *Supervision and control over the inter-regional links as may be required for ensuring stability of the power system under its control*
- *Coordination with Regional Load Despatch Centres for the energy accounting of inter-regional exchange of power*
- *Coordination for trans-national exchange of power*

From the above mandate it is evident that just as the RLDCs/RPCs are responsible for scheduling, metering, accounting and settlement at the Regional level, NLDC has been made responsible at the inter-regional and trans-national levels. The corresponding roles pertaining to inter-regional and trans-national transactions accounting and settlement need to be taken up at the National level by the NLDC and NPC.

### 4. Trans-National/Cross-Border Interconnections

At present, India has cross-border interconnections with Nepal, Bhutan, Bangladesh and Myanmar. Briefly, the connectivity of these countries with various regional grids in India is as follows:

- Nepal: With Northern region and Eastern Region
- Bhutan: With Eastern region
- Bangladesh: With Eastern region and North-Eastern region
- Myanmar: With North-Eastern region

In future, other neighboring SAARC countries like Bangladesh and Pakistan may have connectivity with two different regions of India. For the purpose of cross-border interconnections, the country needs to be treated as a single control area for the purpose of transnational exchanges and transactions have to be reconciled on National basis. Further, in line with the mandate provided, NLDC is responsible for all trans-national exchanges.

## 5. Changing Scenario & Increasing Complexities

A vibrant electricity market is functioning in the country and many regulatory changes have been implemented to address new challenges from the changing scenario which is also leading to increased complexities. Some of the significant changes that have already been implemented at the National level and some future challenges are briefly discussed below.

- Collective Transactions through Power Exchanges:** Open Access Regulations, 2008 issued by CERC paved the way for functioning of power exchanges. As per the Regulations and procedures issued pursuant to the Regulations, collective (i.e. power exchange) transactions are coordinated by NLDC. Two Power Exchanges are functioning at present and another is in the offing. NLDC accepts scheduling request for collective transactions after checking for congestions, and forwards the same to RLDCs for scheduling. Curtailment, if any, has to be done by NLDC in coordination with RLDCs. Accounting and settlement of the Collective Transactions is carried out by NLDC.
- Ancillary Services (RRAS):** The Regulatory Framework for implementation of Ancillary Services has been provided by the Hon'ble CERC in August 2015 and these have been implemented from April 2016. As per the present framework for ancillary services, available generation (thermal) reserves are dispatched by NLDC across regions on a pan-India basis. In the scheduling process, a virtual entity has been created in each regional pool to act as a counterparty to the ancillary schedules (beneficiaries schedules are not disturbed in the ancillary despatch process). Settlement of ancillary transactions is carried out on a regional basis from the DSM Pool. There are times, when the regional DSM pool faces shortfall and NLDC facilitates transfer of funds from a surplus regional pool to the deficit regional pool as per the provisions of the relevant CERC regulations. Again, this involves multiple fund transfers at times.
- Fast Response Ancillary Services (FRAS):** CERC vide suo-motu order dated 16<sup>th</sup> July 2018 has directed the implementation of FRAS and pilot project for 5-minute metering. The framework for FRAS provides for fast response ancillary services using the flexibility of hydro generation. The dispatch under FRAS is with the primary objective of obtaining regulation services from hydro while at the same time honoring all the hydro constraints. Scheduling, accounting and settlement of FRAS is to be carried out by NLDC across multiple regions (NR, ER and NER).

(d) **Secondary Frequency Control through Automatic Generation Control (AGC):** Based on the directions of CERC a pilot project for AGC has been implemented at Dadri – Stage II in January 2018. The AGC signals are being sent to the generating station from NLDC and the accounting and settlement for the AGC is being facilitated by NLDC. Based on the experience gained by this pilot project, AGC implementation is being taken up at one generating station in each of the other regions. A second pilot implementation of AGC is expected to be commissioned at Simhadri in November 2018. Implementations in other regions are also coming up progressively. Accounting and settlement of all such implementations have to be facilitated at the national level.

(e) **Proposals under various stages of implementation/deliberations:** Some of the other proposals which are under various stages of deliberations or implementation are as follows:

- Replacement of thermal generation by RE generation (Ministry of Power, April 2018)
- Real Time Markets (CERC, July 2018) for facilitating balancing closer to the time of delivery
- Flexibility in scheduling of thermal generation (Ministry of Power, August 2018) to achieve economy in despatch at the national level
- Security Constrained Economic Despatch (POSOCO, September 2018) to achieve economy in despatch at the national level

Almost all of the above-mentioned proposals are intended for scheduling, despatch, accounting and settlement at the national level. The complexity in settlement needs to be streamlined at the national level keeping in view the changing paradigm and new challenges.

## **6. National Energy Account and National Deviation Pool Account**

In order to streamline the accounting and settlement at the national level there is a need for implementing a National Deviation Pool based on the National Energy Account. In this regard, the following methodology is proposed.

(a) **Scheduling:** Corridor-wise (e.g., ER-NR, etc.) scheduling of inter-regional transactions is presently being carried out. However, actual power flows as per the laws of physics. In case of collective transactions, one to one correspondence of source and sink is not there and scheduling on a particular inter-regional corridor may at best be notional. Hence, there is a need to migrate to scheduling inter-regional transactions on a net basis for each region. However, while accepting the transactions for scheduling, corridor-wise TTC/ATC/available margin etc. may be duly taken care of. Inter-regional corridor-wise schedules may also be continued based on the physical power flow patterns as the same is useful for grid security monitoring and checking for any discrepancies. NLDC shall communicate the net inter-regional schedules to the NPC for the purpose of accounting.

Schedules for cross-border transactions shall also be prepared by NLDC on a net-basis to facilitate accounting of cross-border transactions by the NPC. However, individual schedules of

the concerned neighboring country with different region regions shall also be continued at RLDC level for the purpose of grid security monitoring and checking for discrepancies.

- (b) **Metering:** The existing practice for metering of the inter-regional points shall continue as per the IEGC and the SEM data shall be collected by the RLDCs, processed and made available to the RPCs. In addition, the processed meter data shall also be made available to the NPC through NLDC. A similar practice shall be adopted for the cross-border metering locations, where the processed meter data shall be provided by the respected RLDCs to the RPCs and NPC (through NLDC).
- (c) **Accounting & Settlement:** Based on the scheduling and meter data provided, NPC shall prepare the National Energy Account (NEA) including the National Deviation Account for the inter-regional and trans-national transactions. The NEA will reflect the payables/receivables for each region on a net-basis and this amount shall be payable/receivable to the National Deviation Pool Account which shall be operated by NLDC. The NEA shall also reflect the cross-border or trans-national transactions and the neighboring countries shall be paying/receiving to/from the National Deviation Pool Account operated by NLDC. Payment to the National DSM Pool shall have the highest priority.

In the future, multi-lateral transaction between neighboring countries are also envisaged under the SAARC framework e.g., Bangladesh may purchase power from Nepal or Bhutan through India. Neighboring countries may also participate in a designated Power Exchange for cross-border transactions in the future. For scheduling and settlement of such transactions, the all-India loss figures would need to be declared upfront by NLDC.

