



AGENDA
FOR
192nd OCC MEETING

Date: 21.06.2022
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700033

EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 192ND OCC MEETING TO BE HELD ON 21.06.2022 (TUESDAY) AT 09:30 HRS

PART – A

ITEM NO. A.1: Confirmation of Minutes of 191st OCC Meeting held on 20th May 2022 through MS Teams online platform.

The minutes of 191st Operation Coordination sub-Committee meeting held on 20.05.2022 was circulated vide letter dated 26.05.2022.

Members may confirm the minutes of 191st OCC meeting.

PART B: ITEMS FOR DISCUSSION

ITEM NO. B.1: Reliability of transmission system for safe and unrestricted evacuation of power from Tala HEP

400kV Tala Binaguri-1 line has been out since 4th June 2021 due to flashover in outdoor cable termination and 400kV Tala Binaguri-2 has been out since 17th March 2022 Fire outbreak at R-Phase of XLPE cable termination at Tala Hydro plant.

It is noted that only two number of 400 kV twin moose lines (thermal limit equals 874 MV A each) for evacuation of Tala generation are in service. The generation of Chukha hydro plant is also indirectly shared by 400kV Tala-Binaguri-3 (via Malbase). Last year the generation from Tala was approx. 1100 MW in the end of May. The generation of complete Tala hydroelectric plant during May -Sep 2021 is enclosed. The high generation was sustained till September end. It is requested to kindly share the anticipated generation from Tala HEP in the ensuing months of June - September 2022.

Under the circumstances, unless the other two 400kV lines from Tala to Binaguri are restored, availability of only two number of 400 kV lines for evacuation of approx. 1100 MW may lead to violation of N-1 reliability criteria. Any contingency involving N-1-1 may cause complete blackout of Tala hydro plant which would eventually lead to spillage of water and loss of generation.

Bhutan may update.

ITEM NO. B.2: Requirement of cold spares for ICTs in Eastern Region to meet any exigency.

1. As per CEA guidelines for availability of spares and inventories for power transmission system (transmission lines & substation/switchyard) assets, adequate cold spare for ICTs has to be maintained at regional as well as state level. Key guidelines for determining spare as per the guidelines are provided below:

- At present PGCIL along with multiple ISTS licensee is operating and maintaining most of the Inter-State Transmission System (ISTS) assets. The transmission lines of above power utilities are spread across more than one states in the country.
- Regional level spare: For regional power utilities (PGCIL & Transmission licensees), the spare at regional level would be required for these assets. These spares should be increased, optimized and limited to double the quantities mentioned for State Level based on transmission line assets in that region in order to avoid unnecessary storage of inventories.
- State level spare: The spares at 'State level' can be maintained at a centralized location which could be conveniently accessed to meet the emergency requirement of various substations/switchyards spread across the State.
- Requirement of state level: ICT and Shunt Reactor: One number single phase/three-phase unit of each rating, as applicable
- Utility for State level spare: If there are five or more substations/switchyards (of same voltage class) of a utility in a State, the 'State Level' spares shall be maintained by the utility.
- Spare at state level by utility having spread in different states: If any utility has five or more substations/switchyards (of same voltage class) spread across different States, spare recommended for 'State Level' shall be maintained for these cluster of substations/switchyards at one or more appropriate locations in any of these States.
- Higher spare for areas having higher probability of damage with natural disaster events: The quantities of spares specified shall be applicable to transmission lines and substations / switchyards in all areas including cyclone / whirlwind / tornado prone areas. However, higher quantity of spares (for some spare items) shall be kept for cyclone / whirlwind / tornado prone areas as indicated in guideline.
- Support between utilities for sharing of spare and associated commercial mechanism: There may be cases, where the extent of damage is so much that specified minimum quantum of spares/inventories may be inadequate in meeting the eventuality. In such cases, support from central power utilities (PGCIL/NTPC/DVC etc.)/transmission licensees/neighboring State utilities may be requested. The financial modalities for providing spares to other utility shall be mutually decided between the utilities.
- Replenishment of Consumed spare: Replenishment of the consumed mandatory spares shall be made at the earliest but in any case, not later than six months from the date of its consumption depending on the criticality of equipment component/material.

With a significant rise in state demands and regional demand along with the number of ICTs, it would be desirable to have an adequate spare to improve reliability and resilience in case of any exigency. Recently, a substantial delay in restoration of damaged ICTs in eastern region has been observed.

Thus, maintaining adequate regional and state level cold spare is important. Table 1-4 provides various details for deciding the requirement of regional and state level cold spare in Eastern region.

Table 1: State wise ICTs at various voltages in ER

State Wise ICT	315 MVA 400/220 kV	500 MVA 400/220 kV	315 MVA 400/132 kV	200 MVA 400/132 kV	270 MVA 400/132 kV	250 MVA 400/220 kV	1500 MVA 765/400 kV	255 MVA 765/132 kV	Cold Spare Availability
Bihar	6	27	3	15			5		
Jharkhand	15	6				1	2		
Sikkim	5				1				
Odisha	30	5					8	2	
West Bengal	38	5					4		

Table 2: Utility wise ICTs detail at various voltage level in ER

Utility	315 MVA 400/2 20 kV	500 MVA 400/2 20 kV	315 MVA 400/1 32 kV	200 MVA 400/1 32 kV	270 MVA 400/1 32 kV	250 MVA 400/2 20 kV	1500 MVA 765/4 00 kV	255 MVA 765/1 32 kV	Cold Spare Availabilit y
PGCIL	47	27	3				15		
Other ISTS (NKTL, PMJTL, PMTL, DMTCL)		8		2			4		
IPP (Dikchu)					1				
NTPC/NPGC/BRBCL	4			9				2	
WBSETCL/WBPDCL/CESC	22			4					
OPTCL/SEL	11	2							
DVC	10								
BGCL		4							
JUSNL/TTPS		2				1			

Table 3: Utility wise number of substations with ICTs in ER

Utility Substation with ICTs	Number of Substation
PGCIL ERTS 1	15
PGCIL ERST 2	8
PGCIL Odisha	10
WBSETCL	5
WBPDCL	2
OPTCL	5
BGCL	2
DVC	5
JUSNL	1
ISTS (NKTL/DMTCL/PMTL/PMJTL)	7
NTPC	7

Table 4: Spread of substations of various utilities in different states

State	PGCIL ERTS 1	PGCIL ERTS 2	PGCIL Odisha	DVC	WBSETCL	OPTCL	Other ISTS	BGCL	JUSNL	NTPC	Others
Bihar	9						4	2		4	
Jharkhand	6			3			1		1		
Sikkim		1									
Odisha			10			5				2	1
West Bengal		6		2 + 1 (MTPS)	5		2			1	2

Members may discuss.

2. In 16th ERPC Meeting held on 18.12.2010, ERPC approved the following requirements of spare transformers in Eastern Region to meet the need of member states:

400/220 kV, 2x315 MVA
220/132 kV, 2x160/150 MVA (as applicable)
132/66 kV, 1x50 MVA

The above ICTs had to be procured by Powergrid & install at their substation in Eastern Region.

Powergrid may update the present status of the above spare ICTs.

3. Diversion of 500 MVA ICT available in state pool of Eastern Region to OPTCL

To cater the growing demand in Duburi command area, Odisha had planned for a 3rd 500 MVA ICT at Duburi. The present loading during peak hours is 237 MW on each ICT. The industries connected at Duburi like Jindal, Visa, NINL, Rohit Ferrotech etc. have applied for enhancement of load from the Grid. With this drawl, the loading on each ICT will be around 270 MW each, which will not fulfil the N-1 criteria.

While the installation work was going on for the 3rd ICT at Duburi, the 2nd ICT at Meramundali was burned and the ICT at Duburi had to be diverted to Meramundali. So, at present Duburi is left with only two ICTs of 315 MVA each.

In the meantime, OPTCL has already initiated action for tendering of one no. 500 MVA ICT which will take more than one year to be available at site. Also, around 90% of the 3rd ICT bay work already completed. To meet this emergency situation and to supply additional power to the above industries, Odisha wants to utilize 500 MVA ICT from the pool of spares available at Pandiabili meant for eastern region on returnable basis. This was decided in CEA standing committee that every region will have a pool of spares and any stake holder can utilize during emergency.

Considering urgency, ERPC is requested to discuss the modalities and finalize the proposal at the earliest.

OPTCL may update. Members may discuss.

ITEM NO. B.3: Total Blackout of 400/220 KV Rourkela Sub-station on 31st May 2022.

At 11:09 Hrs. on 31.05.2022, both 400 kV Bus at Rourkela became dead while trying to open line isolator of 400 kV TSTPP-Rourkela-1 at Rourkela end. Teed protection operated, however, B-ph breaker of Talcher-1 at Rourkela was stuck, thereafter LBB operated which didn't function properly due to which all lines tripped from remote ends in Zone-2. Total power failure occurred at 400/220 kV Rourkela S/s. No load loss or generation loss occurred.

PGCIL and NTPC may update.

ITEM NO. B.4: Availability of ERS in the Eastern Region and update on the status by various utilities including inter-state and intra-state transmission licensees.

In line with CEA guidelines for the availability of spares and inventories for power transmission system (transmission lines & substation/switchyard) assets 2020 and the CEA disaster management plan for power sector 2021, adequate ERS is required to be maintained in ER grid for early restoration of transmission line due to any tower collapse. The Eastern region is prone to cyclones, Norwester/Kalbaisakhi localized storms, hilly terrain with landslides, floods, changes in river course, substation flooding, etc. due to which each year tower collapse occurs causing forced outages of transmission lines. This necessitates adequate ERS maintenance by various utilities in the eastern region for early restoration.

Present status available at ERLDC on ERS as collected during cyclone Yaas in 2021 is provided in the attached table. All transmission utilities are requested to kindly update the ERS availability

and any ERS which are already engaged.

Status Update by: PGCIL ERTS 1, PGCIL ERST 2, PGCIL Odisha, WBSETCL and OPTCL (if any ERS is already engaged then same may be put as remarks)

Utility to provide details of available ERS in the attached format:

- State-level: BSPTCL, BGCL, DVC, JUSNL, Sikkim power department (SPD)
- ISTS: Indigrid (OGPTL, PKTCL, ENICL), PGCIL Subsidiaries (CBPTCL, PMTL, PMJTL), Powerlink Transmission limited (PTL), DMTCL, Adani transmission (ATL, NKTL), TPTL

Table 1: ERS availability in ER (updated during Yaas cyclone preparedness 2021)

Sl	Utility	(For different voltage levels)	Number of ERS towers available	Location of ERS situated	Type of ERS (Suspension/ Tension/ any other)
1	OPTCL	400 kV	14	Mancheswar grid - 4 nos. (high Tech)	Details awaited
				Mancheswar store - 8 nos. (high tech)	Details awaited
				Mancheswar store - 2 nos. (Lindsey)	Details awaited
		220 kV	41	Budhipadar - 14 nos. (Lindsey)	Details awaited
				Mancheswar grid - 13 Nos. (Lindsey)	Details awaited
				Chatrapur - 14 nos. (Lindsey)	Details awaited
2	PGCIL ERTS 1	765 kV - 24 sets	24 Sets	GAYA	Suspension & Tension
		400 KV - 30 sets	30 Sets	Jamshedpur, Purnea, Lakhisarai	

3	Adani transmission limited (ATL)	400 KV	1 set (12 Column). Nos of ERS towers shall depend on line configuration, type of tower and extension of towers. Approximate 6 suspension towers/ set for 400kV D/C twin conductor.	Central India (Koradi, Maharashtra)	Modular aluminum guyed towers
4	PGCIL (Odisha)	400 KV ERS - 3	3	Rourkela	Suspension - 2 & Tension-1
		765 KV ERS - 24	24	Rengali	Suspension - 15 & Tension-9
5	PGCIL ERTS 2	400 KV	10 Set -400 KV Voltage level	Durgapur	7 Set-Suspension 03 Set-Tension
6	WBSETCL	400 KV	05+05set (for 400kV-6 available, for 220kV-8, for 132kV-10	at Arambagh & Gokarno	Details awaited

Members may discuss.

ITEM NO. B.5: Outage of Important Transmission System.

B5.1. 132kV Sagbari–Melli.

Sikkim vide mail dated 09.06.2021 updated the following status:

- 1) In loc 82,83 & 84 we have low ground clearance which need hill cutting but if needed TL can be charged after putting temporarily barbed wire fencing.
- 2) In loc 98-99 a house had been constructed just below the line and warning had been issued to the owner for not to do vertical extension of the house till any such arrangement is made.
- 3) In loc 116 & 117 land owner demanding for intermediate tower and not allowing for us to clear the jungles.
- 4) Loc 128 is in dilapidated condition due to sinking effect posing threat to lives and properties. Local public are asking to shift the tower in safe place before restoration of supply in the TL.
- 5) 80% of jungle clearance has been completed and remaining 20% is in Forest area most of it is under west district and waiting for permission from Forest department.
- 6) The delay in obtaining permission for following trees in forest land is that it cannot be ascertained whether FCA clearance during construction of TL was obtained as the record is not available either in power department or in DFO Office. Regarding this it had been told by ERPC that once obtaining environment clearance at the time of construction there need not to take permission for further clearance of ROW from Forest dept and this matter is been conveyed to the Forest department but they informed us as per Forest Act of Sikkim state permission has to be obtained for fresh felling with payment of compensation. File for approval is being send to conservator of Forest from DFO on 10/6/2021.

In the 191st OCC Meeting, Sikkim representative submitted that the 132 KV Sagbari-Melli line would be charged within 6 months.

OCC advised Sikkim to submit progress report of the work on monthly basis.

Sikkim may update.

B5.2. 440/220kV 315 MVA ICT 2 at Meramundali:

400KV/220KV 315 MVA ICT 2 at Meramundali tripped on 21-02-2021 due to fire hazard at Meramundali SS. The ICT is under outage since then. Meramundali S/S is serving the important load of the Odisha. Long outage of an ICT at such crucial S/S may hamper the reliability of the Grid.

In the 190th OCC meeting, OPTCL representative submitted that all the erection works had been completed except those of header pipes due to probable mismatch in them. The work would be completed after the new header pipes are received.

Further, two phases of nitrogen purging have been completed and the third is under progress.

The commissioning work would be completed by 15th May 2022.

In the 191st OCC Meeting, OPTCL representative submitted that 4 nos. of matching short pieces are yet to be received from OEM. The work would be completed after the materials are received.

OPTCL may update.

ITEM NO. B.6: Agenda by Powergrid.

B.6.1. Technical Overview of AMR data center hardware and software application refreshment program.

In continuation with agenda point no - B15 of 190th OCC, POWERGRID after detail deliberation, taken fresh offer from M/S. TCS. As per latest offer, total cost of upgradation will be Rs. 1,39,49,793/- (Excluding GST). Further meeting with ERLDC and TCS also conducted on TS of H/W & S/W upgradation on 12.05.2022.

ERLDC may provide go ahead technically for the program.

In view of above, it is proposed to provide in-principal approval to POWERGRID such that LOA can be issued for above work to TCS on Single Tender (ST) basis.

The technical document and proposal are provided at **Annexure B.6.1.**

In the 191st OCC Meeting, West Bengal representative expressed that they would inform their views to ERPC within 5 days after consulting with their higher authority.

OCC agreed with the proposal of Powergrid and gave an in-principle approval for the program and referred it to the next Commercial Committee Meeting.

Powergrid may update.

B.6.2. LAN integration of DCU's installed at various SS of ER for SEM data transmission to ERLDC-Cost proposal.

In continuation with agenda B14 of 190th OCC meeting regarding cost approval for further LAN integration of various DCU's installed across various SS of Eastern Region, followings may be noted: -

1. As per original LOA- 40 Locations integrated.
2. As per amendment of LOA- 69 Locations integrated.

TCS has successfully completed all the 109 LAN integration work under scope vide LOA (Ref: ER-II/KOL/CS/I-2446/P-2420/AMEND-II/4374) dated- 05/07/2021. Now, the following 63 locations where LAN setup is present and AMR LAN integration is possible using that channel. Among these 41 locations can be integrated as regular connection through Normal CAT-6 cabling and TCS has agreed to carry out the work on prevailing rate of existing LOA and further 22 locations require additional financial implication in regard to converter and Optical cables. Further 08 locations are yet to provide any information about connectivity but included in totality. Total location count comes to 71. Location details attached separately.