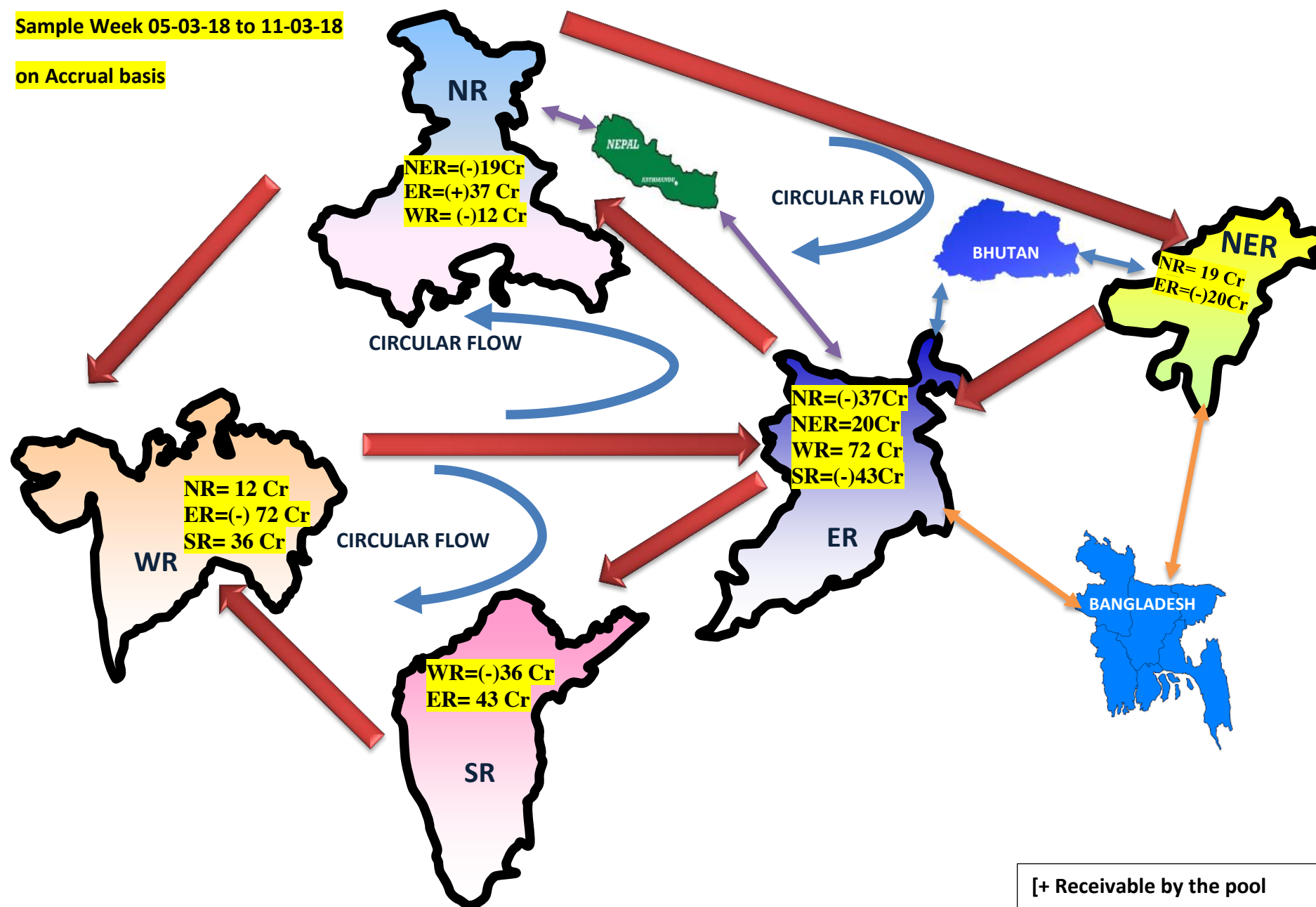
- (d) **Handling Surplus/Deficit in Regional Pool Accounts and transfer of residual to PSDF:** As has already been mentioned above, sometimes the regional DSM pool may face shortfalls on account of disbursements for reliability support such as RRAS, FRAS, AGC, etc. in accordance with the relevant regulations of CERC. Once the National DSM Pool becomes operational, all residual/surplus amount in the regional DSM pools shall be transferred to the National DSM pool account. The NPC accounts would also facilitate the transfer of funds from the surplus available in the National DSM pool to the deficit regional DSM pool accounts as a single transaction thereby simplifying the process. Once all liabilities have been met, any residual in National DSM Pool shall be transferred periodically to the PSDF in accordance with the extant CERC Regulations.

A sample illustration of the flow of funds between different regional DSM pool accounts to the national DSM pool account and that with the neighboring countries is shown at Annex – II.

Suitable changes/modifications are required to be carried out in the IEGC and DSM Regulations and the functions of NPC also need to be recognized in the regulatory framework.

Sample Week 05-03-18 to 11-03-18

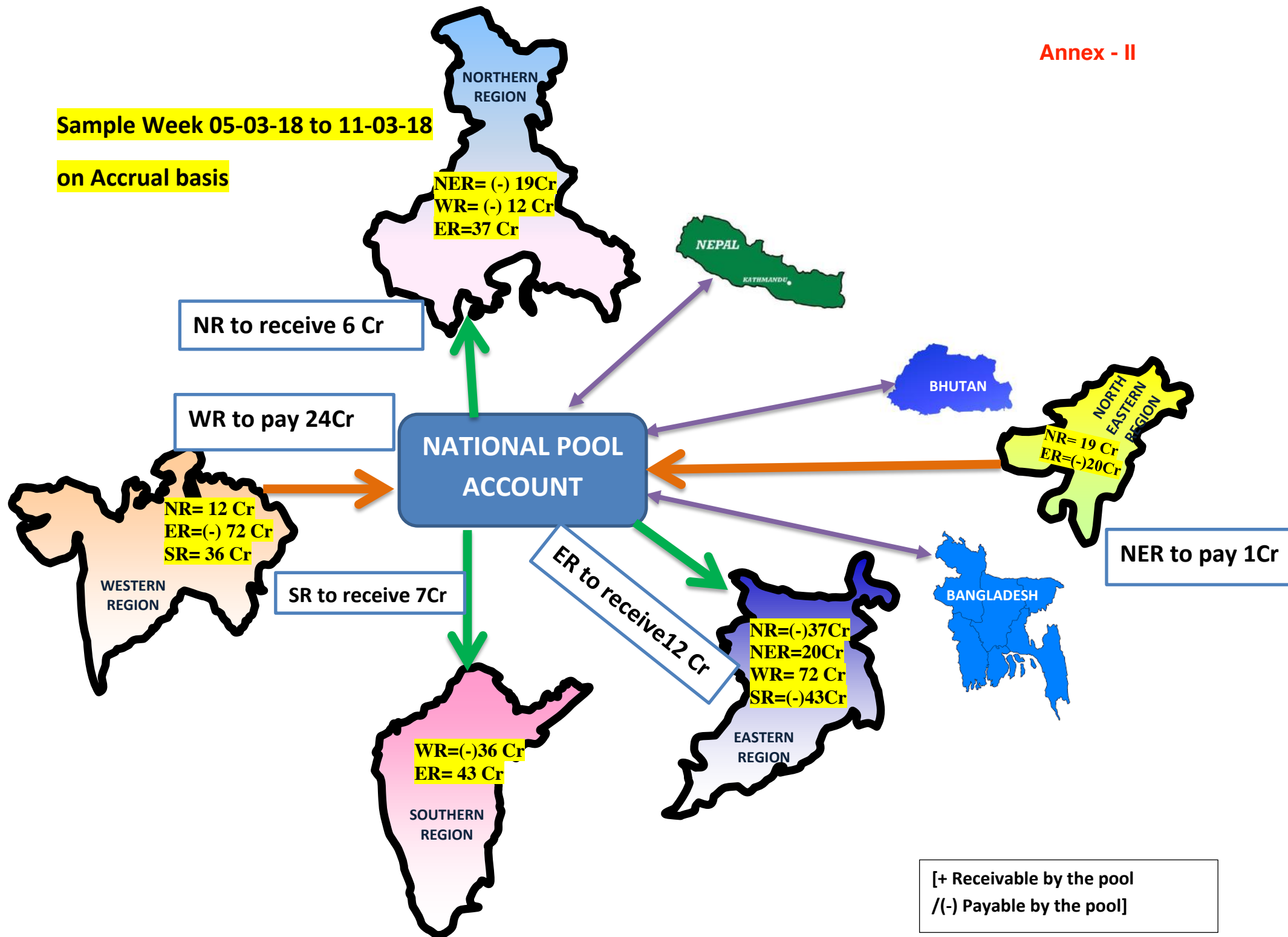
on Accrual basis



## Annex - II

Sample Week 05-03-18 to 11-03-18

on Accrual basis







# ଓଡିଶା ବହୁତ ଶକ୍ତି ସଂଚାରଣ ନିଗମ ଲି.ଓ. ODISHA POWER TRANSMISSION CORPORATION LIMITED

(A Government of Odisha Undertaking) Regd. Office:  
Janpath: Bhubaneswar-751022. Telephone: (0674) 2540051  
(EPABX), Website: [www.optcl.co.in](http://www.optcl.co.in)  
CIN:U4102OR2004SGC007553

Annexure-XVII

*By Speed Post*

RT&C-NON-ISTS/2017-

*497*

Dated 22-02-2019

To

✓  
The Member Secretary  
Eastern Regional Power Committee  
14, Golf Club Road,  
Tollygunge, Kolkata-700033

पूर्वा क्षेत्रीय विद्युत समिति  
Eastern Regional Power Committee  
डायरी नं: Diary No- *1801*  
दिनांक/Dat: *06/02/19*  
भारत सरकार/Ministry of India  
4, गोल्फ क्लब रोड टॉलीगंज  
14, Golf Club Road  
कोलकाता-33, Kolkata-33

Sub: Certification of non-ISTS lines of OPTCL carrying ISTS Power

- Ref: 1. This office Letter No RT&C-NON-ISTS/2017/6122 Dated 12.12.18  
2. Your Letter No-ERPC/COM-I/non-ISTS/2018/6809-10 Dated 19.12.18

Sir,

As per our letter under reference -1 OPTCL has applied for 9 nos of lines as listed below for certification of non-ISTS lines carrying ISTS power.