Total Cost Calculation as below, based on TCS's proposal submitted.

Item	Type	Qty	Unit Price	Total Price (INR)
LAN Integration Service at Sub Station**	Services	71	15564	11,05,044.00
Additional Charges for LAN Integration at Kiosk Sites	Services	22	17830	3,92,260.00
Fiber Optical Cable with Converters and other accessories.	HW Supply	18000	94.50	17,01,000.00

Total Price: 31,98,304/- INR (without GST).

** Unit price for LAN Integration Service is same as per the existing LOA of AMR Phase-4.

In view of above, it is proposed to provide in-principal approval to POWERGRID such that LOA can be issued for LAN integration to TCS on Single Tender (ST) basis on urgent basis.

The location details and Techno Commercial proposal are provided at **Annexure B.6.2**.

In the 191st OCC Meeting, Powergrid representative submitted that few locations in Jharkhand and Sikkim do not have fiber connectivity.

Sikkim representative submitted that fiber connectivity is available at Sagbari.

Jharkhand representative submitted that OPGW installation work is in progress in Chandil and Daltonganj S/s.

GMR representative agreed to provide the port opening details within 5 days.

West Bengal representative submitted that a separate meeting may be convened between the communication departments of WBSETCL, Powergrid, ERLDC and ERPC for further deliberation

in this regard.

OCC advised all the states to provide the port opening details to Powergrid at the earliest.

OCC further advised Powergrid to give the status update of LAN integration to ERPC on weekly basis.

OCC gave in-principle approval for the cost proposal of Rs. 31,98,304/- INR (without GST) and referred it to the next Commercial Committee Meeting.

Powergrid may update.

ITEM NO. B.7: Ensuring N-1 reliability criteria at 400/220 KV Subhashgram (PG) S/s.

400/220 kV Subhashgram (PG) substation is feeding to the major load centers in south Bengal. At present 5 numbers of 400/220 kV ICTs (4x315 MVA+1x500 MVA) having a total transformation capacity of 1760 MVA is installed at Subhashgram. However, total loading through ICTs is crossing 1500 MW on daily basis. It is pertinent to note that N-1 security criteria for ICTs is satisfied till the total drawl remains below 1300 MW. On exceeding the said limit, tripping of a single ICT may overload the four other ICTs which can lead to their cascade tripping, resulting in total black out of Subhashgram (PG) Substation feeding to extensive areas of South-24 parganas and Kolkata (CESC). In addition, 220 KV network connecting Rajarhat, Jeerat, Barasat, Kasba and adjoining stations can possibly trip on overload.

In this regard, a meeting was convened on 10.05.2022 by MS ERPC to discuss on the issue of violation of n-1 reliability criteria for 400/22 kV ICTs at Subhashgram (PG) S/s. In the meeting, it was agreed that an SPS will be implemented at Subhashgram (PG) considering the same load which are identified for 220 kV Subhashgram-EMSS D/C contingency.

In the 191st OCC Meeting, CESC representative submitted that a meeting was convened with Powergrid on 18.05.2022 to finalize the logic of the SPS scheme.

CESC representative submitted that as per the logic, SPS would operate when one of the transformers trips leading to simultaneous overloading of other transformers. The quantum required for load shedding would be decided by ERLDC on real time basis and further intimated to CESC.

ERPC representative was of the view that in case of operation of SPS the load shedding quantum should be triggered automatically instead of manual intervention.

OCC opined that a separate meeting would be convened to finalize the scheme and determine the load shedding quantum.

In this regard, a meeting was convened on 10.06.2022 between ERLDC, POWERGRID ERTS-II and CESC. In the meeting ERLDC proposed that after tripping of any one ICT and overload in the remaining transformer going above 110 % for 5 second then SPS shall operate and requisite load shedding of 200 MW to be done to reduce the loading of other available ICTs immediately within 110% of their rated loading (if required, additional load shed may be done manually to restrict the ICT loading to 100% on instruction from ERLDC).

CESC and Powergrid may update.

ITEM NO. B.8: Endangering Grid connectivity, security & stability of 400 KV Sundargarh-Raigarh LILO Ckt – 3 & 4 at tapping points near Sundergarh by M/s Vedanta Ltd, Jharsuguda along with violation of Grid discipline.

As per the agreement dated 22.12.2010 between M/s Vedanta Ltd. And Powergrid, the connectivity to Vedanta Ltd sub-station was carried out from LILO of 400 KV Sundargarh-Raigarh D/C line # 3 between Tower No – 834 (DD+0) & 835 (DD+0) and 400 KV Sundargarh-Raigarh D/C line # 4 between Tower No – 299 (DD+0) & new Vedanta Tower No-VL3 (DD+0) was done during the year 2011. This activity was taken up as per direction of CERC and instruction of ERLDC/WRLDC in order to charge the Vedanta switchyard at Jharsuguda for sending and receiving of power at Vedanta end with CTU transmission system.

After direct connectivity of Vedanta 400 KV sub-station with 765/400 KV sub-station of Powergrid at Sundergarh, the tapping points of LILO portion of line # 3 & # 4 was disconnected by M/s Vedanta Pvt. Ltd. In the year 2014 & 2017 respectively, without completion of direct connectivity for Powergrid, in above-mentioned LILO lines.

M/s Vedanta has dismantled all towers of LILO portion except 2 nos. of towers near each tapping point and left these 4 towers without any routine maintenance/watch & ward activity. At present there is no back support at tower no-VL2 and VL5 (**Annexure B.8**) As there is no watch and ward and routine maintenance work theft of tower members on these towers have become rampant, subsequently weakening the strength of towers which may lead to collapse of existing Vedanta towers as well as Powergrid towers, resulting interruption of power transfer between Eastern and Western Grid.

In this regard, the authority of M/s Vedanta has been informed many times verbally as well as in written communication for replenishment of all missing/hanging members and to provide backstay

(back support) for keeping the tower in safe condition and also to take urgent action for direct connectivity of both LILO points.

Some of the correspondences with the photographs of tower condition and record notes of discussion held on dt. 25.06.2020 and dt. 22.10.2021 have been provided at **Annexure B.8**.

Inspite of these correspondences and discussions with M/s Vedanta Ltd., since dt. 04.03.2019, neither any action has been taken nor any permanent connectivity solution has been implemented. The said LILO lines are in severe danger zone and power flow will be affected as stated.

In the 191st OCC Meeting, Powergrid representative requested for restoration of 400kV Sundargarh-Raigarh ckt- 3 & 4 to the configuration existed prior to LILO connectivity in order to avoid the situation of tower collapse which may lead to interruption of power transfer between Eastern and Western Grid.

Vedanta representative submitted that necessary budget approval for the aforesaid work had been taken and the work would be completed within 2 months.

Powergrid may update.

ITEM NO. B.9: Ensuring healthiness of ADMS.

Automatic demand management scheme (ADMS) is already commissioned in West Bengal, DVC and Jharkhand. Logic for ADMS is as implemented in these state is as follows.

SI No	State/Utility	Logic for ADMS operation	Implementation Date	Total Load connected in ADMS logic
1	Jharkhand	System Frequency < 49.9 Hz AND Deviation > 12 % or 25/50/75 MW. Block I, II & III feeders will be selected for load shedding depending on the O/D.	In service from 21st August 2019.	Total 90 MW
2	DVC	F <49.9 Hz AND deviation > 12 % or 150 MW	In service from 17.06.2016.	Total 281 MW
3	West Bengal	F <49.7 AND deviation > 12 % or 150 MW	In service from 25.11.16.	Total 225 MW

ADMS in WB

In the 191st OCC meeting ERLDC intimated that ADMS criteria was satisfied for 38 number of occasions for WB, out of which on 26 no of occasions no relief was observed. Further as desired in the meeting, ERLDC shared the detailed data with WB SLDC vide mail dated 20.05.2022 for analysis from their end. The response from WBSLDC is still awaited. In the month of May, the ADMS criteria satisfied for one occasion which is given below.

Date	Time Period	Frequency	Deviation (MW)
18.05.22	23:08-23:17	49.6	261

However, no information is received regarding operation of ADMS in West Bengal in May-2022 also.

Hence, West Bengal is requested to share the details of ADMS operation for the month of April and May-2022.

ADMS in Jharkhand

In 191st OCC meeting, Jharkhand representative submitted that ADMS did not operate due to unhealthy communication with some of the sub-stations. OCC advised Jharkhand to take necessary steps in order to ensure healthy communication links. In the month of May-2022 also the criteria for operation of ADMS of Jharkhand were satisfied for around 459 instances from 01.05.2022 to 29.05.2022 but no information received regarding operation of ADMS in Jharkhand.

Jharkhand may update the status of ADMS at present.

ADMS in DVC

From 01st May,2022 to 29th May,2022 the criteria for operation of ADMS of DVC satisfied for 27 instances. The instance where the ADMS operation criteria fulfilled for DVC is given below:

Date & Time	Actual	Schedule	Overdraw
10-05-2022 18:31	-1547.6	-1723.58	175.9801025
11-05-2022 23:08	-1703.76	-1862.36	158.5952148
12-05-2022 18:36	-979.208	-1688.25	709.0393677
12-05-2022 18:55	-966.517	-1686.62	720.1029663
12-05-2022 19:15	-969.002	-1685.16	716.1547241
13-05-2022 16:15	-1549.81	-1754.85	205.0428467
18-05-2022 00:34	-1545.75	-1717.43	171.6845703
18-05-2022 14:47	-1152.62	-1588.37	435.7495117
18-05-2022 15:20	-1099.14	-1682.37	583.2293701
18-05-2022 19:25	-1171.19	-1388.06	216.8713379
18-05-2022 20:52	-1233.5	-1460.37	226.8729248
18-05-2022 21:19	-1129.82	-1484.3	354.4798584
18-05-2022 22:13	-1197.49	-1491.99	294.503418
19-05-2022 00:04	-1050.62	-1341.16	290.5428467
19-05-2022 01:12	-1091.18	-1342.65	251.470459
19-05-2022 02:17	-1057.03	-1294.08	237.0560303
19-05-2022 22:34	-1194.79	-1479.35	284.5646973
20-05-2022 00:25	-1318.74	-1523.04	204.2976074
24-05-2022 14:56	-515.263	-1246.56	731.2921753
24-05-2022 15:13	-1386.67	-1588.74	202.0670166
24-05-2022 15:19	-1439.28	-1675.74	236.46521
25-05-2022 15:45	-1645.17	-1879.83	234.6580811
26-05-2022 23:06	-1675.16	-1893.13	217.9715576
27-05-2022 21:18	-1638.27	-1804.25	165.9812012

27-05-2022 23:06	-1339.91	-1701.38	361.4691162
28-05-2022 00:11	-1472.82	-1733.48	260.6611328
28-05-2022 22:29	-1636.55	-1786.7	150.1556396

However, no information was received from DVC regarding the operation of ADMS. In the 191st OCC meeting, OCC advised DVC to share the SCADA data and simulation report with ERPC and ERLDC. However, the report from DVC is still awaited.

DVC is requested to update the status of ADMS at present.

ITEM NO. B.10: Commissioning status of ADMS.

Automatic demand management scheme (ADMS) is already commissioned in West Bengal, DVC and Jharkhand. However, for Bihar and Odisha it is yet to be implemented, the last status as confirmed in the earlier meeting is as follows.

SI No	State/Utility	Logic for ADMS operation	Implementation status/target
1	Bihar	F <49.7 AND deviation > 12 % or 150 MW	1 st week of May 2022.
2	Odisha	1. System Frequency < 49.9 Hz 2. Odisha over-drawl > 150 MW 3. Discom over-drawl > 40 MW	15 th May 2022.

Bihar and Odisha may share the present status of implementation and share the reason for delay in implementation if any.

In the 190th OCC meeting, Odisha representative submitted that the ADMS would be operational by 15th May 2022.

Bihar representative submitted that ADMS would be operational by 1st week of May 2022.

In the 191st OCC Meeting, Bihar representative submitted that ADMS would be operational by last week of May 2022.

SLDC Odisha representative submitted that out of 88 stations, work has been completed in 69 stations and is expected to be operational by 24th June 2022.

Bihar and Odisha may update the status of the implementation of ADMS scheme.

ITEM NO. B.11: List of lines of Eastern Region violating N-1 security criteria.

The list of such lines for which necessary planning needs to be done to make the system N-1 secure are given below:

Sl. No	Name of Element	Short Term Measures	Long term Measures	The target date for long term measures
Transmission Constraint in Odisha Network				
1	i. 220 kV Budhipadar-Lapanga D/C, ii. 220 kV Budhipadar Vedanta D/C iii. 220 kV Rourkela-Tarkera D/C	SPS available only for 220 kV Rourkela-Tarkera D/C. However, even with SPS N-1 criteria is not satisfied for all the conditions. Action Required:- Load trimming scheme needs to be planned	1. Reconductoring of 220 kV Rourkela-Tarkera D/C with HTLS. 2. 220 kV Rourkela-Tarkera second D/C 3. Shifting of Vedanta from 220 kV to 400 kV	OPTCL to provide a target date for Long term measures
2	i. 220 kV Lapanga-Katapalli D/C , ii. 220 kV Katapali-New Bargarh-Sadepalli (New Bolangir) S/C iii. 220 kV Katapali-Bolangir (PG)- S/C	No SPS Available. Action Required:- SPS/Load trimming scheme needs to be planned	Odisha to share long-term remedial action to make the system N-1 secure.	OPTCL to provide a target date for Long term measures
Transmission Constraint in DVC Network				
3	i. 220 kV Waria-Bidhan Nagar D/C ii. 220 kV Waria-Mejia D/C	Opening of 220 kV Waria-Bidhan Nagar D/C as and when required	400/220kV, 315MVA (3rd) ICT at Bidhannagar	Target Date 2022-23. WBSETCL may update the present Status

Sl. No	Name of Element	Short Term Measures	Long term Measures	The target date for long term measures
4	i. 220 kV Maithon-Dhanbad D/C, ii. 220 kV Maithon-Kalyaneshwari D/C	No SPS is Available. Action Required:- SOP/SPS/Load trimming scheme needs to be planned for the time being	i. 220 kV Connectivity at 400 kV Mejia-B ii. 220 kV Connectivity at 400 kV RTPS	DVC may update the target date
Transmission Constraint in Jharkhand Network				
5	220 kV Maithon Dumka D/C	No SPS Available. Action Required:- SPS/Load trimming scheme needs to be planned	i. LILO of 1st circuit of 220kV Dumka – Govindpur D/c line at Dhanbad	Target Date 2023. Jharkhand may update the target date
Transmission Constraint in West Bengal Network				
6	i. 220 kV Rajarhat-Newtown AA3 D/C, ii. 220 kV Subhasgram-EMSS D/C	SPS is Available for both the Ckts	1. 220 kV Rajarhat-Newtown AA3 D/C line with HTLS. 2. No Strengthening planned for 220 kV Subhasgram-EMSS D/C	1. Target Date Oct, 2022 for reconductoring WBSETCL may update the present Status
7	i. 220 kV Subhasgram (PG) – Subhasgram (WB) D/C ii. 220 kV Subhasgram (WB)-Lakshimikantpur D/C	SPS Available for 220 kV Subhasgram (PG) – Subhasgram (WB) D/C	i. 220 kV Subshagram – Baruipur D/C ii. 400/220 kV Substation at Lakshimikantpur.	i. Line antitheft charged from Subhasgram end ii. Lakshimikantpur target date is December 2024 WBSETCL may update the present Status

Members may update.

ITEM NO. B.12: ICT Constraints violating N-1 security criteria.

The list of ICTs which are not N-1 complaint are given below:

Sl. No	Name of ICT	Short Term Measures	Long term Measures	The target date for long term measures
ICT Constraint in West Bengal Network				
1	i. 400/220 kV 2 X 315 MVA ICTs at Gokarna & ii. 400/220 kV Sagardighi 1 X 315 MVA ICTs	SPS Available for Gokerno ICTs Action Required:- Load trimming scheme needs to be planned for Sagardighi	i. 3 rd ICT at Gokerno	Target Date Dec-22 WBSETCL may update the present Status
ICT Constraint in ISTS Network				
1	i. 400/220 kV Ranchi 2 X 315 MVA ICTs	SPS Available	i. 3 rd 500 MVA ICT at Ranchi	POWERGRID may update the target date
ICT Constraint in DVC Network				
3	i. 400/220 kV Bokaro A 2 X 315 MVA ICTs	No SPS Available Action Required:- SPS needs to be planned	ii. Upgradation with 500 MVA ICTs	DVC may update target date

Members may update.

ITEM NO. B.13: Islanding Schemes in Eastern Region.

B13.1. Implementation of Islanding Schemes in Eastern Region

In the meeting held on 28th December 2020 and chaired by the Hon'ble Minister of State (IC) it was directed that islanding schemes should be implemented for all major cities of the country considering all the strategic and essential loads. Subsequently, in line with the direction given in the meeting, the subject matter was discussed in PCC meeting of ERPC and it was finalized that new islanding scheme would be implemented for capital city of Patna & Ranchi.

I. Patna Islanding Scheme:

In the 45th TCC Meeting, following was decided:

- a) A Technical Committee comprising of the members from BSPTCL, SLDC Bihar, and participating generator, Powergrid, ERLDC and ERPC may be constituted for finalizing the Islanding Scheme.
- b) CESC may also be included in the Committee for any technical expertise.
- c) The Committee may consult OEM/Vendor as and when required for any inputs.
- d) The Committee may submit its report by 15th May'2022. TCC advised the concerned

constituents to give their nominations latest by 31st March'2022.

In this regard, ERPC vide letter no. ERPC/Operation/IS/2022/97 dated 18.04.2022 (**Annexure B.13.1**) constituted a Technical Committee based on the nominations received for finalizing Patna Islanding Scheme.

In the 190th OCC meeting, Committee submitted that the first meeting was convened on 19th April 2022 and the second meeting is scheduled to be held by 1st week of May 2022. The report would be submitted by 15th May 2022.

In the 191st OCC Meeting, OCC advised the committee to submit the report to ERPC.

Committee may update.

II. Ranchi Islanding Scheme:

In the 45th TCC Meeting, following was decided:

a) A Technical Committee comprising of the members from JUSNL, SLDC Jharkhand, and participating generator, Powergrid, ERLDC and ERPC may be constituted for finalizing the Islanding Scheme.

b) CESC may also be included in the Committee for any technical expertise.

c) The Committee may consult OEM/Vendor as and when required for any inputs.

d) The Committee may submit its report by 15th May'2022. TCC advised the concerned constituents to give their nominations latest by 31st March'2022.

In this regard, ERPC vide letter no. ERPC/Operation/IS/2022/97 dated 18.04.2022 (**Annexure B.13.1**) constituted a Technical Committee based on the nominations received for finalizing Ranchi Islanding Scheme.

In the 190th OCC meeting, Committee submitted that the first meeting was convened on 19th April 2022 and the second meeting is scheduled to be held by 1st week of May 2022. The report would be submitted by 15th May 2022.

In the 191st OCC Meeting, OCC advised the committee to submit the report to ERPC.

Committee may update.

In addition to above new islanding schemes, the following schemes have already been finalized and under different stage of implementation:

III. Chandrapura Islanding Scheme:

The scheme detail in brief is as follows:

➤ The CTPS-B islanding scheme is to be designed with two units of CTPS-B (2x250 MW) generating station as participating generator and connected loads at CTPS, Putki, Biada, Nimiaghata & Patherdih. The estimated off-peak and peak load in the proposed islanding system is 280 MW & 420 MW respectively.

- The islanding frequency for CTPS-B islanding system was decided as 48.4 Hz.

In the 190th OCC meeting, DVC representative submitted that 3 bids were received which were opened on 18th April 2022. He further submitted that the technical evaluation is under progress and the commercial evaluation would be completed by the end of April 2022.

DVC may update.

IV. IB-TPS Islanding Scheme:

The scheme was finalized in the special Meeting on Islanding Scheme of IB-TPS held at ERPC, Kolkata on 12th December 2018.

In special meeting held on 06.08.2021, OPGC representative informed that work order had been placed on OEM (M/s BHEL) for implementation of the Islanding scheme at IB TPS units.

OPGC was also advised to take up the issue with their highest authority as well as with the OEM for expediting the implementation of islanding scheme.

In the 190th OCC meeting, OPTCL representative submitted that the installation, commissioning, and testing of DTPC at both Budhipadar and OPGC end was completed.

OPGC representative submitted that end to end signal testing and wiring from switchyard to relay panel had been completed. The testing would be done during shutdown or outage of the units.

OPTCL may update.

ITEM NO. B.14: Reliable Power Supply to Lalmatia/Godda/Dumka areas of JUSNL

B14.1. Restoration of 220kV Farraka-Lalmatia S/C line

The 220 kV Farakka-Lalmatia S/C was out of service since April 2021 due to tower collapse. The 220/132/33 kV Lalmatia substation is relying on only 132 kV lines. At present the local load at 220 kV Dumka and Godda S/S were being radially fed from 400/220 kV Maithon S/S through 220 kV Maithon-Dumka D/C and 220 kV Dumka-Godda D/C.

In 181st OCC Meeting, JUSNL representative submitted that they had got a letter from NTPC on 19th July '21 regarding anti-theft charging of the 220kV Farraka-Lalmatia S/C line at 33kV level. Earlier the antitheft charging of the line was done at 11kV level but incidents of thefts have been reported in some portion of the conductor.

Further, Jharkhand representative requested NTPC to submit the details of the 33kV lines passing below 220kV Farakka-Lalmatia T/L. He added that as per information obtained from their JUSNL Discom part, the 33kV lines are mostly connected with 11kV feeders and due to this it would be difficult to charge the Farakka-Lalmatia line at 33kV level in Pakur area.

NTPC representative informed that they had charged the line up to loc no.241 but in between loc no.76-82 only the top conductor was in charged condition and the bottom rest were not; because of this theft might have happened in that portion. He further added that they had already isolated the section from loc no.76-82, whereas up to loc no.76 the line is in charged Condition and from loc no.82-241 the line needs to be charged.

ERPC advised NTPC and Jharkhand to explore the possibility of antitheft charging at 33kV level first and if that is not feasible then charging at 11kV can be assessed.

In the meeting held on 10th August 2021 by the Hon'ble Secretary, Ministry of Power, Government of India, ECL was directed to handover the FLTS assets on "as is where is basis" to

JUSNL, the Operation and Maintenance whereof as was with the NTPC is also to be transferred to the JUSNL without any further delay and latest by 20th August 2021. Further JUSNL was directed to comply with all other directions of the CERC's order dated 21.07.2020, after the transfer of the FLTS from ECL.

In the 182nd OCC meeting, JUSNL representative submitted that the tripartite agreement for taking over of FLTS as well as O&M of FLTS is in process and the same would be done after getting the consent from the competent authority by 4th week of August'2021.

In the 191st OCC Meeting, JUSNL representative submitted that the order would be placed by 31st May'2022.

JUSNL may update.

ITEM NO. B.15: Issue regarding Letter of Credit furnished by PTC - JITPL.

JITPL vide letter No. JITPL/ERPC/2022-23/92 dated 10.06.2022 submitted that JITPL had entered into a Pilot Scheme I Agreement for procurement of power (PAPP) with PTC for dated 26.10.2018 for supply of 125 MW Power to DISCOMs of Bihar under Medium Term (MTOA) for 3 years wherein the issue is regarding the Letter of Credit (LC) furnished by PTC is not in accordance with the format furnished in the PAPP.

JITPL had raised this issue and done several time remainders to PTC but still there is no reply and action has been taken on the aforesaid matter. JITPL is going to cut the power supply to PTC without any liability and penalty.

JITPL may explain. Members may discuss.

PART C: ITEMS FOR UPDATE

ITEM NO. C.1: ER Grid performance during May 2022

The average and maximum consumption of Eastern Region and Max/Min Demand (MW), Energy Export for the month May-2022 were as follows:

Average Consumption (MU)	Maximum Consumption (MU)/ Date	Maximum Demand (MW) Date/Time	Minimum Demand (MW) Date/Time	Schedule Export (MU)	Actual Export (MU)
506.7	552.6 MU 31-05-2022	24669 MW, 27-05-2022 22:52 Hrs.	15892 MW, 02-05-2022 at 05:55 Hrs.	3052	2903

ERLDC may highlight the performance of the ER grid.

ITEM NO. C.2: Performance of Primary Frequency Response of ER Generating Units.

Frequency response characteristics (FRC) have been analyzed pan India for one event of sudden frequency change that occurred in the month of May 2022. The details of these events and the overall response of the Eastern region have been summarized in Table below.

Event	Frequency Change	ER FRC
Event - 1: Solar generation loss of around 1920MW in Solar generation complex of Northern region on dated 02nd-May-2022 at 11:06 Hrs. As reported Solar generation loss of around 1920MW observed in solar generation complex in Rajasthan of Northern Region.	49.97 Hz to 49.77 Hz.	14.8 %
Event - 2: Multiple tripping in Southern region on dated 03rd-May-2022 at 03:16 Hrs. As reported at 03:16 hrs, 400kV simhadri,400kV gazuwaka,400kV kalapakka,400 kV Hinduja, 220kV VSS, 220kV gannavaram, 220kV pendurthy,220kV sarada,220kV atchutapuram,220kV abhjeet,220kV mrs vizag got dead, consequently Generation loss of around 2660 MW and Load loss of around 1200 MW occurred in the event. In this Event effective generation loss of around 1440 MW	50.025 Hz to 50.00 Hz.	90.9 %
Event - 3: At 20:11 hrs of 15 th May,2022	49.997 Hz to 49.954 Hz.	39 %

<p>Generation loss of around 1250 MW occurred due to tripping of Units in Nathpa Jhakri, Rampur and Karcham Wangtoo Hydro generation complex of Northern Region on SPS operation.</p>		
<p>Event - 4: At reported at 12:31 hrs of 20th May,2022 Generation loss of around 3014 MW (Fatehgarh2 1578MW, Bhadla_PG 1136 MW, Bhadla2_PG 30 MW,Bikaner_PG 270 MW) occurred due to multiple tripping in Rajasthan Solar Generation complex of Northern Region.</p>	<p>50.032 Hz to 49.905 Hz</p>	<p>14.8 %</p>
<p>Event - 5: At around 01:09 hrs while test charging of 765 kV Bhuj-Banaskatha line 1, 765 kV Bhuj Banaskatha line 2 also tripped due to over voltage. Due to extended planned outage of 400 kV CGPL Bhuj DC lines and tripping of both circuits of 765 kV Bhuj-Banaskantha lines, Bhuj substation got isolated from the grid which resulted loss of evacuation path for Bhuj RE generators leading to loss of around 1673 MW RE generation.</p>	<p>50.025 Hz to 49.99 Hz</p>	<p>87.7 %</p>

Members may note.

ITEM NO. C.3: Review of implementation of PSDF approved projects of ER.

In 10th NPC meeting held on 09.04.2021, RPCs were advised take up the matter for improvement of the fund disbursement and expeditious implementation of the sanctioned projects under PSDF.

In view of the above, status review of the projects being executed under PSDF funding in Eastern Region would be carried out on regular basis for expediting the projects. All the constituents are requested to furnish/update the status of their respective project in every month.

Concerned utilities may update the present status of the project as given in the **Annexure-C.3**.

187th OCC advised all the utilities to update the status of project to the ERPC Secretariat.

In the 191st meeting, OCC advised all the utilities to update the status of PSDF projects if any to ERPC Secretariat at the earliest.

Respective utilities may update.

ITEM NO. C.4: Status of implementation of AGC as a pilot project in States.

In 42nd TCC, DVC intimated that AGC shall be implemented in unit 7 and 8 of Mejia as per the given schedule by 31st July 2020.

WBPDCL informed that they have already collected offer from Siemens for implementation of AGC and they are awaiting the concurrence from SLDC.

SLDC, WB informed that they are not in a position to implement AGC unless a clear direction is given by WBERC. Further, implementation of intra state DSM is a prerequisite for implementation of AGC in the states.

It was decided to request CERC to include this as an issue in the agenda for discussion in the meeting of Forum of Regulators.

OCC advised SLDC Odisha and OPGC to interact with Barh NTPC & ERLDC to get the technical specifications & the procedure for implementation of AGC.

In the 183rd OCC meeting, OPGC representative informed that work order has been issued to M/s Siemens for implementation of AGC. The work would be carried out during the unit shutdown which is scheduled from 18.10.2021.

State	Station/Unit	Deliberation in 184 th OCC Meeting
DVC	Mejia unit#7 &8	DVC representative informed that NIT is to be floated.
Odisha	Unit#3 of OPGC	OPGC vide email dated 25 th Oct'21 informed that some additional data is needed from SLDC Odisha and after getting the same AGC would be implemented.

In the 185th OCC meeting, DVC representative informed that the NIT for implementation of AGC will be floated by 9th December 2021.

OPGC representative was not present during the discussion.

In the 186th OCC meeting, DVC representative informed that the NIT would be floated by 31st December 2021.

In the 187th OCC meeting, OPGC and DVC representative were not present during the discussion.

In the 188th OCC meeting, DVC representative informed that NIT was floated on 29th December 2021 and the bid opening would be done on 19th February 2022.

OPGC representative was not present during the discussion.

In the 190th OCC meeting, DVC representative submitted that NIT would be re-floated due to some issues in the payment terms.

SLDC Odisha representative submitted that the order has been place to M/s Siemens for AGC

implementation and the feasibility test would be conducted on 3rd May 2022.

DVC and Odisha may update.

ITEM NO. C.5: Primary Frequency Response Testing of ISGS Generating Units

In the 180th OCC meeting, ERLDC representative informed that as per communication received from GMR and JITPL PFR testing has been scheduled by Siemens in August'21.

MPL representative submitted that they would carry out the PFR testing in the month of July'21.

In the 181st OCC meeting, ERLDC representative informed that PFR testing of MPL got postponed due to some technical issue. He further informed that PFR testing is going on in APNRL and that of NPGC and BRBCL is scheduled in the last week of July'21 and 1st week of August'21 respectively.

In the 182nd OCC meeting, ERLDC representative submitted that During July – August 2021, PFR testing has been conducted at the following generating units:

1. Adhunik TPS Unit 1 & 2
2. BRBCL TPS Unit 2 & 3
3. Nabinagar STPS Unit 1
4. Kahalgaon STPS Unit 1

In the 183rd OCC meeting, ERLDC representative updated that PFR testing for Unit# 1 & 2 of GMR had been completed.

In the 185th OCC meeting, ERLDC representative informed that PFR testing of Dikchu is being carried out.

In the 187th OCC Meeting, OCC advised all the members to provide the updated status of PFR testing, if any, to ERPC and ERLDC.

In the 188th OCC meeting, ERLDC representative informed that updated status of PFR testing was received from MPL.

OCC advised all the members to provide the updated status of PFR testing, if any, to ERPC and ERLDC.

The updated status is enclosed at **Annexure-C.5**.

In the 191st OCC meeting, OCC advised all the members to update the status of PFR testing to ERPC and ERLDC.

Members may update.

ITEM NO. C.6: Testing of Primary Frequency Response of State Generating units by third party agency.

In the 171st OCC Meeting, OCC advised all the SLDC's to prepare the action plan for their state generators and submit the details to ERPC and ERLDC at the earliest.

DVC vide-mail dated 6th Oct 2020 informed that the Primary Frequency Response Testing may be carried out for the following generating units:

Sl. No.	Name of the Units	Capacity (MW)
1	BTPS-A	500
2	CTPS Unit #7&8	2X250
3	DSTPS Unit#1&2	2X500
4	KTPS Unit # 1&2	2X500
5	MTPS Unit # 3 to 8	2 X 210 +2 X 250 + 2X 500
6	RTPS Unit # 1 & 2	2 X 600

In the 185th OCC meeting, OHPC representative informed that testing of Primary Frequency Response of all the units of Rengali and Indravati will be done by the end of December 2021.