Sl No	Line	Circuits	Route kms	Ckt kms
1	220 kV Kuchei-Balasore	2	76.859	153.718
2	220 kV Atri-Pandiabil	2	24.530	48.060
3	220 kV Samagara-Pandiabil	2	48.600	97.200
4	220 kV New Bolangir-Bolangir PG	1	2.900	2.900
5	220 kV Bargarh New-Bolangir PG	1	52.000	52.000
6	132 kV Kuchei-Bangiriposhi	1	31.000	31.000
7	132 kV Kuchei-Baripada	1	11.653	11.653
8	132 kV Kuchei-Jaleswar	1	79.282	158.564
9	132 kV Kuchei-Bhograi	1	101.600	101.600

Accordingly ERPC had requested ERLDC to carry out study (reference-2) but till date we have not received any letter regarding certification.

You are therefore requested to expedite the process so as to enable OPTCL to file before CERC for determination of transmission charges.

Encl- As above

Yours faithfully

*SK Jaisri*  
02/02/2019  
Sr. General Manager, (RT&C)

*PD & back.*

*EE (Revenue)*

*Pl. Issue reminder to ERLDC with a Copy to OPTCL.*

*8/2/19*



भारत सरकार  
Government of India  
विद्युत मंत्रालय  
Ministry of Power  
पूर्वी क्षेत्रीय विद्युत समिति

Annexure-XVIII



**Eastern Regional Power Committee**

14, गोल्फ क्लब रोड, टॉलीगंज, कोलकाता-700033  
14 Golf Club Road, Tollygunj, Kolkata-700033

Tel No.:033-24239651, 24239657 FAX No.:033-24239652, 24239653 Web: [www.erpcc.gov.in](http://www.erpcc.gov.in)

No: ERPC/COM - I/non – ISTS/2019/ 8986-87

Date: 11.02.2019.

To  
**The Executive Director,**  
Eastern Region Load Despatch Centre,  
14, Golf Club Road,  
Tollygunge,  
Kolkata – 700033.

**Sub: Certification of non –ISTS lines of OPTCL System carrying ISTS Power – Reg.**

**Ref:** This office letter No. : ERPC/COM - I/non – ISTS/2018/6809-10 dated 19.12.2018.

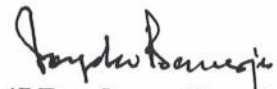
Dear Sir,

With above subject and reference, it is intimated that this office has received a reminder from OPTCL regarding the certification of the non – ISTS lines of OPTCL System carrying ISTS power. A copy of the letter received from OPTCL is attached. It is requested that necessary studies may please be got carried out at your end and forwarded to ERPC Secretariat, so that the same can be put up in the coming Commercial Committee Meeting and OCC Meeting.

Thanking you,

Yours faithfully,

Encl: As above.

  
(J.Bandyopadhyay)  
Member Secretary

Copy to: Sr. General Manager (RT&C), OPTCL, Janpath, Bhubaneshwar – 751022.





भारत सरकार  
Government of India  
विद्युत मंत्रालय  
Ministry of Power  
पूर्वी क्षेत्रीय विद्युत समिति

**Eastern Regional Power Committee**

14, गोल्फ क्लब रोड, टॉलीगंज, कोलकाता-700033  
14 Golf Club Road, Tollygunj, Kolkata-700033



Tel No.:033-24239651, 24239659 FAX No.:033-24239652, 24239653 Web: [www.erpc.gov.in](http://www.erpc.gov.in)

No: ERPC/MS/TA/ 2018-19/ 8480-84

Date: 25.01.2019

**To:**

1. Director (Operation), WBSETCL, Vidyut Bhavan, 8<sup>th</sup> Floor, Block – DJ, Sector – II, Bidhannagar, Kolkata – 700091.
2. Director (Operation), Orissa Power Transmission Corporation Ltd., Janpath, Bhubaneswar – 751022.
3. Executive Director (ER-I), Power Grid Corporation of India Ltd, Board Colony, Shastri Nagar, Patna-800023.
4. Project Director (O&M), Sterlite Power, A (Tulip) – 634, New Minal Residency, J.K.Road, Near Ayodha Bypass Road, Bhopal – 462023.

**Sub: Constitution of Committee for analysing the major outages of ISTS elements of Eastern Region - regarding**

**Ref:** Our office letter no. ERPC/MS/TA/2018/6673 - 76 dated 14.12.2018

Sir,

You may be aware that ERPC Secretariat is issuing certificate for availability of Transmission elements of all ISTS licensee of Eastern Region. ERPC Secretariat has to certify various types of outages based on the reasons specified with reasonable restoration time. Recently, in few cases of major outages, it becomes difficult to ascertain all the facts to arrive at the reasonability of the outage and reasonable time of restoration. Therefore a Committee is hereby constituted for **Analysing the major outages of ISTS elements of ER** to identify the category of outage and reasonable restoration time.

The members of the Committee as nominated by ER constituents are as follows;

1. Sh. D.K. Bauri, EE, ERPC -- Convenor
2. Sh. Chinmay Halder, ACE, WBSLDC
3. Sh. Sudhansu Sekhar Nanda, DGM (E& MR), OPTCL
4. Sh. S.K.Singh, GM(AM), Powergrid (ER-I)
5. Dr. Deepak Lakhapati, Head-Design, Sterlite Power


The committee will function as per the following guidelines:

- i) The Committee shall meet from time to time to analyse the various outages as referred by Member Secretary, ERPC.

- ii) The Convenor of the committee shall coordinate with all the members to organize meetings.
- iii) The Committee shall look into the various details of causes for outage of transmission elements and suggest the category of outage and reasonable restoration time period for of the transmission element.
- iv) The committee in its report/minute shall indicate the category and reasonable time period to be considered for each category for all outages as per the prevailing CERC regulations and CERC/CEA/CTU standards.
- v) ERLDC may be invited on case to case basis as and when felt by the committee members for verifying the outage time, log, record etc. as available with ERLDC.
- vi) The other concerned transmission licensee may be invited on case to case basis for explaining the details of outages of their respective elements.
- vii) The above members from Powergrid and Sterlite Power shall not take part in the decision making while analyzing outages of their respective elements. However, in such cases their function shall be restricted to represent or explain their cases of outages to the Committee.
- viii) If required, the committee shall undertake site visit for assessing the actual position in case of major failure of transmission elements which require higher restoration time beyond the standard allowable restoration period.
- ix) The Committee shall be advisory in nature and shall submit the recommendations to Member Secretary, ERPC for consideration.

Thanking you,

Yours faithfully,

  
(J.Bandyopadhyay)  
Member Secretary

Copy to: Executive Director, ERLDC, 14 Golf Club Road, Kolkata-700033

## SUMMARY OF DEVIATION CHARGE RECEIPT AND PAYMENT STATUS

BILL upto 20.01.19 (upto Week -42 of 2018 - 19)

Last Payment Disbursement Date - 26.09.18

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
WR	15.21672	12.62733	514971.96558	492833.58344	-22135.79275
SR	226050.45324	222954.03553	3889.51850	3939.17284	3146.07205
NER	154366.53195	153325.82633	28944.41500	13579.97506	-14323.73432
NR	99477.31488	54337.11958	53948.24243	41798.49845	32990.45132
BSPHCL	17925.89708	15847.38225	1095.72657	0.00000	982.78826
JUVNL	20828.66090	15300.07751	14.63752	0.00000	5513.94587
DVC	26935.58121	26821.90722	4182.61110	4182.61110	113.67399
GRIDCO	47207.53003	48002.77067	499.59727	1390.00265	95.16474
WBSETCL	49587.93073	49400.77632	0.00000	19.31179	206.46620
SIKKIM	948.66984	154.38587	1311.63493	496.60429	-20.74667
NTPC	12465.60635	12262.81141	70.96887	87.68291	219.50898
NHPC	6.13288	6.13288	4867.32258	4862.54183	-4.78075
MPL	354.47693	355.45400	810.76604	818.02805	6.28494
MTPS STG-II(KBUNL)	1504.70052	1446.34484	0.00000	0.00000	58.35568
APNRL	718.29612	247.44648	511.00554	132.90648	92.75058
CHUZACHEN (GATI)	135.98794	132.68095	729.90338	729.90332	3.30693
NVVN(IND-BNG)	1062.15902	1018.85267	425.02081	427.89872	46.18426
JITPL	928.96698	909.43894	1117.00383	1117.01502	19.53923
GMR	1455.33387	1360.44049	1634.82974	1587.70921	47.77285
IND BARATH	112.50429	0.00000	0.00000	0.00000	112.50429
TPTCL(DAGACHU)	6508.85901	6381.02693	36.08101	36.24336	127.99443
JLHEP(DANS ENERGY)	896.47807	888.05815	485.11323	485.08963	8.39632
BRBCL(Nabinagar)	308.02212	297.07594	1188.72627	1198.81027	21.03018
NVVN (IND-NEPAL)	5932.83022	5753.66577	560.57529	574.69080	193.27996
HVDC SASARAM	39.21356	27.15153	263.94644	263.94644	12.06203
HVDC ALIPURDUAR	66.65713	67.61607	363.62337	364.58231	0.00000
TEESTA-III	1231.78908	1230.03951	2649.17225	2649.15225	1.72957
DIKCHU(Sneha Kinetic)	157.42733	172.55679	962.05498	976.42339	-0.76105
TASHIDING(Shiga Energy)	449.99719	422.56633	507.61915	507.61917	27.43088
OPGC	546.04602	498.97962	0.00000	0.00000	47.06640
NPGC	829.19644	799.76270	0.00000	0.00000	29.43374
Pool Balance	0.00000	822.45081	-8101.19490	0.00000	7278.74409
Addl Deviation charge	35316.66089	48459.88063	0.00000	0.00000	-13143.21974
IRE	0.00000	0.00000	-124.71065	0.00000	124.71065
VAE	32.97914	0.00000	26039.78722	0.00000	-26006.80808
<b>TOTAL</b>	<b>679054.46764</b>	<b>620435.01061</b>	<b>643855.96334</b>	<b>575060.00278</b>	