WBPDCL representative informed that they will place the order in the month of December 2021.

In the 186th OCC Meeting, OHPC representative informed that the testing of Primary Frequency Response of all the units of Rengali and Indravati would be done by the 2nd week of January 2022.

DVC representative informed that the bid opening had been done on 22nd December 2021.

In the 187th OCC meeting, OHPC and DVC representatives were not present during the discussion.

In the 188th OCC meeting, It was informed that PFR testing of all the 3 units of Budge-Budge are scheduled from 26th Feb 2022 to 3rd March 2022.

OHPC representative submitted that PFR testing of all the units of Rengali (5 units) and Indravati (4 units) would be carried out by M/s Solvina from 20th March 2022 onwards.

DVC representative informed that the work order for PFR testing has been placed.

In the 191st OCC meeting, OCC advised all the state generating units to update the status of PFR testing to ERPC and ERLDC at the earliest.

Generating units may update.

ITEM NO. C.7: PSS tuning of Generators in Eastern Region

The PSS tuning activity is mandatory in line with IEGC and CEA regulations. The Procedure of PSS tuning for helping utilities in getting this activity carried out has been approved in 171st OCC Meeting and shared with all concerned utilities.

In the 186th OCC Meeting, Teesta –V representative informed that the PSS tuning would be conducted in the last week of January 2022.

It was informed in the OCC that PSS tuning of Rongnichu and Chuzachen had been completed.

DVC representative informed that PSS tuning of RTPS unit-1 & 2 would be done in the month of March 2022.

BRBCL representative informed that PSS tuning of BRBCL unit-1 has also been completed.

In the 187th OCC meeting, OCC advised ERLDC to send the updated status of PSS tuning to ERPC.

The updated schedule for PSS tuning of the units is attached at **Annexure-C.7**.

In the 191st OCC meeting, OCC advised all the generators to update the status of PSS tuning to ERPC and ERLDC.

Generators may update.

ITEM NO. C.8: Status of UFRs healthiness installed in Eastern Region.

Members may update the status of UFR healthiness installed in Eastern Region.

Members may update.

ITEM NO. C.9: Status of Islanding Schemes healthiness installed in Eastern Region.

As per the decision taken in the meeting held on 8th July 2021 and chaired by member (GO&D), CEA, data in prescribed formats may be submitted by concerned utilities to RPCs on monthly basis to certify the healthiness of the Islanding Schemes.

a. Format - I for RLDC/SLDCs

S.NO	Name of Islanding Scheme	Healthiness of Communication channel

b. Format - II for Generating Station

S.NO	Name of Islanding Scheme	Healthiness of Islanding Relay	Healthiness of Communication channel
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c. Format - III for Transmission Utility/DISCOMs

S.NO	Name of Islanding Scheme	Elements considered for tripping to from Island	For communication-based tripping logic Of feeders	For UFR based tripping logic of feeders	
			Healthiness of Communication channel	Healthiness of PT Fuse and status of DC supply to UFR relay*	Healthiness of Relay#

* Where dedicated UFR relay have been installed for tripping of the feeders under Islanding scheme

Where UFR functions have been enabled within backup protection relay of the line.

d. Format - IV for collecting Relay details of the Islanding scheme.

The following format may be used to get Relay details of the Islanding scheme:

S.NO	Description	UFRs-for load relief (A)	df/dt -for load relief (B)	Relay for Island creation(C)
1	Relay location (S/s name)			
2	Relay make & model			
3	Frequency setting of the relay (at which load shedding is envisaged)			
4	Feeder name (voltage level and source-destination name) signaled by the Islanding Relay for separation /load shedding/separation from outside grid			
5	Quantum of load relief due to tripping of feeder (as per state's peak of previous year)			
6	Quantum of load (Min, Avg, Max in MW) on the feeder (as per state's peak of previous year)			

e. Format - V for Contact details of all Nodal Officer

Utility Name & Location	Name	Designation	Organization	Email ID	Mobile No.

It was deliberated in the 186th OCC meeting that except West Bengal all the entities are sending the report as per the new format.

In the 187th OCC meeting, it was informed that except for West Bengal all entities are sending the report as per the new format.

Members may update.

ITEM NO. C.10: Latest Status of States ATC/TTC declared by States for the month of July-2022.

To harmonize the ATC/TTC calculation methodology and timeline One to one meeting and hands on training with each SLDC was conducted in the month of Sep-21 and Oct-21. As per the common agreed procedure and timeline ATC/TTC calculation in three months advance and reconciliation of the TTC/ATC figure for the upcoming month between RLDC and SLDC has started from month Dec-21. Reconciled ATC/TTC figures for **July-2022** are as follows:

SI No	State/Utility	TTC (MW)		RM(MW)		ATC Import (MW)		Remark
		Import	Export	Import	Export	Import	Export	
1	BSPTCL	6876	--	3	--	6738	--	July-22
2	JUSNL	1649	--	57	--	1592	--	July-22
3	DVC	1860	3543	65	51	1795	3492	July-22
4	OPTCL	3325	1427	126	68	3199	1359	July-22
5	WBSETCL	5852	--	450	--	5402	--	July-22
6	Sikkim	170	--	2.18	--	167.82	--	May-22

As per the agreed philosophy the status of month wise ATC/TTC submission is as follows:

State	Bihar	Jharkhand	DVC	Odisha	West Bengal	Sikkim
Month						
July-22	Submitted	Submitted	Submitted	Submitted	Submitted	Pending
Aug-22	Submitted	Submitted	Submitted	Pending	Submitted	Pending
Sep-22	Submitted	Pending	Submitted	Pending	Submitted	Pending
Oct-22	Pending	Pending	Pending	Pending	Pending	Pending

Declaration of TTC/ATC on SLDC Website:

SI No	SLDC	Declared on Website	Website Link	Constraint Available on Website	Type of Website Link
1	BSPTCL	Yes	http://www.bsptcl.in/ViewATCTTC	Yes	Static Link-

			Web.aspx?GL=12&PL=10		Table
2	JUSNL	Yes	http://www.jusnl.in/pdf/download/ttc_atc_nov_2020.pdf	Yes	Static link - pdf file
3	DVC	Yes	https://application.dvc.gov.in/CLD/atcttcmenu.jsp#	Yes	Static Link-Word file
4	OPTCL	Yes	https://www.sldcorissa.org.in/TTC_ATC.aspx	Yes	Static Link-pdf file
5	WBSETCL	Yes	http://www.wbsldc.in/atc-ttc	No (Not updating)	Static Link-Table
6	Sikkim	No	https://power.sikkim.gov.in/atc-and-ttc	No (Not updating)	Static Link-Excel file

All the states having net export schedule should declare their export TTC. In view of the same West Bengal is once again requested to share export TTC.

It is observed that from Odisha and Sikkim submission of ATC/TTC and base case are not regular. All the states are once again requested to share ATC/TTC in timely manner.

Further it is noted that ATC declared by Bihar SLDC is much lower than the allocation given to them. While schedule as well as actual interchange Odisha violated its ATC in the month of June-2022.

Members may update.

ITEM NO. C.11: Mock Black start exercises in Eastern Region

Mock black start date for financial year is as follows:

Sl. No	Name of Hydro Station	Schedule of Mock Black Start	Actual Date of Test	Schedule of Mock Black Start	Actual Date of Test
		Test-1		Test-2	
1	U. Kolab	June-2022		Jan-2023	
2	Balimela	July-2022		Feb-2023	
3	Rengali	June-2022		Jan-2023	
4	Burla	July-2022		Feb-2023	
5	U. Indravati	May-2022	25-May-2022	Jan-2023	
6	Maithon	June-2022		Feb-2023	
7	TLDP-III	Oct-2022		Jan-2023	
8	TLDP-IV	Oct-2022		Feb-2023	
9	Subarnarekha	Aug-2022		Jan-2023	
10	Teesta-V	Sep-2022		Feb-2023	
11	Chuzachen	Oct-2022		Jan-2023	
12	Teesta-III	April-2022	08-April-2022	Feb-2023	
13	Jorethang	Oct-2022		Jan-2023	
14	Tashiding	Oct-2022		Feb-2023	
15	Dikchu	Oct-2022		Jan-2023	
16	Rongnichu	Oct-2022		Feb-2023	

Members may update.

PART D: OPERATIONAL PLANNING

ITEM NO. D.1: Anticipated power supply position during July 2022

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of July 2022 provided at **Annexure D.1** were prepared by ERPC Secretariat on the basis of LGBR for 2022-23 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc.

Members may update.

ITEM NO. D.2: Shutdown proposal of generating units for the month of July 2022

Generator unit shutdown schedule for July' 2022 is given in the table:

Proposed Maintenance Schedule of Thermal Generating Units of ER in the month of July' 2022								
System	Station	Unit No.	Capacity (MW)	Period (As per LGBR 2022-23)		No. of Days	Reason	Remarks
				From	To			
TVNL	Tenughat TPS	2	210	01.07.2022	14.08.2022	45	Overhauling and R&M	
WBPDCL	Kolaghat TPS	6	210	10.07.2022	08.08.2022	30	AOH/BOH	
	Sagardighi TPS	2	300	20.07.2022	13.08.2022	25	AOH/BOH	
DVC	Koderma TPS	1	500	15.07.2022	19.08.2022	36	AOH-Blr, LPT, Gen, FGD & De-Nox Burner	
CESC	SOUTHERN	1	67.5	12.07.2022	21.07.2022	10	Not Specified	
		2	67.5	25.07.2022	08.08.2022	15	Not Specified	
KBUNL	KBUNL	4	195	01.07.2022	05.08.2022	36	Boiler+DeNOx+Bearing Inspection	
BRBCL	Nabinagar TPS	3	250	01.07.2022	14.08.2022	45	Barring Gear Stalling issue, HPT, Boiler, TG overhaul	

Additional:

- NTPC, Barh STPS U-1 (660 MW) is going under planned shutdown from 01.07.2022 to 22.07.2022 for mandatory inspection of Generator.
- OPGC, IB TPS U-2 (210 MW) is going under planned shutdown from 15.07.2022 to 13.08.2022 for overhauling works.

Members may update.

ITEM NO. D.3: Major Generating Units/Transmission Element outages/shutdown in ER Grid (as on 12.06.2022)

a) Thermal Generating Stations outage report:

SL No	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
1	BARAUNI TPS	BIHAR	NTPC	7	110	Excessive chemical deposits on Turbine blades and diaphragms over time	19-Feb-2022
2	DARLIPALI	ODISHA	NTPC	1	800	Initially Furnace pressure was low. Later on vibration found in Low Pressure turbine (Damage found in LP turbine)	23-Apr-2022
3	CHANDRAPURA TPS	DVC	DVC	8	250	Stator Earth Fault (OEM BHEL has visited the site and assessed that for rectification atleast 28 more days (upto 15-06-2022) are required)	06-May-2022
4	KHSTPP	BIHAR	NTPC	4	210	Leakage in Generator Hydrogen Cooling System	12-May-2022
5	JITPL	ODISHA	JITPL	2	600	Turbine Vibration high.	16-May-2022
6	KOLAGHAT	WEST BENGAL	WBPDC	4	210	Initially out on Boiler tube leakage at REHEAT ZONE. Kept S/D for boiler maintenance job along with licence renewal. Presently, Unit under S/D due to Poor Coal Stock w.e.f. 09-06-2022	17-May-2022
7	WARIA TPS	DVC	DVC	4	210	Condenser vacuum issue	05-Jun-2022
8	BANDEL TPS	WEST BENGAL	WBPDC	5	210	Miscellaneous Maintenance job	09-Jun-2022
9	BARAUNI TPS	BIHAR	NTPC	6	110	Boiler Tube Leakage	10-Jun-2022
10	NABINAGAR(NP GC)	BIHAR	NTPC	3	660	Boiler Tube Leakage	10-Jun-2022

All Generating stations are requested to update expected restoration time and reason outage to ERLDC/ERPC on weekly basis in case of any change at their end.

Generators/ constituents are requested to update the expected date of revival of the units.

b) Major Generating stations Out on Reserve Shutdown due to low system demand:

S.NO	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
1	NIL						

b) Hydro Unit Outage Report:

S. NO	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
1	BALIMELA HPS	ODISHA	OHPC	4	60	Sparking at Permanent Magnet Generator	04-Apr -2022
2	RENGALI HPS	ODISHA	OHPC	3	50	BEARING PROBLEM	26-Nov-2021
3	RENGALI HPS	ODISHA	OHPC	5	50	FAILURE OF VACUUM VALVE	28-May-2022
4	BURLA HPS/HIRAKUDI	ODISHA	OHPC	2	49.5	Annual Maintenance	19-May-2022

It is seen that about 209.5 MW hydro capacities in Odisha is under forced outage and therefore not available for providing the much-needed peaking support during evening peak.

SLDC / OHPC may please indicate restoration plan of the units.

d) Long outage report of transmission lines:

SL. NO	TRANSMISSION ELEMENT / ICT	AGENCY	OUTAGE DATE	REASONS FOR OUTAGE
1	400 KV IBEUL JHARSUGUDA D/C	IBEUL	29.04.2018	TOWER COLLAPSE AT LOC 44,45
2	220/132 KV 100 MVA ICT 2 AT LALMATIA	FSTPP/JUSNL	22.01.2019	FAILURE OF HV SIDE BREAKER
3	220 KV PANDIABILI - SAMANGARA D/C	OPTCL	03.05.2019	49 NOS OF TOWER COLLAPSED.AS REPORTED BY SLDC OPTCL, TOTAL 60 NOS OF TOWER IN BETWEEN 220KV PANDIABILI – SAMANGARA LINE IN WHICH 48 NOS TOWERS FULLY DAMAGED AND 12 NOS TOWERS PARTIALLY DAMAGED. WORK UNDER PROGRESS. PRESENTLY CHARGED FROM PANDIABILLI END (LOC 156) TO LOC 58
4	220KV BARAUNI-HAJIPUR CKT-1	BSPTCL	28.09.2019	TOWER COLLAPSE AT LOCATION 38 & 39. CKT-2 IS ON ERS SINCE 13.01.2020.
5	220/132 KV 100 MVA ICT 3 AT CHANDIL	JUSNL	30.04.2020	ICT BURST AND DAMAGED AFTER FIRE REPORTED
6	400KV/220KV 315 MVA ICT 2 AT MEERAMUNDALI	OPTCL	21.02.2021	FIRE HAZARD
7	400KV/220KV 315 MVA ICT 4 AT JEERAT	WBSETCL	09.04.2021	VERBALLY CONFIRMED BY WB THAT NEW TRANSFORMER PROCUREMENT UNDER PIPELINE AND SHALL BE REPLACED IN THE NEAR FUTURE.
8	400KV MAIN BUS - 2 AT DIKCHU	DIKCHU	05.05.2021	REPEATED SPURIOUS BUSBAR PROTECTION OPERATION
9	220KV-FSTPP-LALMATIA	JUSNL	21.04.2021	THREE TOWER COLLAPSED NEAR LALMATIA
10	220KV-GAYA-CHANDAUTI (PMTL)-DC	BSPTCL	22.05.2021	FOR DISMANTLING OF TOWER NO 51 UNDER LILO WORK AT BODHGAYA.
11	400KV-BINAGURI-TALA-1	BHUTAN	12.11.2021	FLASHOVER IN XLPE OUTDOOR CABLE TERMINATION AT TALA.
12	400KV-BINAGURI-TALA-2	BHUTAN	17.03.2022	FIRE ON THE GIS TERMINATION OF THE B-PHASE AT TALA END.
13	400KV/220KV 315 MVA ICT 1 AT INDRAVATI (PH)	GRIDCO	24.03.2022	INITIALLY REPORTED BUCHHOLZ RELAY OPERATED. LATER SLDC ODISHA REPORTED THAT CONTROL & RELAY PANEL OF ICT BURNT. REPLACEMENT FOR THE SAME IS

				UNDER PROCESS.
14	132KV-KHSTPP-SABOUR-1	BSPTCL	19.05.2022	DUE TO TOWER COLLAPSED AT LOC NO 65 ,66,67 & 68

Transmission licensees/ Utilities are requested to update expected restoration date & work progress regarding restoration regularly to ERLDC/ERPC on monthly basis by 5th of each month so that status of restoration can be reviewed in OCC. Utilities are also requested to update outage of any elements within their substation premises like isolator/breaker to ERLDC/ERPC regularly.

(Reported as per Clause 5.2(e) of IEGC)

Members may update.

ITEM NO. D.4: Commissioning of new units and transmission elements in Eastern Grid in the month of May-2022

The details of new units/transmission elements commissioned in the month of May-2022 based on the inputs received from beneficiaries:

ERLDC_LIST OF NEW ELEMENTS CHARGED DURING MAY, 2022							
GENERATING UNITS							
SL. NO	Location	OWNER/UNIT NAME	Unit No/ Source	Capacity added (MW)	Total/Installed Capacity (MW)	DATE	Remarks
NIL							
ICTs/ GTs / STs							
SL. NO	Agency/Owner	SUB-STATION	ICT NO	Voltage Level (kV)	CAPACITY (MVA)	DATE	Remarks
1	DVC	MTPS-B	2	400/220	315	27-May-22	First Time Charged at 11:54 hours from 400 kV Side Bay.
TRANSMISSION LINES							
SL. NO	Agency/Owner	LINE NAME	Length (KM)	Conductor Type	DATE	Remarks	
1	BGCL/PGCIL	220KV-ARRAH (PG)-NAUBATPUR(BH)-1	43.085	ACSR Zebra	8-May-22	First time charged at 12:12 hours;36.702 KM is with PGCIL ownership and 6.383 KM is with BGCL ownership.	
2	WBSETCL	220KV-BARUIPUR-SUBHASGRAM(PG)-1	33.000	ACSR Zebra	18-May-22	First time anti-theft charged at 17:48 hours from PG end.	
3	WBSETCL	220KV-BARUIPUR-SUBHASGRAM(PG)-2	33.000	ACSR Zebra	18-May-22	First time anti-theft charged at 18:12 hours from PG end.	
4	OPTCL	220KV-PANDIABILI-PRATAPSASAN-1	30.636	ACSR Zebra	19-May-22	Charged from Pratapsasan end at 12:29 hours. Fully loaded on 25-May-22 at 11:57 Hours.	
5	OPTCL	220KV-PANDIABILI-PRATAPSASAN-2	30.636	ACSR Zebra	19-May-22	Charged from Pratapsasan end at 12:44 hours. Fully loaded on 25-May-22 at 11:57 Hours.	
6	WBSETCL	400KV-GOKARNA-NEW CHANDITALA-1	177.360	TWIN Moose	27-May-22	Line first time anti theft charged From Gokarna End till Line isolator at New Chanditala end. Line loaded	

						on 31-May-2022.
7	WBSETCL	400KV-GOKARNA-NEW CHANDITALA-2	177.360	TWIN Moose	27-May-22	Line first time anti theft charged From Gokarna End till Line isolator at New Chanditala end. Line loaded on 31-May-2022.
LILO/RE-ARRANGEMENT OF TRANSMISSION LINES						
SL. NO	Agency/Owner	Line Name/LILO at	Length (KM)	Conductor Type	DATE	Remarks
1	WBSETCL	220 KV RAJARHAT (PG)-BARASAT (WB)-1	20.720	ACSR Zebra	1-May-22	First Time charged at 16:32 hours.
2	WBSETCL	220 KV RAJARHAT (PG)-BARASAT (WB)-2	20.720	ACSR Zebra	1-May-22	First Time charged at 16:35 hours.
3	BSPTCL	220KV-MUZAFFARPUR(PG)-GORAUL(BH)-1	19.900	ACSR Zebra	11-May-22	First time anti-theft charged at 14:45 hours from PG end.
4	BSPTCL	220KV-MUZAFFARPUR(PG)-GORAUL(BH)-2	19.900	ACSR Zebra	13-May-22	First time anti-theft charged at 17:48 hours from PG end.
BUS/LINE REACTORS						
SL. NO	Agency/Owner	Element Name	SUB-STATION	Voltage Level (kV)	DATE	Remarks
NIL						

Members may update.

ITEM NO. D.5: UFR operation during the month of May 2022.

Frequency profile for the month as follows:

Month	Max	Min	Less IEGC Band (%)	Within IEGC Band (%)	More IEGC Band (%)
	(Date/Time)	(Date/Time)			
May, 2022	50.35 Hz on 23.05.2022 at 09:07 Hrs.	49.50 Hz on 03.05.2022 at 14:55 Hrs.	09.83	72.22	17.95

Hence, no report of operation of UFR has been received from any of the constituents. However, in view of low frequency operation and high demand scenario all the constituents are requested to keep the UFR in healthy condition.

Members may note.

Hardware, Software & Application refreshment at Data Center, for PGCIL AMR System

Technical Document, Apr 2022

**for Power Grid Corporation of India Ltd. – Eastern
Region (PGCIL - ER)**

April 28, 2022

Reference No.: TCS/PGCIL-AMR/TS/01/0422 DT 28.04.2022

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Revision No.	Revision Date	Revision Description	Page No.	Rationale for Change	Change Type (Add / modify / delete)
1.					
2.					
3.					
4.					
5.					
6.					

Table of Contents

Contents

1. Reference.....	5
2. Business Background and Requirements	5
3. New Hardware and Software of AMR	5
3.1 Hardware for Networking Part	6
3.2 Hardware for AMR Application Server	7
3.3 Software for AMR Application Servers	9
4. New AMR Application Development.....	9
4.1 Scope and Objective of AMR Application	9
4.2 Design Approach and Pre-Requisites.....	10
4.3 Application: Security Aspects.....	10
4.4 AMR Application: Overview with Snapshots	11
4.4.1 AMR LOGIN PAGE:	11
4.4.2 AMR HOME PAGE:.....	12
4.4.3 AMR DASHBOARD:.....	12
4.4.4 AMR REPORTS:.....	13
4.4.5 AMR SEM DATA VIEW:	14
4.4.6 AMR MASTER DATA VIEW:.....	14
4.4.7 AMR REPORT VIEW:	14
4.4.8 UPDATE CT/PT RATIO:.....	14
4.4.9 USER PROFILE MANAGEMENT:	15
4.5 AMR Application: Dumping and Data File Processing	15
4.6 AMR Application: Load Balancing and Mirroring	15
4.7 Exclusions.....	16

1. Reference

Referring to PGCIL AMR system installation at Data Centre, which had been done in Mar-2013 period. All the hardware and its corresponding software have crossed the technical life span. Referring CERC/CEA regulations, refreshment required for IT hardware and software.

Referring to the technical presentation given on 12-Oct-21 to PGCIL and PGCIL mail request dated. 26-Oct-21 and 12-Apr-2022, submitting the Technical Document for “AMR Hardware, Software and Application Refreshment at Data Centre.”

2. Business Background and Requirements

Automatic Meter Reading (AMR) system has been implemented in Eastern Region of PGCIL circuit. This covers total 05 states i.e., West Bengal, Sikkim, Odisha, Bihar, and Jharkhand. The implementation of AMR system has been started from Mar-2013. Gradually the number of Sub Station and Meters have been gradually integrated with AMR system.

The Data Centre Setup for AMR system was initially done in Mar-2013 time. All the Hardware, software and AMR application being installed and put into production that time. Since then, the same AMR Hardware and application is running in AMR system till now. As per CERC/CEA guidelines for IT equipment (both hardware and Software) depreciation rate, refreshment of all Hardware and Software required. This Technical Document is for the total overview of new Hardware and Software replacement plan.

There will be no change in the basic architecture of AMR system. The way and methodology being used for Data retrieval from SEMs by DCU and the data transmission to ERLDC (via GPRS or LAN) will remain same. This Technical document is only the detailed overview of new Hardware and Software those will be installed at ERLDC as a part of “AMR Hardware, Software and Application Refreshment at Data Centre” plan.

3. New Hardware and Software of AMR

Details of New Hardware and the corresponding software being given in below sections. The hardware will be installed as a replacement of existing Hardware. All hardware and software will have 05 years comprehensive OEM support from the date of material delivery to PGCIL. The qty of new Hardware will be same as the existing system. No additional hardware being considered here.

3.1 Hardware for Networking Part

In the networking, the existing architecture have one Firewall, one Router and one Switch. Following are the details of new hardware, which will be installed as replacement of the existing one. All the new Networking Devices will be CISCO make with latest upgradations.

1. AMR Firewall – CISCO MAKE

#	Part Number	Part Description	Service Duration	Quantity
1.0	FPR1140-NGFW-K9	Cisco Firepower 1140 NGFW Appliance, 1U	-	1
1.0.1	CON-SSSNT-FR11P40N	SOLN SUPP 8X5XNBD Cisco Firepower 1140 NGFW Appliance, 1U	60	1
1.1	FPR1140T-TMC	Cisco FPR1140 Threat Defense Threat, Malware and URL License	-	1
1.1.1	L-FPR1140T-TMC-5Y	Cisco FPR1140 Threat Defense Threat, Malware and URL 5Y Subs	60	1
1.2	CAB-IND-10A	10A Power cable for India	-	1
1.3	FPR1K-RM-SSD200-	Cisco Firepower 1K Series 200GB for FPR-1120/1140	-	1
1.4	FPR1K-RM-ACY-KIT	Cisco Firepower 1K Series Accessory Kit for FPR-1120/1140	-	1
1.5	FPR1000-ASA	Cisco Firepower 1000 Standard ASA License	-	1
1.6	GLC-SX-MMD	1000BASE-SX SFP transceiver module, MMF, 850nm, DOM	-	1
1.7	FPR-LTP-QR-LBL	Cisco Firepower QR Label - Internal Use Only	-	1
1.8	SF-F1K-TD7.0.1-K9	Cisco Firepower Threat Defense software v7.0.1 for FPR1000	-	1

2. AMR Router – CISCO Make

#	Part Number	Part Description	Service Duration	Quantity
2.0	ISR4221-SEC/K9	Cisco ISR 4221 SEC Bundle with SEC lic	-	1
2.0.1	CON-SNT-ISR4221S	SNTC-8X5XNBD Cisco ISR 4221 SEC B	60	1
2.1	SL-4220-SEC-K9	Security License for Cisco ISR 4220 Series	-	1
2.2	SL-4220-IPB-K9	IP Base License for Cisco ISR 4220 Series	-	1
2.3	PWR-4220-AC	AC Power Supply for Cisco ISR 4220	-	1
2.4	CAB-C13-C14-IN	Power Cord Jumper, C13-C14 Connectors,1.4 Meter Length India	-	1
2.5	NIM-BLANK	Blank faceplate for NIM slot on Cisco ISR 4400	-	2
2.6	SISR4200UK9-173	Cisco ISR 4200 Series IOS XE Universal	-	1

3. AMR Manageable Switch 24 Ports – CISCO Make

#	Part Number	Part Description	Service Duration	Quantity
3.0	C9200L-24T-4G-E	Catalyst 9200L 24-port data, 4 x 1G, Network Essentials	-	1
3.0.1	CON-SSSNT-C920L24T	SOLN SUPP 8X5XNBD Catalyst 9200L 24-port data, 4 x 1G, Net	60	1
3.1	C9200L-NW-E-24	C9200L Network Essentials, 24-port license	-	1
3.2	CAB-C15-CBN-IN	AC Power Cord, Type C15 Cable, India	-	1
3.3	PWR-C5-BLANK	Config 5 Power Supply Blank	-	1
3.4	C9200-STACK-BLANK	Catalyst 9200 Blank Stack Module	-	2
3.5	C9200L-DNA-E-24	C9200L Cisco DNA Essentials, 24-port Term license	-	1
3.5.0.1	CON-SSTCM-C92LE24	SOLN SUPP SW SUBC9200L Cisco DNA Ess	60	1
3.5.1	C9200L-DNA-E-24-5Y	C9200L Cisco DNA Essentials, 24-port, 5 Year Term license	60	1
3.6	NETWORK-PNP-LIC	Network Plug-n-Play Connect for zero-touch device deployment	-	1

The required Operating System for above three hardware will be pre-installed. Required Configuration as per AMR architecture will be done post procurement and installation of the same.

3.2 Hardware for AMR Application Server

For the Application Server, which have the AMR application and Database installed within it. At present there are two application Servers present and working as Primary and Backup of AMR Application and Database Server. Also, to connect to those Servers from outside (via VPN), one Workstation system is present. All this three hardware will be replaced, and new Hardware will be installed. All hardware will be HP make and will have 05 years Comprehensive Support from the date of material delivery.

1. AMR Application and Database Server (Qty: 2) – HP make

Qty	Product Description
1	HPE ProLiant DL160 Gen10 8SFF Configure-to-Order Server
1	HPE DL160 Gen10 8SFF CTO Server
1	Intel Xeon-Silver 4208 (2.1GHz/8-core/85W) FIO Processor Kit for HPE ProLiant DL160 Gen10
1	Intel Xeon-Silver 4208 (2.1GHz/8-core/85W) Processor Kit for HPE ProLiant DL160 Gen10
2	HPE 32GB (1x32GB) Dual Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit
4	HPE 2TB SAS 12G Business Critical 7.2K SFF SC 1-year Warranty 512e HDD
1	HPE Smart Array E208i-a SR Gen10 (8 Internal Lanes/No Cache) 12G SAS Modular LH Controller
2	HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
1	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features
1	HPE DL160/180 Gen10 Redundant Power Supply Enablement Kit
1	HPE 1U Gen10 8SFF Smart Array SAS Cable Kit
1	HPE 1U Small Form Factor Easy Install Rail Kit
1	HPE 5 Year Tech Care Basic DL160 Gen10 Service
1	HPE Installation ProLiant DL160/DL360e Service

2. AMR Workstation System– HP Make

Qty	Product Description
1	HPE ProLiant ML350 Gen10 Hot Plug SFF with RPS Enablement Kit Configure-to-order Server
1	Intel Xeon-Silver 4208 (2.1GHz/8-core/85W) FIO Processor Kit for HPE ProLiant ML350 Gen10
1	Intel Xeon-Silver 4208 (2.1GHz/8-core/85W) Processor Kit for HPE ProLiant ML350 Gen10
2	HPE 16GB (1x16GB) Dual Rank x8 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit
2	HPE 2TB SAS 12G Business Critical 7.2K SFF SC 1-year Warranty 512e HDD
1	HPE Smart Array E208i-a SR Gen10 (8 Internal Lanes/No Cache) 12G SAS Modular Controller
2	HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
1	HPE ML350 Gen10 AROC Mini-SAS Cable Kit for SFF Configuration
1	HPE ML350 Gen10 Redundant Fan Cage Kit with 4 Fan Modules
1	HPE 5 Year Tech Care Basic ML350 Gen10 Service

3.3 Software for AMR Application Servers

In AMR application Servers, Windows Operating System will be installed, and MS SQL Server will be installed as RDBMS. (Database Management). Details of those license version software are given below. This OEM license will be valid for 05 years from the date of material delivery and will have comprehensive support for the period.

Item Name	Description	OEM	Qty	Remarks
MS OS License 2019.	MS WS19 (16-Core) Std ROK en SW	Microsoft	3	03 Windows license for three Servers. (02 application Servers, 01 Workstation)
MS Office License 2021	MS Office LTSC Standard 2021	Microsoft	3	03 MS Office license for three Servers. (02 application Servers, 01 Workstation)
MS SQL Server License 2019	SQL Server 2019 Standard Core- 2 Core License Pack - Commercial	Microsoft	2	02 Database will be installed in 02 AMR Application Servers.

All comprehensive 05 supports will be from respective OEM. SLA will be maintained for issue rectifications. All required documents from OEM, will be submitted to PGCIL during material delivery time.

4. New AMR Application Development

The AMR application has been developed and installed in AMR System in Mar-2013. Since then, the same application is running in AMR system. Application replacement is needed for smooth execution of AMR system and to follow all the Security Compliance policies, as per Cyber Security Guideline policy by CERC. New AMR application will be developed. The detailed overview of new AMR Application development is mentioned in below sections. This new Application will have 05 years Comprehensive Support, from the date of delivery to PGCIL.

4.1 Scope and Objective of AMR Application

The following are the major scope and Objectives of AMR Application. New AMR application will have all the existing functionalities with some new features.