% Realization

91.37

As on

06.02.19

Receivable:

Receivable by ER POOL

Payable

Payable by ER POOL

Received

Received by ER POOL

Paid

Paid by ER POOL

"- ve" Payable by ER pool

"+ ve" Receivable by ER pool

## Annexure-XXI

### Difference in DSM account for ERPC & NRPC

All figs Rupees in Lacs

Week No.	Financial Year	Bill Period	As per ERPC Fig	As per NRPC Fig	Diff	Remarks
42	2017-18	15-Jan-18 to 21-Jan-18	38.97137	39.29811	-0.32674	ERPC - NRPC account almost matched
43		22-Jan-18 to 28-Jan-18	1818.71461	1819.54751	-0.83290	
44		29-Jan-18 to 04-Feb-18	487.19714	487.57902	-0.38188	
45		05-Feb-18 to 11-Feb-18	-646.59265	-646.02624	-0.56641	
46		12-Feb-18 to 18-Feb-18	1584.50023	1585.10833	-0.60810	
47		19-Feb-18 to 25-Feb-18	476.0878	476.43103	-0.34323	
48		26-Feb-18 to 04-Mar-18	1031.32822	1031.76241	-0.43419	
49		05-Mar-18 to 11-Mar-18	3770.82179	3769.44801	1.37378	
50		12-Mar-18 to 18-Mar-18	747.61039	748.42405	-0.81366	
51		19-Mar-18 to 25-Mar-18	1375.16618	1368.40764	6.75854	
52		26-Mar-18 to 01-Apr-18	210.04301	210.42000	-0.37699	
1	2018-19	02-Apr-18 to 08-Apr-18	1009.60994	1278.46919	-268.85925	NRPC Revision Done
2		09-Apr-18 to 15-Apr-18	-654.32388	-692.66860	38.34472	NRPC Revision Done
3		16-Apr-18 to 22-Apr-18	-1284.45597	-1390.85092	106.39495	NRPC Revision Done
4		23-Apr-18 to 29-Apr-18	-2159.58592	-2257.12707	97.54115	NRPC Revision Done
5		30-Apr-18 to 06-May-18	353.29802	180.20509	173.09293	NRPC Revision Done
6		07-May-18 to 13-May-18	146.92212	-599.83702	746.75914	NRPC Revision Done
7		14-May-18 to 20-May-18	-3368.88035	-4112.30688	743.42653	NRPC Revision Done
8		21-May-18 to 27-May-18	-2796.00937	-3900.47619	1104.46682	NRPC Revision Done
9		28-May-18 to 03-Jun-18	-2591.71233	-3203.81689	612.10456	NRPC Revision Done
10		04-Jun-18 to 10-Jun-18	-3967.18649	-4640.58132	673.39483	NRPC Revision Done
11		11-Jun-18 to 17-Jun-18	-5122.51604	-6386.98958	1264.47354	NRPC Revision Done
12		18-Jun-18 to 24-Jun-18	-6473.51666	-7954.42305	1480.90639	NRPC Revision Done
13		25-Jun-18 to 01-Jul-18	-1685.53423	-2975.43419	1289.89996	NRPC Revision Done
14		02-Jul-18 to 08-Jul-18	-385.14665	-2663.69127	2278.54462	NRPC Revision Pending
15		09-Jul-18 to 15-Jul-18	-2801.19246	-5350.27882	2549.08636	NRPC Revision Pending
16		16-Jul-18 to 22-Jul-18	-1799.16426	-4037.75088	2238.58662	NRPC Revision Pending
17		23-Jul-18 to 29-Jul-18	1118.66298	1109.37759	9.28539	NRPC Revision Pending
18		30-Jul-18 to 05-Aug-18	766.69794	-1644.61889	2411.31683	NRPC Revision Pending
19		06-Aug-18 to 12-Aug-18	-86.22433	-2601.46292	2515.23859	NRPC Revision Pending
20		13-Aug-18 to 19-Aug-18	-2350.19739	-4349.83849	1999.64110	NRPC Revision Pending
21		20-Aug-18 to 26-Aug-18	-1551.02649	-3609.48205	2058.45556	NRPC Revision Pending
22		27-Aug-18 to 02-Sep-18	-2337.21583	-4670.94369	2333.72786	NRPC Revision Pending

*Note : +Ve is Receivable by ER/-Ve payable by ER*



## Deviation Interest Bill due to delay payment during FY 2017-18

As on 06.02.19

Annexure-XXII

Sl No.	Name of Constituents	Interest amt Payable by Party(in Rs)	Amount Paid/ recovered by Party(in Rs)	Interest amt receivable by Party(in Rs)	Amount paid to the Party(in Rs)	Outstanding Interest as on 06.02.19 (in Rs)
1	BSPHCL	16974993	16974993			0
2	JUVNL	15419205	15419205			0
3	DVC			14278	14278	0
4	GRIDCO			25776	25776	0
5	WBSETCL	0				0
6	SIKKIM	1143998				1143998
7	NTPC	0				0
8	NHPC			5860	5860	0
9	MPL	1443	1443			0
10	APNRL			57900	57900	0
11	CHUZACHEN	8617	8617			0
12	NVVN(IND-BD)	765	765			0
13	JITPL	38619	38619			0
14	GMR	56974	56974			0
15	IND BARATH	2135362				2135362
16	TPTCL(DAGACHU)	304143	304143			0
17	JLHEP	230359	230359			0
18	BRBCL	5315	5315			0
19	NVVN(IND-NEP)	5268	5268			0
20	TUL(TEESTA-III)			5772	5772	0
21	DIKCHU			9475	9475	0
22	HVDC-PSL			127	127	0
23	HVDC-ALPD			355	355	0
24	TASHIDING	138753	138753			0
25	OPGC	0				0
	<b>Total</b>	<b>36463813</b>	<b>33184453</b>	<b>119543</b>	<b>119543</b>	<b>3279360</b>

## STATUS OF REACTIVE CHARGES

RECEIVABLE IN ER POOL AS PER PUBLISHED A/C UPTO 20.01.19 (2018 -19)  
AS ON 06.02.19

CONSTITUENT	AMOUNT RECEIVABLE IN THE POOL (Rs.)	AMOUNT RECEIVED IN THE POOL (Rs.)	TOTAL OUTSTANDING(Rs.)
BSPHCL	5010087	378537	4631550
JUVNL	4285714	1137688	3148026
DVC	660320	660320	0
GRIDCO	245987789	245987789	0
WBSETCL	676708817	658345891	18362926
SIKKIM	635432	325817	309615
TOTAL	933288159	906836042	26452117

Note: (+ve) means payable by utility & (-ve) means receivable by utility

## Annexure - XXIV

### SUMMARY OF RRAS CHARGE RECEIPT AND PAYMENT STATUS

BILL from 02.04.18 to 20.01.19 (upto Week - 42 of 2018 - 19)

Last Payment Disbursement Date -06.02.19

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
FSTPP STG-I & II	384.35530	352.14982	3955.59911	3927.33109	3.93746
FSTPP STG-III	105.01552	95.84101	2163.99108	2151.74448	-3.07208
KhSTPP STG-I	151.18304	143.46901	4581.19033	4568.78183	-4.69447
KhSTPP STG-II	39.34237	38.80175	6459.55857	6444.32326	-14.69469
TSTPP STG-I	37.46264	37.04840	116.06508	116.06508	0.41425
BARH STG-II	224.29320	221.52636	3427.09073	3417.68153	-6.64236
BRBCL (Nabinagar)	18.32129	18.03804	1793.64906	1791.12600	-2.23981
KBUNL (MTPS-II)	53.82299	47.01378	1244.67313	1150.39113	-87.47279
<b>TOTAL</b>	<b>1013.79634</b>	<b>953.88816</b>	<b>23741.81709</b>	<b>23567.44440</b>	<b>-114.46448</b>

As on

06.02.19

Receivable:

Receivable by ER POOL

Payable

Payable by ER POOL

Received

Received by ER POOL

Paid

Paid by ER POOL

"- ve" Payable by ER pool

"+ ve" Receivable by ER pool

**Annexure - XXV**

**SUMMARY OF CONGESTION CHARGE RECEIPT AND PAYMENT STATUS**

**Bill upto 07.01.2013**

**Last Payment Disbursement Date - 13.05.2013**

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
BSEB	0.67823	0.67823	0.39118	0.39118	0.00000
JSEB	16.37889	16.37889	2.61323	2.61323	0.00000
DVC	0.00000	0.00000	6.24040	6.24040	0.00000
GRIDCO	5.34488	5.34488	0.00000	0.00000	0.00000
WBSETCL	0.00000	7.42249	4.32834	11.75083	0.00000
SIKKIM	0.65609	6.20909	0.00000	5.55300	0.00000
NTPC	6.93152	6.93152	7.42249	7.42249	0.00000
NHPC	0.70445	0.70445	0.05875	0.05875	0.00000
MPL	4.81694	4.81694	0.85169	0.85169	0.00000
STERLITE	7.70504	7.70504	0.00000	0.00000	0.00000
Pool Balance	0.00000	0.00000	21.30996	21.30996	0.00000
<b>TOTAL</b>	<b>43.21604</b>	<b>56.19153</b>	<b>43.21604</b>	<b>56.19153</b>	<b>0.00000</b>

**% Realization**

**As on 31.05.2015**

Receivable: Receivable by ER POOL

Payable Payable by ER POOL

Received Received by ER POOL

Paid Paid by ER POOL

"- ve" Payable by ER pool

" + ve" Receivable by ER pool

## Annexure - XXVI

## DETAILS OF DISBURSEMENT TO POWER SYSTEM DEVELOPMENT FUND

SI No	Nature of Amount	Amount transferred to PSDF (Rs in Lac)	Date of Disbursement	Remarks
1	Opening Balance (upto 31.03.16)	86464.58111		
2	Addl. Dev	83.33978	01.04.16	Addl Dev Charge 15-16
3	Addl. Dev	43.77416	05.04.16	Addl Dev Charge 15-16
4	Addl. Dev	31.83984	07.04.16	Addl Dev Charge 15-16
5	Addl. Dev	52.08622	11.04.16	Addl Dev Charge 15-16
6	Addl. Dev	107.23773	13.04.16	Addl Dev Charge 15-16
7	Addl. Dev	220.15330	19.04.16	Addl Dev Charge 15-16
8	Addl. Dev	76.84824	21.04.16	Addl Dev Charge 15-16
9	Addl. Dev	20.84026	26.04.16	DSM Interest 2014-15(Paid by APNRL)
10	Addl. Dev	10.01920	26.04.16	Addl Dev Charge 16-17
11	Addl. Dev	432.25696	28.04.16	Addl Dev Charge 16-17
12	Addl. Dev	117.08707	02.05.16	Addl Dev Charge 16-17
13	Addl. Dev	41.65418	04.05.16	Addl Dev Charge 16-17
14	Addl. Dev	9.17422	06.05.16	Addl Dev Charge 16-17
15	Addl. Dev	105.15627	06.05.16	Addl Dev Charge 15-16
16	Deviation Interest	38.50018	06.05.16	Deviation Interest
17	Addl. Dev	35.54178	10.05.16	Addl Dev Charge 16-17
18	Addl. Dev	448.87953	31.05.16	Addl Dev Charge 16-17
19	Addl. Dev	170.51274	29.06.16	Addl Dev Charge 16-17
20	Reactive Energy Charge	530.57497	28.09.16	Reactive Charges_15-16
21	Reactive Energy Charge	1000.00000	26.12.16	Reactive Charges_16-17
27	Reactive Energy Charge	248.26904	31.07.17	Reactive Charges_17-18
28	Reactive Energy Charge	128.44284	29.08.17	Reactive Charges_17-18
29	Reactive Energy Charge	103.22685	26.09.17	Reactive Charges_17-18
30	Reactive Energy Charge	249.14078	31.10.17	Reactive Charges_17-18
31	Reactive Energy Charge	172.20693	30.11.17	Reactive Charges_17-18
32	Reactive Energy Charge	200.00000	15.12.17	Reactive Charges_17-18
33	Reactive Energy Charge	100.00000	05.01.18	Reactive Charges_17-18
34	Reactive Energy Charge	558.45339	06.02.18	Reactive Charges_17-18
35	Reactive Energy Charge	171.95546	06.03.18	Reactive Charges_17-18
36	Reactive Energy Charge	129.35497	04.04.18	Reactive Charges_17-18
37	Reactive Energy Charge	126.21494	07.05.18	Reactive Charges_18-19
38	Reactive Energy Charge	183.31081	06.06.18	Reactive Charges_18-19
39	Reactive Energy Charge	215.58816	05.07.18	Reactive Charges_18-19
40	Reactive Energy Charge	176.54245	03.08.18	Reactive Charges_18-19
41	Reactive Energy Charge	39.54556	06.09.18	Reactive Charges_18-19
42	Reactive Energy Charge	34.03973	01.10.18	Reactive Charges_18-19
43	Reactive Energy Charge	74.57236	05.11.18	Reactive Charges_18-19
44	Reactive Energy Charge	40.66623	04.12.18	Reactive Charges_18-19
45	Reactive Energy Charge	236.89035	02.01.19	Reactive Charges_18-19 & 15-16
46	Reactive Energy Charge	300.04546	05.02.19	Reactive Charges_18-19 & 15-16
	<b>Total</b>	<b>95662.88682</b>		

## Annexure-XXVII

	2017-18				2018-19		
DSM account Reconciliation Status of ER constituents and Inter Regional							
Name of The Utility	Q1(04.07.17)	Q2(09.10.17)	Q3(08.01.18)	Q4(09.04.18)	Q1(19.07.18)	Q2(08.10.18)	Q3(09.01.19)
Inter Regional							
WR	NO	NO	NO	NO	NO	NO	NO
SR	YES	NO	NO	NO	YES	YES	NO
NER	YES	NO	YES	NO	YES	NO	NO
NR	NO	NO	YES	NO	NO	NO	NO
Intra Regional							
BSPHCL	YES	YES	YES	YES	YES	YES	NO
JUVNL	YES	YES	YES	YES	YES	YES	NO
DVC	YES	YES	YES	YES	YES	YES	NO
GRIDCO	YES	YES	YES	YES	YES	YES	YES
WBSETCL	YES	YES	YES	YES	YES	YES	NO
SIKKIM	YES	YES	YES	YES	YES	YES	NO
NTPC	YES	YES	YES	YES	YES	YES	YES
NHPC	YES	YES	YES	YES	YES	YES	NO
MPL	YES	YES	YES	YES	YES	YES	YES
KBUNL	N/A	N/A	N/A	N/A	YES	YES	NO
APNRL	YES	YES	YES	YES	YES	YES	YES
CHUZACHEN(GATI)	YES	YES	YES	YES	YES	YES	YES
NVVN(Ind-Bng)	YES	YES	YES	YES	YES	YES	YES
NVVN(Ind-Nep)	YES	YES	YES	YES	YES	YES	YES
GMR	YES	YES	YES	YES	YES	YES	NO
JITPL	YES	YES	YES	YES	YES	YES	YES
INBEUL	NO	NO	NO	NO	NO	NO	NO
TPTCL (DAGACHU)	YES	YES	YES	YES	YES	YES	YES
JLHEP(DANS ENERGY)	YES	YES	YES	YES	YES	YES	NO
BRBCL	YES	YES	YES	YES	YES	YES	YES
POWERGRID (ER-I)	YES	YES	YES	YES	YES	YES	NO
POWERGRID (ER-II)	N/A	N/A	YES	YES	YES	YES	NO
TUL (TEESTA-III)	YES	YES	YES	YES	YES	YES	YES
DIKCHU	YES	YES	YES	YES	YES	YES	NO
SHIGA (TASHIDING)	N/A	N/A	YES	YES	YES	YES	NO
OPGC	N/A	N/A	N/A	YES	YES	NO	NO
NPGC	N/A	N/A	N/A	N/A	YES	YES	NO

Note:

(1)The dates in the bracket indicates the date of sending the Reconciliation statements by ERLDC to utilities.