- Dumping of Raw data file of Energy Meter.

- Processing raw data file and store data in Database.
- Handling and processing of large number of data files at a time.
- Provide User Interface.
- Viewing Live Dashboard for AMR communication status.
- Generating various Reports. (Like NPC, Energy Flow, Load Duration, Time deviation etc.)

4.2 Design Approach and Pre-Requisites

- This new application will be developed in Latest Version of JAVA. (JRE 17)
- Web designing will be done using HTML/CSS, Angular JS (version 1.8).
- A web application resource file (.war) will be deployed in Apache Tomcat Server. This Deployment will be done in AMR Application Servers.
- Required JRE and JDL will be installed at AMR Servers.
- The application will be hosted in ERLDC LAN Network.
- User will be able to access the AMR application using any Web Browser. (Platform independent).
- Application will be running at both AMR Primary and Backup Server, for better Redundancy.
- Application will go through software patch update regularly.

4.3 Application: Security Aspects

- Application will go through all Security testing. SSA (Software Security Assurance) review and Audit will be done.
- SSA review will be done against each unit/section wise development.
- Comprehensive SSA Certificate will be provided before going into Live Environment.
- Any change in Application will go-through SSA review.

4.4 AMR Application: Overview with Snapshots

In this section, the new AMR Application over and functionalities are being described in a high-level.

4.4.1 AMR Login Page:

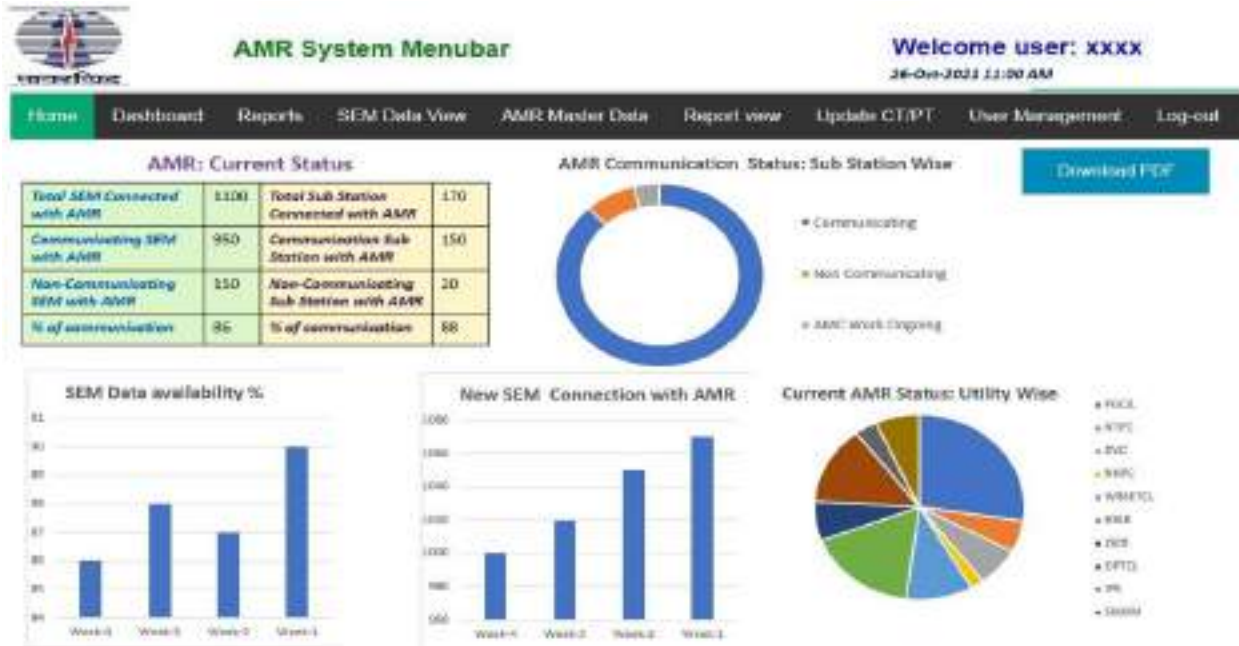
The new AMR Login page will have two level of Security authentication, password, and OTP.



- User will provide Username and password. If valid then system will ask for OTP.
- OTP will be sent to registered Mobile number. After successful OPT Verification, user will log in to system.
- Password policy to be followed.
- Periodic change of password.
- Password Reset/ Update/ Forget Password function.
- Auto Logout during Ideal time.

4.4.2 AMR Home Page:

Once User successfully logged into AMR system, the following Home Page will be displayed.



- Representation of AMR communication status.
- Representation of new AMR connection.
- Representation of AMR installation status- Utility Wise.
- Both Graphical and Tabular Representation will be there (as per above screen shot).
- This will give the status of AMR system on the given date.
- This can be downloaded in PDF/Word format.

4.4.3 AMR Dashboard:

AMR Live Dashboard will be like this. This Dashboard will give the live communication Status of Each Sub Station.

Sub Station

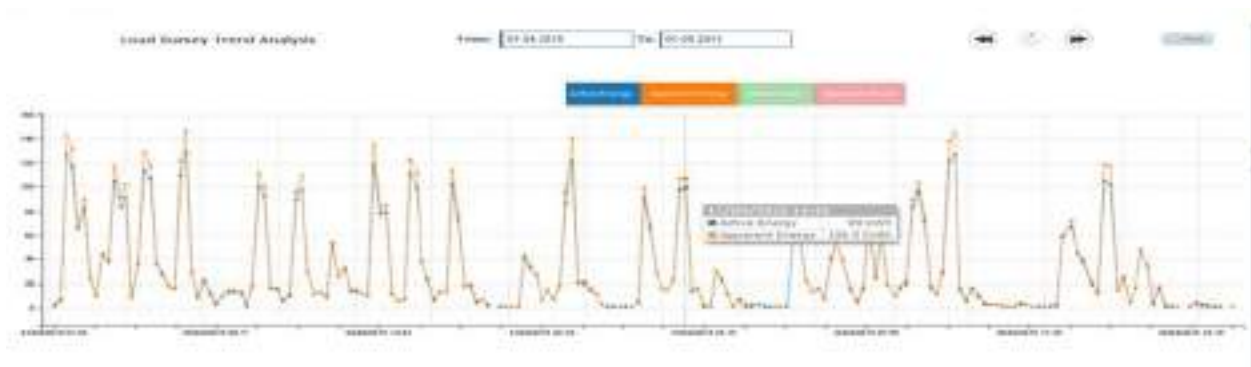
Sl No.	Sub Station	Utility	DCU Hostname	Total Meter	Communicating Meter	Non Communicating Meter	View Details
1	Subhasgram	PGCIL	100	10	10	0	View
2	Maithon	PGCIL	200	10	9	1	View
3	Durgam	PGCIL	300	10	0	10	View

- Sub Station Wise Search/ Filter.
- Click on View Button, for SEM Details and Data Pooling time.
- Auto Refresh of Dashboard.
- Scroll in both horizontal and Vertical.

4.4.4 AMR Reports:

AMR Application will have the following Reports.

- **NPC Reports**
 - **Diagnostic Report (Dashboard)**
 - **Frequency with Load Curve**
 - **Max Min (MW) Flow Report**
 - **Reactive Energy Flow**
 - **Time Deviation Report**
 - **Daily Export Import Report**
 - **Load Duration Curve**
 - **Net Injection Report**
 - **Trend Analysis of Energy (Meter/Feeder wise)**
- Generating Reports as per given date. (same as existing process).
 - Report will be sent to Users Mail.
 - All Report stored at specific folder.
 - NPC report can be downloaded SEM Wise, Sub Station Wise, Utility Wise, All Sub Station.
 - Trend Analysis report is the new one. Snapshot given below.



- Graphical Representation of block wise data.
- Active and Reactive power flow for a given SEM in given period.

- Mouse Pointer hovering will show the Parameter Value.
- Report Can be downloaded in PDF/Word format.

4.4.5 AMR SEM Data View:

- Data View of selected SEM. (General Info, LS Data, MIDN Data)
- **General Info:** SEM info like Feeder, Sub Station, CT PT, Location ID etc. with Last LS & MIDN data timestamp.
- **Load Survey:** 15 mins block-wise data for given period (Wh_Net, Frequency).
- **Midnight Data:** 00:00 hrs. data (Active and Reactive Energy) view for given period.
- Data view with/without MF of Meter.
- Data download option in required format. (word, excel, pdf)

4.4.6 AMR Master Data View:

Sub Station

Sub Station	Utility	Total SEM	GENUS	I&T	Total DCU	Connectivity	ISP	SIM Code	SIM No.	Contact
Subhasgram	PGCIL	20	15	5	1	LAN	NA	NA	NA	sem@powergrid.in 9876907890

- Details of all Sub Stations.
- Search, Filter and download options.

4.4.7 AMR Report View:

- Show all downloaded reports.
- Separate Folders based on Reports.
- Folders/ Files with Date-Time Stamp.
- Options to download files/folders in User’s system.

4.4.8 Update CT/PT Ratio:

Sub Station	Utility	SEM Sl No.	Feeder	CT Primary	CT Secondary	PT Primary	PT Secondary	Last CT/PT updated	Action
Subhasgram	PGCIL	ER-1181-A	Feeder-1	1000	1	220	110	20-Oct-21	<input type="button" value="Edit"/>
Subhasgram	PGCIL	ER-1182-A	Feeder-2	1000	1	220	110	20-Oct-21	<input type="button" value="Edit"/>
Subhasgram	PGCIL	ER-1183-A	Feeder-3	1000	1	220	110	20-Oct-21	<input type="button" value="Edit"/>

- Only Admin User have the privilege.
- CT/PT can be searched and Updated SEM/ Sub Station Wise.
- CT/PT report can be downloaded in Excel/PDF.

4.4.9 User Profile Management:

User specific privilege will be given for accessing AMR system and the Features. Admin User have the full access of entire AMR Application. Normal user will have role specific access.

- Normal User: Check and update user info details of individuals.
- Admin User:
 - Create new User with specific role.
 - Set Role base access to features.
 - Check all user info and download in report format.
 - Make users active/ inactive.
 - Check User Log for respective end users.

4.5 AMR Application: Dumping and Data File Processing

AMR application will do the dumping and processing of raw data file of SEM. Data files will be dumped and processed with greater speed. Data insertion into Database will be done simultaneously. Background scripts will be running to speed up the data handling and processing, with ~ zero loss of any raw data file. Dumping script will be deployed in both primary and backup Servers of AMR. Dumping will work in redundancy mode.

Multithreading will be used to control and handle the multiple scripts and programs, that will run for data dumping. This will reduce the time of data dumping significantly. Once any SEM raw data file comes into M2M Server, the same file will be taken and processed immediately and respective data values will be stored into database. At the same time, AMR live dashboard will be updated with the latest time of data retrieval and dumping into AMR. The number of scripts will be increased with proportion to the number of SEM increases in AMR system.

4.6 AMR Application: Load Balancing and Mirroring

AMR application will do the dumping and processing of raw data file of SEM. And using the application, End Users will be able to generate and download various reports. For smooth running of system and do proper load balancing and consumption of database, there will be specific rule setup. Bulk report generation (like NPC report of all Sub Stations, many utilities etc.) will be restricted to max 02 users at a time. Once the reports are generated, then next user will be able to generate bulk reports. Proper pop-up message will be displayed if user is on queue to generate Bulk size reports.

AMR application and AMR Database will be installed at both Primary and Backup application Servers. In ideal scenario, AMR Primary Server will be working in Live environment (both AMR

Application and Database). Raw SEM Data processing and dumping will be done, along with the required UI for AMR system access and report generation. There will be Database mirroring between the Primary AMR Server and Secondary AMR Server database. All required SEM data will be stored in Secondary Server database (along with Primary Server DB). If there is any issue with the Primary Server, then the Secondary Server AMR application will be put in Live Environment. Both SEM data file dumping and UI access will be achieved through the Secondary Server. This will ensure the ~ zero data loss and AMR system availability will be kept as ~ 99%. (except any exceptional scenarios).

4.7 Exclusions

This TS document is for “AMR Hardware, Software and Application Refreshment at Data Centre.”. The scope is to refresh the existing AMR system Hardware, software and Applications which are old (almost 9 years). There is no change in the basic Architecture of existing AMR system. The methodology which are currently being used for SEM data retrieval through DCU and data transmission to ERLDC (via GPRS or LAN) will remain same. Any change in the existing Network setup (Like Public IP address, Current LAN IP, internal IP for AMR access etc.) have not being considered in this scope.

Providing required DC Infra is part of PGCIL scope. PGCIL has to provide the required AMR Rack space and Power Supply needed for all the Hardware. And, maintaining the DC Infra is not in our scope. (As per the existing and ongoing architecture of AMR)

This is for the AMR Data Centre part only. No DR (Disaster Recovery) site been considered here.

Hardware, Software & Application refreshment at Data Center, for PGCIL AMR System

Techno Commercial Proposal, Apr 2022

**for Power Grid Corporation of India Ltd. – Eastern
Region (PGCIL - ER)**

April 28, 2022

TCS Offer No. TCS/PGCIL/AMR-HWSW/TECH-COM/01/0422 DT 28.04.2022

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REVISION LIST

Revision No.	Revision Date	Revision Description	Page No.	Rationale for Change	Change Type (Add / modify / delete)
1.					
2.					
3.					
4.					
5.					
6.					

Table of Contents

1. REFERENCE	6
2. SCOPE OF WORK (SOW), EXCLUSIONS & TIMELINES	6
2.1.1 SCOPE OF WORK	6
2.1.2 EXCLUSIONS	7
2.1.3 HARDWARE SOFTWARE AND APPLICATION REFRESHMENT TIMELINE	8
3. COMMERCIALS	8
3.1 ITEMS.....	8
3.1.1 COST OF COMPONENT OF HARDWARE AND OS SUPPLY ITEMS. (A)	8
3.1.2 COST OF COMPONENT OF SOFTWARE SUPPLY ITEMS. (B)	9
3.1.3 COST OF COMPONENT OF AMR APPLICATION DEVELOPMENT (C).....	9
3.1.4 TOTAL COST OF OWNERSHIP (TCO).....	9
3.1.5 PAYMENT TERMS.....	10
4. TECHNICAL AND OPERATIONAL TERMS AND CONDITIONS.....	10
5. COMMERCIAL TERMS AND CONDITIONS.....	11
5.1 OFFER VALIDITY.....	11
5.2 CONTRACT DURATION	11
5.3 LANGUAGE OF COMMUNICATION	11
5.4 WORK ORDER	12
5.5 CUSTOMER LOCATION	12
5.6 ACCEPTANCE	12
5.7 MODE OF DELIVERY	12
5.8 THIRD PARTY LICENSES/ AGREEMENTS.....	13
5.9 TAXES	13
5.10 ASSISTANCE	13
5.11 METHODOLOGY AND TECHNIQUES	13
5.12 DELEGATION	13
5.13 ADDITIONAL SUPPORT AND SERVICES	13
5.14 TRAVEL AND RELATED EXPENSES	14
5.15 TAXES AND DUTIES	14
5.16 WARRANTY	14
5.17 NON-EMPLOYMENT	14
5.18 CONFIDENTIALITY	14
5.19 RISK PURCHASE.....	16
5.20 SUB-CONTRACTING	16
5.21 GENERAL INDEMNITY	16
5.22 PATENT INDEMNITY	16
5.23 PATENT INFRINGEMENT.....	17
5.24 NOTICES	17
5.25 FORCE MAJEURE.....	18
5.26 WAIVER	18
5.27 SEVERABILITY.....	18

5.28	ASSIGNMENT.....	19
5.29	NON-EXCLUSIVITY	19
5.30	INDEPENDENT RELATIONSHIP	19
5.31	MODIFICATION.....	19
5.32	PUBLICITY.....	19
5.33	ENTIRE UNDERSTANDING.....	19
5.34	SURVIVAL.....	19
5.35	LIABILITY	20
5.36	INTELLECTUAL PROPERTY RIGHTS.....	20
5.37	STATUTORY AND REGULATORY REQUIREMENTS	21
5.38	RELIEF EVENTS.....	21
5.39	TERMINATION	21
5.40	TATA CODE OF CONDUCT	22

The total number of pages in this document is **21**.

1. Reference

Refereeing to PGCIL AMR system installation at Data Centre, which had been done in Mar-2013 period. All the hardware and its corresponding software have crossed the End of life. Referring CERC/CEA regulations, refreshment required of IT hardware and software.

Referring to the technical presentation given on 26-Oct-21 to PGCIL, subsequent mail request from PGCIL dated. 26-Oct-21, PGCIL mail dated 12-04-2022 for resubmitting the revised offer and Technical Specification document submitted to PGCIL (Ref#: TCS/PGCIL-AMR/TS/01/0422 DT 28.04.2022), we hereby submitting the Techno Commercial proposal for “AMR Hardware, Software and Application Refreshment at Data Centre.”

2. Scope of Work (SoW), Exclusions & Timelines

2.1.1 Scope of Work

1. Supply and installation of AMR DC Hardware, as per the existing system architecture. Hardware details and Spec are in below table.

SL No.	Item	Make	Model	OEM Support
1	Firewall	CISCO	Cisco Firepower 1140	05 years
2	Router	CISCO	Cisco ISR 4221 SEC	05 years
3	L3 Switch	CISCO	Catalyst 9200L 24-port data	05 years
4	Application Server	HP	HPE ProLiant DL160 Gen10, with 64 GB RAM, 4TB HDD (RAID-1), Intel Xeon-Silver 4208 Processor	05 Years
5	Tower Server	HP	HPE ProLiant ML350 Gen1, with 32 GB RAM, 2TB HDD (RAID-1), Intel Xeon-Silver 4208 Processor	05 Years

- 05 years OEM Support starting from Delivery of Hardware to PGCIL.
2. Supply and installation of required software. Details as below.

SL No	Item	OEM	Remarks
1	Windows Operating System 2019, MS Office 2021	Microsoft	With SA, and patch update.
2	SQL Server 2019 standard Version, for RDBMS	Microsoft	With SA, and patch update.

3. All the Hardware will have 05 years back-to-back OEM Support. Support period will start from the date of Delivery of hardware materials to PGCIL.
4. Standard SLA will be followed, as per OEM, for any issue rectification.
5. Hardware installation and Rack fitting (at Data Centre, ERLDC) will be done.
6. Hardware configuration will be done as per the existing required AMR architecture.
7. All Server hardening will be done as per standard practice.
8. Firewall rule reconciliation will be done periodically.
9. New AMR application will be developed, with required features. New application will be developed in latest JAVA version.
10. Existing and new features will be developed. (As per Technical Document submitted)
11. Application development, installation, testing and deployment in production will be done unit wise.
12. Application will be hosted in LAN network of Data Center.
13. Feasible Security aspects will be taken care, during the development phase.
14. New AMR application software will have support and will go-through periodic SSA Audit/review by TCS internal team.
15. New application will go through required patch updates periodically.
16. 05 years support will be provided, support will start from the date of delivery to PGCIL.

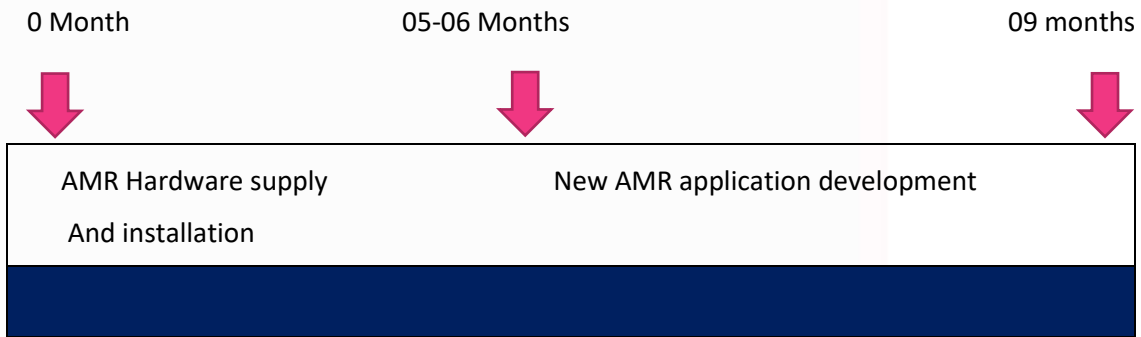
2.1.2 Exclusions

1. New Rack installation at Data Center is not considered. Rack and required Power Supply, Network Ips etc. to be given by ERLDC. (This is as per the existing setup).
2. No change in the existing network Architecture of AMR. (Like Public IP, internal IP addresses etc.)
3. Any DR site setup is not considered here.
4. Maintenance of Data Centre Infra is not in our scope.
5. Hardware setup will be done as per the existing architecture, no new architecture (like public IP change, 05 mins scheduling SEM etc.) will be considered in this scope.
6. Application development will be as per the existing system with new features (as demonstrated in technical presentation). Any new change will be part of separate change request.

7. Hosting of new AMR application software will be same as per the existing architecture. (In ERLDC LAN network). Hosting into another LAN zone, or WAN zone or open internet is out of our scope.
8. Public IP Network monitoring and Security control will not be in scope of us. Inclusion of direct ISP link to AMR network is not feasible in this scope.
9. This proposal is only for the HW and SW of ERLDC Data Center. Any Sub Station related hardware/software change (in DCU) are not considered.
10. Conducting VAPT of AMR hardware is not in our scope.

2.1.3 Hardware software and application refreshment timeline.

Indicative timeline for the execution of the project is given below



3. Commercials

3.1 Items

The Cost for new Hardware, software and the Development of new AMR application are mentioned briefly in below sections and tables.

3.1.1 COST of Component of Hardware and OS Supply Items. (A)

SL No	Item Description	Unit	Qty	Unit- Ex Work Cost (INR)	Unit- Ex Work Cost (INR)
1	Networking Devices- CISCO make (1 Firewall, 1 Router, 1 Switch) with 05 Years Comprehensive OEM Support (from the date of Delivery)	No	1	28,77,406.00	28,77,406.00
2	AMR Servers- HP make (2 Rack Servers, 01 Tower Server) along with required Operating system (Windows Server 2019) and MS Office 2021 license, with 05 Years Comprehensive OEM Support (from the date of Delivery)	No	1	18,00,537.00	18,00,537.00
Total Cost					46,77,943.00.00

3.1.2 COST of Component of Software Supply Items. (B)

SL No	Item Description	Unit	Qty	Unit- Ex Work Cost (INR)	Unit- Ex Work Cost (INR)
1	SQL Server 2019 license, for RDBMS with 05 Years Comprehensive OEM Support (from the date of Delivery)	No	2	3,51,308.50	7,02,617.00
Total Cost					7,02,617.00

3.1.3 COST of Component of AMR Application Development (C)

SL No	Item Description	Unit	Qty	Unit- Ex Work Cost (INR)	Unit- Ex Work Cost (INR)
1	New AMR application development with all features	Item	1	8569233	85,69,233.00
Total Cost					85,69,233.00

3.1.4 TOTAL COST OF OWNERSHIP (TCO)

TOTAL COST OF HW SUPPLY (w/o taxes) (A)	TOTAL COST OF SW SUPPLY (w/o taxes) (B)	TOTAL COST OF Application Development (w/o taxes) (C)	TOTAL COST OF OWNERSHIP (w/o taxes) A+B+C = T
46,77,943.00	7,02,617.00	85,69,233.00	1,39,49,793.00

Total Cost of Ownership in figures without taxes: 1,39,49,793.00 /-

Total Cost of Ownership in words without taxes: One Crore Thirty Nine Lakhs Forty Nine Thousand Seven Hundred Ninety-Three Rupees only.

Note:

- 1) *These prices are exclusive of all applicable taxes, duties, freight, and insurance. Taxes, duties, freight, and insurance will be extra, as applicable at the time of invoicing pursuant to the relevant 'Taxes and Duties' clause as detailed in this document.
- 2) Any change in the existing tax rates or introduction of any new taxes (applicable for this contract) will be on customer's account and will be charged at the rate applicable at the time of invoicing.

3.1.5 PAYMENT TERMS

The following payment terms are applicable for the project.

SL No	Payment Milestone
HW and SW SUPPLY	
1	100% billing after Delivery of Hardware and Software
New AMR Application Development	
2	<ol style="list-style-type: none"> 1. MS-1: 40% billing at the end of month-3 after completion of framework development in existing Servers. 2. MS-2: 40% billing at the end of month-6, after development completed in new Setup. 3. MS-3: Remaining 20% billing after completion of 2 months of deployment of the new application in new setup.

NOTE:

1. *Applicable Road Permit / C-Form has to be provided by PGCIL.*
2. *All payment shall be released within 30 days from the date of invoice submission. Delayed payments may attract penalty @2% per month or part thereof.*

4. Technical and Operational Terms and Conditions

1. All the new hardware will be delivered to Data Centre directly.
2. Hardware installation and configuration will be done at Data Centre, immediately after the Hardware delivered to PGCIL.
3. Hardware installation will be done in the existing AMR system rack.
4. Required documents like Warranty Certificate, test certificate will be provided accordingly.
5. The existing network architecture (like public IP used, network accesses and controls etc.) should remain same as it is currently working. Any network related changes will not be considered in this scope.
6. Application development will be done by remote VPN connection or physically sitting at Data Centre during the development lifecycle period.
7. After hardware installation and application development is completed, the ownership will be transferred to Customer.

8. VAPT is not part of this scope. Customer should conduct it separately. VAPT open points closure will be our scope (which are related to AMR).
9. No additional requirement will be considered.
10. Accessing of AMR system via Intranet (at ERLDC) will be same which is existing. There will be no additional access provided either any other LAN zone in ERLDC or outside ERLDC.
11. Public IP Network monitoring and Security control will not be in scope of us. Inclusion of direct ISP link to AMR network is not feasible in this scope.
12. Hosting of new AMR application software will be same as per the existing architecture. (In ERLDC LAN network). Hosting into another LAN zone, or WAN zone or open internet is out of our scope.
13. End to end security monitoring of AMR is not feasible in this scope. However, the new HW and Application software will go through TCS internal security audit process and resolution actions will be taken.

5. Commercial Terms and Conditions

The assignment will be governed by the following commercial terms and conditions.

5.1 Offer Validity

This offer is valid till May 28, 2022. Acceptance from PGCIL is expected within this period. Acceptance can be in the form of Firm Order/Contract/Letter of Award. Revalidation of offer is mandatory if acceptance is not received within the timeframe stated here.

5.2 Contract Duration

This contract will be valid for a time period as detailed in the above [Section 2.3](#) of this proposal and subject to finalization between PGCIL and TCS. This Commercial is valid with the assumption that start date of this project will be effective from 01-Jun-22.

5.3 Language of Communication

The official language of communication for the proposed assignment will be English. Further, all deliverable documents will be in the English language.

5.4 Work Order

As the first step for the assignment, post finalization of the job, PGCIL will issue TCS a Work Order with reference to TCS' proposal and acceptance of the terms and conditions.

5.5 Customer Location

This project will be done at current Data Center (ERLDC, Kolkata) premises. Required documents and signing will be done from PGCIL-ER2 RGQ office, Kolkata.

5.6 Acceptance

Keeping the project duration in mind, each deliverable delivered by TCS, which is subject to acceptance, shall be reviewed and accepted by Customer within a period of two (2) days from the date of delivery. All deliverables will be deemed accepted by Customer on successful closure of review comments, whereupon Customer shall provide sign-off letter to TCS. However, if Customer does not provide any review comments within the above mentioned period of two (2) days from delivery or written acceptance on deliverables is not received within two (2) days of its delivery, then notwithstanding anything contained herein, the deliverables shall be deemed to be unconditionally and absolutely accepted by the Customer at the end of the two (2) day period allotted for provision of such review comments.

The cost of correction of the deliverables shall be to the account of the Customer if the failure is for reasons not solely and entirely attributable to the TCS. This clause will be applicable for acceptance related to all types of deliverables, including the acceptance of such deliverables which ensures Go Live of the corresponding component as well.

5.7 Mode of Delivery

The mode of delivery for different components shall be as follows:

- a. All documentation including specifications, manuals etc. shall be delivered in softcopy format only via electronic mail.
- b. The hardware items, spares, etc. will be delivered in physical form at ERLDC, Kolkata office.
- c. All third-party licenses, if applicable, shall be delivered in softcopy/electronic format.
- d. Links to download sites, for licensed software downloads, as provided by OEM, shall be shared with Customer. All such downloads will be carried out by Customer.

5.8 Third Party Licenses/ Agreements

Customer shall be responsible for signing of all Third Party Licenses/Agreements as required for timely execution of the project. All terms and conditions will be as detailed in the corresponding End User License Agreements.

5.9 TAXES

Prices quoted are exclusive of all applicable taxes, duties, freight, and insurance. Taxes, duties, freight, and insurance will be extra, as applicable at the time of invoicing pursuant to the relevant 'Taxes and Duties' clause as detailed in this document. Building CESS is not part of this job.

5.10 Assistance

PGCIL will ensure, through its Project Co-ordinator, transfer of information, specification of mutually agreed change-requirements (Change Requests), availability of materials such as documents and equipment, meetings with relevant users and other personnel among other requisites for TCS to understand and document the same for the purpose of time-bound formal approval by the PGCIL, before the service is undertaken by TCS.

Necessary and sufficient time will have to be spent by PGCIL personnel with TCS personnel during this stage of the assignment.

5.11 Methodology and Techniques

TCS standards, methodology, tools, and techniques will be used for maintaining the software, in the absence of PGCIL standards. However, in the event of any PGCIL specific standards, the same can be used for maintaining the software application.

5.12 Delegation

Neither PGCIL nor TCS will have the right to delegate any rights or obligations concerning the proposal without the written consent of the other party.

5.13 Additional Support and Services

In case the PGCIL requires any additional support in execution of its tasks in respect of the assignment, it shall be provided to them by TCS on availability-basis at then current market rate of TCS.

5.14 Travel and Related Expenses

In case, the assignment requires any travel by TCS experts outside the customer location mentioned above, PGCIL will bear all expenses for such travel after mutually discussed with all stakeholders.

5.15 Taxes and Duties

TCS shall be reimbursed its liability for payment of any statutory duty/tax/levy including interest and/or new or an increase in the rates of existing taxes or any other sum, if any payable in respect of any sales tax and/or any other state or central levy, including GST. This will apply retrospectively, if so applicable upon TCS.

5.16 Warranty

Except as set forth in the Agreement to be finalized, TCS makes no warranties to PGCIL, express or implied, with respect to any services or deliverables provided hereunder, including, without limitation, any implied warranties of merchantability or fitness for a particular purpose. All such other warranties are hereby disclaimed by TCS.

5.17 Non-Employment

PGCIL will neither offer to employ nor employ, directly or otherwise, any TCS employee associated for the purpose of or with the proposed assignment during the period between the date of this proposal and two years from the completion of the assignment arising from it.

5.18 Confidentiality

Both parties and their respective employees may, in the course of their business relationship with the other, acquire or be exposed to information that is proprietary or confidential to the other party, its affiliates or its or their respective Purchasers.

Both parties undertake to hold all such information in strictest confidence and further undertakes not to (i) disclose such information either in whole or in part to any person other than those of its officers, employees and agents who need to know the confidential information for the purpose authorized hereunder provided that each such officer, employee or agent has agreed in writing to maintain the confidentiality of the confidential information in accordance with the terms hereof or (ii) use such

information for any purpose whatsoever save as may be strictly necessary for the performance of the obligations of that party under this Agreement.

The receiving party shall indemnify and hold harmless the other party and their directors, officers, employees, agents, and representatives from and against all or any claims, damages, losses, liabilities, or expenses (including, but not limited to, reasonable attorneys' fee and disbursements), [however incurred], arising out of a breach of this undertaking by either party or their officers.

The parties agree that money damages would not be a sufficient remedy for any breach of this undertaking by the receiving party, and that in addition to the remedies provided in this Agreement and any other remedies, the aggrieved party shall be entitled to specific performance and injunctive or other equitable relief as a remedy for any such breach.