(2) YES Indicates that signed reconciliation statement received by ERLDC

(3) NO Indicates that signed reconciliation statement is not received by ERLDC

**Annexure-XXVIII**

**Reconciliation Between Open Access department of ERLDC and SLDCs, STUs**

Sl. No.	STUs / SLDCs Name	Quarter-I	Quarter-II	Quarter-III
	Date of Issuance	16-07-2018	15-10-2018	18-01-2019
1	West Bengal - SLDC and STU	YES	NO	YES
2	DVC - SLDC	YES	YES	NO
3	OPTCL-SLDC and STU	YES	NO	YES

**Reconciliation Between Open Access department of ERLDC and Applicants**

Sl. No.	Applicants Name	Quarter-I	Quarter-II	Quarter-III
	Date of Issuance	25-07-2018	15-10-2018	17-01-2019
1	Calcutta Electric Supply Company	YES	NA	NA
2	Jindal India Thermal Power Limited	YES	NO	YES
3	Jharkhand Urja Vitaran Nigam Limited	NO	NO	NO
4	West Bengal State Distribution Company Limited	YES	NO	NO



## Annexure - XXIX

**Current Status of Letter of Credit (LC) amount against DSM charges for ER constituents***Figures in Lacs of Rupees*

SI No	ER Constituents	No. of weeks in which Deviation Charge payable	No of times payment was delayed during 2017-18	Total Deviation charges payable to pool during 2017-18	Average weekly Deviation Charge liability	LC Amount	Due date of expiry	Remarks
					(C)/52 weeks			
		(A)	(B)	(C)	(D)	(E)	(F)	(G)
1	JUVNL	50	50	10486.92151	201.67157	221.83872	Expired on 31.01.2018	Letter Issued but Not Renewed
2	SIKKIM	26	26	577.40815	11.10400	12.21440	Expired on 07.03.2018	Letter Issued but Not Renewed
3	BSPHCL	48	48	12297.15842	236.48382	260.13220	Expired on 16.11.2018	Letter Issued but Not Renewed
4	NVVN(IND-NEP)	36	7	2742.53984	52.74115	58.01527	Expired on 26.09.2018	Letter Issued but Not Renewed
5	APNRL	18	16	307.81318	5.91948	6.51143	Expired on 31.12.2018	Letter Issued but Not Renewed
6	IND-BARATH	47	47	107.23938	2.06230	2.26853	Not Opened	Not Opened
7	SHIGA ENERGY(TASHIDING)	25	15	148.94874	2.86440	3.15084	Not Opened	Not Opened
8	JLHEP (DANS ENERGY)	37	24	652.25964	12.54345	13.79780	30.11.2019	Opened for 13.79780 Lacs
9	JITPL	18	3	656.5622	12.62620	13.88882	31.03.2019	Opened for 13.88882 Lac
10	GMR	21	10	257.62983	4.95442	5.44986	18.04.2019	Opened for 7.62525 Lacs
11	MPL	12	2	148.83104	2.86214	3.14835	31.03.2019	Opened for 3.14835 Lac
12	CHUZACHEN	9	4	43.51171	0.83676	0.92044	31.03.2019	Opened for 0.92044
13	TPTCL	49	7	2092.89162	40.24792	44.27271	31.03.2019	Opened for 112.03686 Lacs
14	BRBCL	21	4	198.25119	3.81252	4.19378	30.04.2019	Opened for 4.19378 Lacs
15	TEESTA-III(TUL)	12	2	1039.16725	19.98399	21.98238	05.06.2019	Opened for 21.98238 Lacs
16	SNEHA KINETIC(DIKCHU)	9	7	53.96014	1.03770	1.14146	20.05.2019	Opened for 1.14146 Lacs

## Annexure-XXX

List of Meters and Location for AMR 4th Phase implementation

S.No	MAKE	Meter Serial No	LOCATION		S.No	MAKE	Meter Serial No	LOCATION	
1	L&T	NP-7885-A	LAKHISARAI(PG)		133	GENUS	ER-1135-A	BERHAMPORE(PG)	
2	L&T	NP-7886-A			134	GENUS	ER-1140-A	BANKA(PG)	
3	L&T	NP-7429-A			135	GENUS	ER-1349-A		
4	L&T	NP-7429-A			136	GENUS	ER-1347-A		
5	L&T	NP-7887-A			137	GENUS	ER-1350-A		
6	L&T	NP-7430-A			138	GENUS	ER-1341-A		
7	L&T	NP-7888-A			139	GENUS	ER-1350-A		
8	L&T	NP-7431-A			140	GENUS	ER-1341-A		
9	GENUS	ER-1433-A			141	GENUS	ER-1015-A	ANGUL(PG)	
10	GENUS	ER-1346-A			142	GENUS	ER-1016-A		
11	GENUS	ER-1104-A	143		GENUS	ER-1085-A			
12	GENUS	ER-1146-A	144		GENUS	ER-1087-A			
13	GENUS	ER-1005-A	145		GENUS	NP-7947-A			
14	GENUS	ER-1006-A	146		GENUS	ER-1554-A			
15	GENUS	ER-1002-A	147		GENUS	ER-1557-A			
16	GENUS	ER-1004-A	148		GENUS	ER-1110-A	BIRPARA(PG)		
17	GENUS	ER-1044-A	149		GENUS	ER-1041-A	CHAIBASA(PG)		
18	GENUS	ER-1047-A	150		GENUS	ER-1415-A			
19	GENUS	ER-1048-A	151		GENUS	ER-1420-A	BIRPARA(WB)		
20	GENUS	ER-1049-A	152		GENUS	ER-1079-A	BARIAPDA(PG)		
21	GENUS	ER-1465-A	153		GENUS	ER-1594-A	BARH(NTPC)		
22	GENUS	ER-1463-A	154		GENUS	ER-1446-A	JAMSHEDPUR(PG)		
23	GENUS	ER-1469-A	155		GENUS	ER-1220-A	RANGPO(PG)		
24	GENUS	ER-1467-A	156		GENUS	ER-1468-A	KISHANGANJ(PG)		
25	GENUS	ER-1473-A	157		GENUS	ER-1153-A			
26	GENUS	ER-1474-A	158		GENUS	ER-1160-A			
27	GENUS	ER-1475-A	159		GENUS	ER-1293-A			
28	GENUS	ER-1476-A	160		GENUS	ER-1296-A			
29	GENUS	ER-1492-A	161		GENUS	ER-1159-A			
30	GENUS	ER-1494-A	162		GENUS	ER-1154-A			
31	GENUS	ER-1532-A	163		GENUS	ER-1437-A			
32	GENUS	ER-1498-A	164		GENUS	ER-1438-A	MALDA(PG)		
33	GENUS	ER-1046-A	165		GENUS	ER-1531-A			
34	GENUS	ER-1088-A	166		GENUS	ER-1536-A	MEJIA(DVC)		
35	GENUS	ER-1089-A	167		GENUS	ER-1008-A			
36	GENUS	ER-1233-A	168		GENUS	ER-1031-A	MPL		
37	GENUS	ER-1240-A	169		GENUS	ER-1122-A			
38	GENUS	ER-1210-A	170		GENUS	ER-1123-A			
39	GENUS	ER-1207-A	171		GENUS	ER-1124-A			
40	GENUS	ER-1216-A	172		GENUS	ER-1129-A			
41	GENUS	ER-1219-A	173		GENUS	ER-1418-A	NABINAGAR(BRBCL)		
42	GENUS	ER-1213-A	174		GENUS	ER-1414-A			
43	GENUS	ER-1214-A	175		GENUS	ER-1281-A			
44	GENUS	ER-1094-A	176		GENUS	ER-1299-A			
45	GENUS	ER-1097-A	177		GENUS	ER-1292-A			
46	GENUS	ER-1091-A	178		GENUS	ER-1294-A			

47	GENUS	ER-1095-A	KISHANGANJ(BSPTCL)
48	GENUS	ER-1025-A	
49	GENUS	ER-1024-A	
50	GENUS	ER-1295-A	KISHANGANJ(BSPTCL)
51	GENUS	ER-1158-A	
52	GENUS	ER-1156-A	
53	GENUS	ER-1157-A	
54	GENUS	ER-1001-A	NEW TOWN(WB)
55	GENUS	ER-1009-A	KLC BANTALA(WB)
56	GENUS	ER-1052-A	OPGC
57	GENUS	ER-1027-A	
58	GENUS	ER-1112-A	
59	GENUS	ER-1026-A	
60	GENUS	ER-1030-A	
61	GENUS	ER-1053-A	
62	GENUS	ER-1066-A	
63	GENUS	ER-1068-A	
64	GENUS	ER-1060-A	TEESTA-III
65	GENUS	ER-1456-A	
66	GENUS	ER-1541-A	
67	GENUS	ER-1542-A	
68	GENUS	ER-1546-A	
69	GENUS	ER-1543-A	
70	GENUS	ER-1519-A	
71	GENUS	ER-1545-A	
72	GENUS	ER-1547-A	
73	GENUS	ER-1450-A	
74	GENUS	ER-1549-A	
75	GENUS	ER-1548-A	MOTIHARI(BSPTCL)
76	GENUS	ER-1250-A	
77	GENUS	ER-1245-A	MOTIPUR(BSPTCL)
78	GENUS	ER-1286-A	
79	GENUS	ER-1288-A	ATRI(GRIDCO)
80	GENUS	ER-1111-A	
81	GENUS	ER-1007-A	RAXAUL(BSPTCL)
82	GENUS	ER-1248-A	
83	GENUS	ER-1249-A	SAMANGARA(GRIDCO)
84	GENUS	ER-1113-A	
85	GENUS	ER-1073-A	SAMASTIPUR(BSPTCL)
86	GENUS	ER-1223-A	
87	GENUS	ER-1227-A	BETIAH(BSPTCL)
88	GENUS	ER-1173-A	
89	GENUS	ER-1116-A	BHOGRAI(GRIDCO)
90	GENUS	ER-1114-A	JALESWAR(GRIDCO)
91	GENUS	ER-1127-A	SUBHASHGRAM(WBS)
92	GENUS	ER-1003-A	
93	GENUS	ER-1131-A	SAGARDIGHI(WB)
94	GENUS	ER-1132-A	
95	GENUS	ER-1134-A	
96	GENUS	ER-1520-A	
97	L&T	LT-0312-A	RAJARAHAT(PG)
98	GENUS	ER-1451-A	
99	GENUS	ER-1453-A	LAUKAHI(BSPHCL)
100	GENUS	ER-1253-A	
101	GENUS	ER-1409-A	
102	GENUS	ER-1373-A	

29 NEW LOCATIONS WITH 132 METERS

179	GENUS	ER-1461-A	NEW MELLI(PG)
180	GENUS	ER-1470-A	
181	GENUS	ER-1491-A	DURGAPUR(PG)
182	GENUS	ER-1496-A	
183	GENUS	ER-1298-A	RAMCHANDARPUR(JUSNL)
184	GENUS	ER-1020-A	RENGALI(PG)
185	GENUS	ER-1402-A	RANCHI(PG)
186	GENUS	ER-1083-A	BIDHANAGAR(WB)
187	GENUS	ER-1012-A	SUNDERGARH(PG)
188	GENUS	ER-1093-A	
189	GENUS	ER-1100-A	
190	GENUS	ER-1019-A	
191	GENUS	ER-1118-A	
192	GENUS	ER-1022-A	
193	GENUS	ER-1062-A	
194	GENUS	ER-1023-A	
195	GENUS	ER-1117-A	
196	GENUS	ER-1119-A	
197	GENUS	ER-1021-A	
198	GENUS	ER-1067-A	
199	GENUS	ER-1061-A	SILIGURI(PG)
200	GENUS	ER-1070-A	
201	GENUS	ER-1065-A	PUSAULI(PG)
202	GENUS	ER-1064-A	
203	GENUS	ER-1500-A	RANCHI NEW(PG)
204	GENUS	ER-1493-A	
205	GENUS	ER-1217-A	PURNEA(PG)
206	GENUS	ER-1218-A	
207	GENUS	ER-1318-A	PATNA(PG)
208	GENUS	ER-1319-A	
209	GENUS	ER-1372-A	PANDIABILI(PG)
210	GENUS	ER-1379-A	
211	GENUS	ER-1378-A	PANDIABILI(PG)
212	GENUS	ER-1236-A	
213	GENUS	ER-1237-A	PATNA(PG)
214	GENUS	ER-1221-A	
215	GENUS	ER-1230-A	PATNA(PG)
216	GENUS	ER-1371-A	
217	GENUS	ER-1355-A	PATNA(PG)
218	GENUS	ER-1358-A	
219	GENUS	ER-1436-A	PATNA(PG)
220	GENUS	ER-1359-A	
221	GENUS	ER-1351-A	PATNA(PG)
222	GENUS	ER-1352-A	
223	GENUS	ER-1231-A	PATNA(PG)
224	GENUS	ER-1232-A	
225	L&T	NP-8862-A	PATNA(PG)
226	GENUS	ER-1311-A	
227	GENUS	ER-1407-A	PATNA(PG)
228	GENUS	ER-1314-A	
229	GENUS	ER-1408-A	PATNA(PG)
230	GENUS	ER-1098-A	
231	GENUS	ER-1591-A	PATNA(PG)
232	GENUS	ER-1583-A	
233	GENUS	ER-1586-A	PATNA(PG)
234	GENUS	ER-1587-A	

25 OLD LOCATIONS WITH 124 METERS

103	GENUS	ER-1377-A	KHIZIRSARAI(BSPHCL)
104	GENUS	ER-1584-A	KEONJHAR(GRIDCO)
105	GENUS	ER-1592-A	
106	GENUS	ER-1138-A	GOKARNA(WB)
107	GENUS	ER-1133-A	
108	GENUS	ER-1222-A	DARBHANGA(BSPTCL)
109	GENUS	ER-1224-A	
110	GENUS	ER-1195-A	
111	GENUS	ER-1192-A	
112	GENUS	ER-1197-A	
113	GENUS	ER-1196-A	
114	GENUS	ER-1199-A	
115	GENUS	ER-1193-A	
116	GENUS	ER-1191-A	
117	GENUS	ER-1155-A	
118	GENUS	ER-1206-A	
119	GENUS	ER-1152-A	
120	GENUS	ER-1201-A	
121	GENUS	ER-1205-A	
122	GENUS	ER-1202-A	
123	GENUS	ER-1204-A	
124	GENUS	ER-1434-A	
125	GENUS	ER-1431-A	
126	GENUS	ER-1432-A	
127	GENUS	ER-1203-A	
128	GENUS	ER-1435-A	DALTONGANJ(PG)
129	GENUS	ER-1198-A	DALTONGANJ(JUVNL)
130	GENUS	ER-1194-A	
131	GENUS	ER-1344-A	BEGUSARAI(BSPTCL)
132	GENUS	ER-1342-A	

235	GENUS	ER-1588-A	
236	GENUS	ER-1590-A	
237	GENUS	ER-1552-A	
238	GENUS	ER-1551-A	KEONJHAR(PG)
239	GENUS	ER-1263-A	
240	GENUS	ER-1170-A	
241	GENUS	ER-1262-A	
242	GENUS	ER-1261-A	
243	GENUS	ER-1375-A	
244	GENUS	ER-1380-A	
245	GENUS	ER-1163-A	
246	GENUS	ER-1416-A	
247	GENUS	ER-1419-A	
248	GENUS	ER-1411-A	
249	GENUS	ER-1448-A	
250	GENUS	ER-1449-A	
251	GENUS	ER-1442-A	
252	GENUS	ER-1447-A	GAYA(PG)
253	GENUS	ER-1582-A	
254	GENUS	ER-1575-A	
255	GENUS	ER-1573-A	
256	GENUS	NP-7919-A	BOLANGIR(PG)
TOTAL METERS = 256			

**AMR Phase-1 AMC Details of all Sub Stations**
**Annexure-XXXI**

SL No	State	Sub Station	Utilities	TOC Date	TOC Month	AMC End Date	Total Meter
1	West Bengal	DSTPS	DVC	15-Mar-14	Mar-14	Mar-19	78
2	Jharkhand	Jamshedpur	PG	30-Mar-14	Mar-14	Mar-19	
3	West Bengal	Jeerat	WBSEB	15-Mar-14	Mar-14	Mar-19	
4	West Bengal	K'neswari	DVC	30-Mar-14	Mar-14	Mar-19	
5	West Bengal	Kolaghat	DVC	15-Mar-14	Mar-14	Mar-19	
6	West Bengal	Maithon	DVC	24-Mar-14	Mar-14	Mar-19	
7	West Bengal	Maithon	PG	30-Mar-14	Mar-14	Mar-19	
8	West Bengal	Malda	WBSEB	30-Mar-14	Mar-14	Mar-19	
9	West Bengal	Mejia	DVC	30-Mar-14	Mar-14	Mar-19	
10	Jharkhand	Ramchandrapur	JSEB	30-Mar-14	Mar-14	Mar-19	
11	West Bengal	Siliguri	PG	31-Mar-14	Mar-14	Mar-19	
12	West Bengal	Subhasgram	PG	30-Dec-13	Mar-14	Mar-19	
13	West Bengal	Waria	DVC	30-Mar-14	Mar-14	Mar-19	
14	Jharkhand	Barhi	DVC	30-Apr-14	Apr-14	Apr-19	89
15	Odisha	Baripada	PG	15-Apr-14	Apr-14	Apr-19	
16	West Bengal	Bidhannagar	WBSEB	15-Apr-14	Apr-14	Apr-19	
17	West Bengal	Binaguri	PG	15-Apr-14	Apr-14	Apr-19	
18	West Bengal	Birpara	WBSEB	15-Apr-14	Apr-14	Apr-19	
19	West Bengal	Birpara	PG	15-Apr-14	Apr-14	Apr-19	
20	Jharkhand	Chandil	JSEB	30-Apr-14	Apr-14	Apr-19	
21	Jharkhand	Garwa	JSEB	30-Apr-14	Apr-14	Apr-19	
22	Jharkhand	Hatia	JSEB	30-Apr-14	Apr-14	Apr-19	
23	Jharkhand	Jamshedpur	DVC	30-Apr-14	Apr-14	Apr-19	
24	West Bengal	Kalimpong	WBSEB	30-Apr-14	Apr-14	Apr-19	
25	West Bengal	Maithon RB	MPL	30-Apr-14	Apr-14	Apr-19	
26	Jharkhand	Manique	DVC	30-Apr-14	Apr-14	Apr-19	47
27	SIKKIM	Melli	SIKKIM	30-Apr-14	Apr-14	Apr-19	
28	West Bengal	NBU	WBSEB	15-Apr-14	Apr-14	Apr-19	
29	West Bengal	Sagardihi	WBSEB	15-Apr-14	Apr-14	Apr-19	
30	West Bengal	Teesta	NHPC	30-Apr-14	Apr-14	Apr-19	
31	West Bengal	Dalkhola	WBSEB	30-May-14	May-14	May-19	
32	Jharkhand	Deogarh	JSEB	15-May-14	May-14	May-19	
33	Jharkhand	Dhanbad	DVC	15-May-14	May-14	May-19	
34	Jharkhand	Jamtara	JSEB	15-May-14	May-14	May-19	
35	Odisha	Joda	GRIDCO	30-May-14	May-14	May-19	
36	Bihar	Kishanganj	BSEB	30-May-14	May-14	May-19	
37	West Bengal	Parulia	DVC	30-May-14	May-14	May-19	67
38	Jharkhand	Patratu	DVC	15-May-14	May-14	May-19	
39	Bihar	Purnea	BSEB	30-May-14	May-14	May-19	
40	Bihar	Purnea	PG	30-May-14	May-14	May-19	
41	West Bengal	Rammam	WBSEB	30-May-14	May-14	May-19	
42	SIKKIM	Rangit	NHPC	30-May-14	May-14	May-19	
43	West Bengal	Santalidih	WBSEB	30-May-14	May-14	May-19	
44	Jharkhand	Tenughat	JSEB	15-May-14	May-14	May-19	
45	Odisha	Jindal	GRIDCO	30-May-14	May-14	May-19	
46	Jharkhand	Japla	JSEB	15-May-14	May-14	May-19	
47	Bihar	Arah	BSEB	15-Jun-14	Jun-14	Jun-19	
48	Bihar	Arah	PG	15-Jun-14	Jun-14	Jun-19	
49	Odisha	Baripada	GRIDCO	30-Jun-14	Jun-14	Jun-19	67
50	Odisha	Budhipadar	GRIDCO	15-Jun-14	Jun-14	Jun-19	
51	Bihar	Dumraon	BSEB	15-Jun-14	Jun-14	Jun-19	
52	West Bengal	Malda	PG	30-Jun-14	Jun-14	Jun-19	
53	Odisha	Mendashal	GRIDCO	15-Jun-14	Jun-14	Jun-19	
54	Odisha	M'mundali	GRIDCO	15-Jun-14	Jun-14	Jun-19	
55	Odisha	Rengali	GRIDCO	15-Jun-14	Jun-14	Jun-19	
56	Odisha	Rengali	PG	15-Jun-14	Jun-14	Jun-19	
57	Odisha	Rourkela	GRIDCO	15-Jun-14	Jun-14	Jun-19	
58	Odisha	Rourkela	PG	15-Jun-14	Jun-14	Jun-19	
59	Odisha	Sterlite	IPPR	15-Jun-14	Jun-14	Jun-19	
60	Odisha	Tarkera	GRIDCO	15-Jun-14	Jun-14	Jun-19	
61	Bihar	Biharshariff	BSEB	15-Jul-14	Jul-14	Jul-19	67
62	Bihar	Dehri	BSEB	15-Jul-14	Jul-14	Jul-19	
63	Jharkhand	Goelkera	JSEB	30-Jul-14	Jul-14	Jul-19	
64	Bihar	Kahalgaoon	BSEB	30-Jul-14	Jul-14	Jul-19	
65	Bihar	Mohania	BSEB	15-Jul-14	Jul-14	Jul-19	
66	Bihar	Rajgir	BSEB	15-Jul-14	Jul-14	Jul-19	

67	Bihar	Sabour	BSEB	15-Jul-14	Jul-14	Jul-19		
68	Bihar	Sonengar	BSEB	15-Jul-14	Jul-14	Jul-19		
69	Bihar	Sultanganj	BSEB	15-Jul-14	Jul-14	Jul-19		
70	Jharkhand	Kendoposi	JSEB	30-Jul-14	Jul-14	Jul-19		
71	Bihar	Khagaul	BSEB	15-Jul-14	Jul-14	Jul-19	34	
72	Bihar	Kanti	BSEB	15-Jul-14	Jul-14	Jul-19		
73	Odisha	Bolangir	PG	30-Aug-14	Aug-14	Aug-19		
74	Odisha	Indravati P/H	GRIDCO	15-Aug-14	Aug-14	Aug-19		
75	Odisha	Indravati	PG	15-Aug-14	Aug-14	Aug-19		
76	Odisha	Jeypore	GRIDCO	15-Aug-14	Aug-14	Aug-19		
77	Odisha	Jeypore	PG	15-Aug-14	Aug-14	Aug-19		
78	Odisha	Keonjhar	PG	30-Aug-14	Aug-14	Aug-19		
79	Jharkhand	Lalmatia	JSEB	15-Aug-14	Aug-14	Aug-19	23	
80	Odisha	Rairangpur	GRIDCO	15-Aug-14	Aug-14	Aug-19		
81	Odisha	Talcher	NTPC	15-Sep-14	Sep-14	Sep-19		
82	West Bengal	Durgapur	PG	30-Nov-14	Nov-14	Nov-19	12	
83	Odisha	Balasore	GRIDCO	30-Dec-14	Dec-14	Dec-19	199	
84	Bihar	Barh	NTPC	30-Dec-14	Dec-14	Dec-19		
85	Bihar	Biharshariff	PG	15-Dec-14	Dec-14	Dec-19		
86	West Bengal	Farakka	NTPC	31-Dec-14	Dec-14	Dec-19		
87	Sikkim	Gangtok	PG	30-Dec-14	Dec-14	Dec-19		
88	Bihar	Gaya	PG	30-Dec-14	Dec-14	Dec-19		
89	Bihar	Kahalgaoon	NTPC	30-Dec-14	Dec-14	Dec-19		
90	Bihar	Karmanasha	BSEB	15-Dec-14	Dec-14	Dec-19		
91	Bihar	Mzaffarpur	PG	30-Dec-14	Dec-14	Dec-19		
92	Bihar	Patna	PG	30-Dec-14	Dec-14	Dec-19		
93	Jharkhand	Patratu	JSEB	15-Dec-14	Dec-14	Dec-19		
94	Jharkhand	Ranchi	PG	30-Dec-14	Dec-14	Dec-19		
95	Bihar	Pusauli	PG	21-Jan-15	Jan-15	Jan-20		16
96	West Bengal	Berhampore	PG	30-May-15	May-15	May-20		
97	West Bengal	Dalkhola	PG	30-May-15	May-15	May-20		
98	Bihar	Fatua	BSEB	30-May-15	May-15	May-20		
99	Bihar	Hajipur	BSEB	30-May-15	May-15	May-20	16	
100	Bihar	Jagdishpur	BSEB	30-May-15	May-15	May-20		
101	Bihar	Sipara	BSEB	30-May-15	May-15	May-20		
102	Odisha	Adhunik	IPPR	30-Jun-15	Jun-15	Jun-20		
103	Odisha	Angul	PG	30-Jun-15	Jun-15	Jun-20		
104	Bihar	Banka	BSEB	30-Jun-15	Jun-15	Jun-20		
105	Bihar	Bodhgaya	BSEB	30-Jun-15	Jun-15	Jun-20		
106	Sikkim	Chuzachen	IPPR	30-Jun-15	Jun-15	Jun-20		
107	Odisha	GMR	GRIDCO	30-Jun-15	Jun-15	Jun-20	48	
108	Odisha	Jindal	IPPR	30-Jun-15	Jun-15	Jun-20		
109	West Bengal	Kharagpur	WBSEB	30-Jun-15	Jun-15	Jun-20		
110	Jharkhand	Koderma	DVC	30-Jun-15	Jun-15	Jun-20		
111	West Bengal	Kurseong	WBSEB	30-Jun-15	Jun-15	Jun-20		
112	Bihar	Madhepura	BSEB	30-Jun-15	Jun-15	Jun-20		
113	Sikkim	Ravangla	SIKKIM	30-Jun-15	Jun-15	Jun-20		
114	Odisha	RTPS	DVC	30-Jun-15	Jun-15	Jun-20		
115	Odisha	Sundergarh	PG	30-Jun-15	Jun-15	Jun-20		
116	Jharkhand	TISCO	DVC	30-Jun-15	Jun-15	Jun-20		
							656	