However, nothing in this clause shall prevent the receiving party from treating confidential information as non-confidential, if such information is:

- i) in the possession of, or was known to receiving party prior to its receipt, without an obligation to maintain its confidentiality.
- ii) becomes generally known to the public without violation of this agreement by the receiving party.
- iii) obtained by receiving party from a third party (i) who the receiving party does not know to have violated, or to have obtained such information in violation of any obligation to the disclosing party with respect to such information, (ii) who does not require the receiving party to refrain from disclosing such information and (iii) who has the right to disclose it, without the obligation to keep such information confidential.
- iv) independently developed by receiving party without the use of confidential information and without the participation of individuals who have had access to confidential information.
- v) is required to be disclosed by the receiving party under the compulsion of law, or by order of any court or government or regulatory body to whose supervisory authority the receiving party is subject; provided that, in any such event, the receiving party shall give the disclosing party notice in writing as soon as practicable (which shall, subject to the applicable law, be prior notice where possible and not later than 30 days after the disclosure) of any disclosure, and the receiving party shall use its best effort to obtain assurance that the disclosed information will be accorded confidential treatment.

This clause shall survive the expiry or earlier termination of this Agreement and for a period of two years thereafter.

5.19 Risk Purchase

During the period of contract, if the contractor fails to rectify any defect pointed out to him, the same shall be got done by POWERGRID at the risk and cost of contractor, which shall not exceed 5% of the value of the undelivered goods/services and recovered from any other amount payable to the contractor.

5.20 Sub-Contracting

TCS shall be free to sub-contract any portion of the work. Details of sub-contractors will be shared with Customer for reference purposes. Responsibility for the sub-contractors performance and compliance to contract terms and conditions shall be with the TCS.

5.21 General Indemnity

Customer will, during the period of the coverage of this Contract defend, indemnify and hold TCS harmless from any costs, expenses, loss, injury, claim or damage resulting from (i) any death or injury to any person or property of TCS arising out of the use or possession of the equipment or location of Customer by TCS or its personnel (ii) any action or claim that may be made or initiated against the TCS by any third parties alleging infringement of their rights arising out of any materials provided by Customer to the TCS and the limitation or liability provided herein shall not apply to such loss, injury, claim or damages.

5.22 Patent Indemnity

Customer shall indemnify and hold harmless TCS and its employees, officers and subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which TCS may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Agreement arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided by Customer.

5.23 Patent Infringement

TCS shall have no liability for any claim of infringement based on: (i) use of a superseded or altered release of some or all of the deliverables including, but not limited to, Customer's failure to use corrections, fixes, or enhancements made available by TCS ; (ii) the combination, operation, or use of some or all of the deliverables or any modification thereof furnished under this Agreement with information, software, specifications, instructions, data, or materials not furnished by TCS if the infringement would have been avoided by not combining, operating, or using the deliverables or the modification thereof; (iii) some or all of the deliverables or the modification thereof, which is based on Customer's material, data or design; (iv) any change, not made by TCS, to some or all of the deliverables or any modification thereof or (v) use of the deliverables otherwise than for the purposes authorized hereunder.

If any of the deliverables is held or is believed by TCS to infringe, TCS shall have the option, at its expense, to (i) modify the deliverables so as to make it non-infringing, (ii) obtain for Customer a license to continue using the deliverables, or (iii) terminate the license for the infringing part of the deliverables and refund a pro rata portion of the fees paid for that portion of deliverables. This clause provides for TCS's entire liability and Customer's exclusive remedy for claims of infringement of intellectual property rights related to the deliverables.

Each of the parties shall separately defend, indemnify, and hold each other harmless from and against any liability, loss, costs, or expenses (including reasonable Attorney's fees) arising out of or resulting from breach of the provisions herein.

5.24 Notices

All notices, requests, demands and other communications under this proposal or in connection herewith shall be given to or made upon the respective parties as follows –

- TCS – Anando Bhattacharya, Tata Consultancy Services, Delta Park Eden, Plot B1, Salt Lake Electronics Complex, Sector V, Salt Lake, Kolkata 700091, West Bengal, Phone # 9874162233

OR

- TCS – Sourav Bera, Tata Consultancy Services, Delta Park Eden, Plot B1, Salt Lake Electronics Complex, Sector V, Salt Lake, Kolkata 700091, West Bengal, Phone # 03366369242,
- PGCIL – as informed to TCS from time to time

Or to such other person or addresses as any of the parties shall have notified to the others.

All notices, requests, demands, and other communications given or made in accordance with the provisions of this proposal shall be in writing by letter, fax, or email.

5.25 Force Majeure

If the performance specified in the proposal is prevented, restricted, delayed, or interfered with by reason of:

- Fire, explosion, cyclone, floods.
- War, revolution, acts of public enemies, blockage of embargo.
- Any law, order proclamation, ordinance, demand, or requirements of any Government or authority or representative of any such Government, including restrictive trade practices or regulations.
- Strikes, shutdowns or labour disputes which are not instigated for the purpose of avoiding obligations herein; or
- Any other circumstances beyond the control of the party affected.

then notwithstanding anything here before contained, if such an event lasts for a continuous period of thirty (30) days then either party may at any time thereafter while such performance continues to be excused, terminate this assignment without liability, by notice in writing to the other party. However, TCS shall be entitled to receive payments for all services rendered by it under this assignment.

5.26 Waiver

No forbearance, indulgence, or relaxation by any party at any time to require performance of any provision of this proposal shall in any way affect, diminish or prejudice the right of such party to require performance of that provision and any waiver by any party or any breach of any provisions of this proposal shall not be construed as a waiver or an amendment of the provisions itself or a waiver of any right under or arising out of this proposal.

5.27 Severability

If any term, clause, or provision of this proposal shall be judged to be invalid for any reason whatsoever, such invalidity shall not affect the validity or operation of any other term, clause or provision of this proposal and such invalid term clause or provision shall be deemed to have been deleted from this proposal.

5.28 Assignment

Neither party shall be entitled to assign or transfer all or any of its rights, benefits, and obligations under this proposal without the prior written consent of the other party.

5.29 Non-exclusivity

TCS shall be free to do similar business either for itself or for any other party or offer similar services to any third parties but without in any way affecting the services agreed to be offered by TCS under this proposal.

5.30 Independent Relationship

This proposal is not intended to create a relationship such as a partnership, joint venture, agency, or employment relationship. Neither party may act in a manner which expresses or implies a relationship other than that of independent party nor bind the other party.

5.31 Modification

This proposal may be modified only by an amendment executed in writing by a duly authorized representative for each party.

5.32 Publicity

Neither party shall publicize any information pertaining to this assignment or the other party without seeking the prior written consent of the other party.

5.33 Entire Understanding

This proposal together with the Schedules, Annexure, and Exhibits hereto and executed by the Parties hereto constitutes the entire understanding between the Parties hereto with respect to the subject matter hereto and supersedes and cancels all previous negotiations thereof.

5.34 Survival

The clauses of this proposal which by their nature are intended to survive shall so survive the termination / expiry of this proposal.

5.35 Liability

TCS shall not be held liable for any delay or failure in its obligations, if and to the extent such delay or failure has resulted from a delay or failure by or on behalf of Customer to perform any of Customer's obligations. In such event, TCS shall be (a) allowed additional time as may be required to perform its obligations, and (b) entitled to charge Customer for additional costs incurred, if any, as may be mutually agreed upon between the parties.

Neither party shall be liable to the other for any special, indirect, incidental, consequential (including loss of profit or revenue), exemplary or punitive damages or loss of data whether in contract, tort, or other theories of law, even if such party has been advised of the possibility of such damages.

The total cumulative liability of either party arising from or relating to this Contract shall not exceed the total amount paid to TCS by Customer under that applicable work in the last twelve (12) months for the services that gives rise to such liability (as of the date the liability arose).

5.36 Intellectual Property Rights

- i. Subject to provisions of the Scope of Agreement including the Scope of Work and Financials as finalized between both organizations, all deliverables created and developed by TCS specifically and exclusively for Customer, together with any associated copyright and other intellectual property rights, shall be the sole and exclusive property of Customer, provided all payments due to TCS for the deliverables rendered under the Agreement, have already been paid by Customer to TCS.
- ii. All Intellectual Property Rights of TCS in its software, tools, processes, utilities, methodology, proprietary products and/or components including any development, customization, enhancement etc. carried out by TCS thereto of and on its own software, tools, processes, utilities, methodology, proprietary products and/or components in the course of providing services hereunder, shall remain the exclusive property of TCS ("TCS Pre-Existing IP") and Customer shall not acquire any right title or interest of any nature on TCS Pre-Existing IP except to the extent provided herein.
- iii. Similarly, all Intellectual Property Rights (IPR) in any Third-Party Software used in providing services including those forming part of or incorporated into the deliverables shall remain with the respective Third-Party owners / vendors licensor and Customer shall have user rights in accordance with End User License Agreement (EULA) as applicable to use of such software.

- iv. Each party shall be entitled to use in the normal course of its business and in providing same or similar services or development of similar deliverables for its other clients, the general knowledge and experience gained and retained in the unaided human memory of its personnel, in the performance of the Agreement. For the purpose of clarity, TCS shall be free to provide any services or design any deliverable (s) that perform functions same or similar to the deliverables being provided hereunder for Customer, for any other client or customer of TCS (including without any limitation any affiliate, competitor, or potential competitor of Customer).

5.37 Statutory and Regulatory Requirements

All the required details with respect to statutory and regulatory requirements relevant to the realization of the product/service will be made available to TCS by Customer. Where such requirements will not/cannot be provided to TCS, the onus shall be on Customer to make it explicitly known to TCS at the very outset.

5.38 Relief Events

TCS shall not be liable or responsible for any delay or failure to perform Support Services and/or Development Services or other services under this Proposal to the extent that such delay or failure to perform has arisen as a result of any delay or failure by Customer or its employees or agents to perform any of its duties and obligations as set out in this Proposal and the applicable Work Package/Statement of Work. In the event that TCS is delayed or prevented from performing its obligations due to such failure or delay on the part of Customer, TCS shall be allowed an additional period of time to perform its obligations and unless otherwise agreed the additional period shall be equal to the amount of time for which TCS is delayed or prevented from performing its obligations due to such failure or delay on the part of Customer. TCS shall be entitled to invoice Customer for the TCS's incremental costs (over and above the Charges) as a result of such failure or delay on the part of Customer.

5.39 Termination

Either party can terminate the agreement with **Two (2) months'** notice in writing for non-performance of any of the articles of this agreement by the other party or for any other reasons.

Termination shall be without prejudice to any other rights or remedies a party may be entitled to hereunder or at law and shall not affect any accrued rights or liabilities of either party nor the coming into force or continuation in force of any provision hereof which is expressly intended to come into force or continue in force on or after the termination.

In the event of this assignment being terminated, PGCIL shall be liable to make payments of the entire amount due under this assignment for which services have been rendered by TCS' consultants. Forthwith on the expiry or earlier termination of this agreement, each party shall, return to the other party all documents and materials, belonging to the other party with regard to this assignment or shall at the option of the disclosing party destroy all documents or materials in connection with this assignment

5.40 Tata Code of Conduct

We, in our dealings, are self-regulated by the "Tata Code of Conduct. We request your support in helping us adhere to the Code in letter and spirit. We request that any violation or potential violation of the Code by any person be promptly brought to the notice of the Ethics Counsellor (corporate.ethics@tcs.com) or the CEO of TCS. All communication received in this regard will be treated and kept as confidential.

Contact

For more information contact,

Anando Bhattacharya

Client Partner

Energy, Resources, Utilities, & Infrastructure (ERUI),

Tata Consultancy Services

Eden Building, Plot – B1, Block EP & GP

Sector V, Salt Lake, Kolkata 700091

India

Cell: +91 9874162233

Mailto: anando.bhattacharya@tcs.com

About Tata Consultancy Services (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled infrastructure, engineering, and assurance services. This is delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development. A part of the Tata Group, India's largest industrial conglomerate, TCS has a global footprint and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

For more information, visit us at www.tcs.com.

IT Services**Business Solutions****Consulting**

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SET-I**DIRECT LAN CONNECTIVITY POSSIBLE BY PORT OPENING: -**

S/NO	Utility Name	Substation Name
1	BIHAR	ARAH(ARB)
2	POWERGRID	BINAGURI(BIN)
3	JHARKHAND	CHANDIL(CHN)
4	IPPR	CHUZACHEN(CZN)
5	JHARKHAND	DALTONGANJ
6	DMTCL	DARBHANGA
7	DMTCL	DARBHANGA
8	NTPC	DARLIPALLI
9	POWERGRID	DURGAPUR(DGP)
10	CESC	EMSS(EMS)
11	GRIDCO	GMR(GMR)
12	CESC	HALDIA(HAL)
13	GRIDCO	INDRAVATI(IND)
14	SIKKIM	JORTHANG
15	BIHAR	KAHALGAON(KAH)
16	WEST BENGAL	KALIMPONG(KLM)
17	BIHAR	KARMANASHA NEW
18	BSPTCL	KHIZIRSARAI
19	BIHAR	KUDRA(KUD)
20	WEST BENGAL	KURSEONG(KSG)
21	BIHAR	LAUKAHI
22	IPPR	MAITHON POWER LTD (MRB)
23	IPPR	MAITHON POWER LTD (MRB)
24	DMTCL	MOTIHARI
25	DMTCL	MOTIHARI
26	BSPTCL	MOTIPUR
27	NTPC	NABINAGAR
28	BIHAR	NEW PUSAULI(NPS)
29	GENERATOR	OPGC 400KV
30	JHARKHAND	PATRATU(PTJ)
31	BIHAR	PURNEA(PUR)
32	WBSETCL	RAMMAM(RMM)
33	BIHAR	RAXAUL
34	GRIDCO	RENGALI(REG)
35	GRIDCO	SADEIPALI
36	WEST BENGAL	SAGARDIGHI(SAG)
37	WEST BENGAL	SANTALDIH(SNT)
38	IPPR	STERLITE(SEL)
39	IPPR	STERLITE(SEL)
40	IPPR	STERLITE(SEL)
41	POWERGRID	LAKHISARAI(PG)

SET-II

KIOSK LOCATION WHERE ADDITIONAL CONVERTER AND FIBER OPTICAL CONNECTIVITY REQUIRED: -

S/NO	Utility Name	Substation Name
1	IPPR	ADHUNIK(APNRL)
2	IPPR	ADHUNIK(APNRL)
3	POWERGRID	ALIPURDUAR
4	POWERGRID	ALIPURDUAR
5	POWERGRID	ALIPURDUAR
6	POWERGRID	ANGUL
7	POWERGRID	ANGUL(AGL)
8	POWERGRID	BERHAMPORE(BMP)
9	POWERGRID	CHANDAUTI
10	JHARKHAND	DUMKA(DUM)
11	POWERGRID	GAYA(GYA)
12	WEST BENGAL	JEERAT(JRT)
13	POWERGRID	KEONJHAR(KJR)
14	POWERGRID	MEDINIPUR
15	SIKKIM	MELLI(MEL)
16	POWERGRID	PATNA(PAT)
17	POWERGRID	PURNEA(PRN)
18	POWERGRID	PUSAUL
19	POWERGRID	RANCHI NEW
20	POWERGRID	RANCHI NEW
21	POWERGRID	GAYA(GYA)
22	POWERGRID	NEW JEERAT

SET-III

LAN CONNECTIVITY PROVISIONALLY POSSIBLE IN DUE COURSE: -

S/NO	Utility Name	Substation Name
1	JHARKHAND	DEOGARH(DEO)
2	JHARKHAND	GARWA(GAR)
3	JHARKHAND	JAMTARA(JMT)
4	JHARKHAND	JAPLA(JAP)
5	JHARKHAND	KENDOPOS(KEN)
6	JHARKHAND	NAGARUNTARI
7	SIKKIM	RAVANGLA(RAV)
8	SIKKIM	DIKCHU

Integration of PGCIL LAN with existing DCU in AMR

Techno Commercial Proposal, Apr 2022

**for Power Grid Corporation of India Ltd. – Eastern
Region (PGCIL - ER)**

Apr 30, 2022

TCS Offer No. TCS/PGCIL/AMR-LAN/TECH-COM/01/0422 DT 30.04.2022

Proprietary Notice

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TATA Code of Conduct

We, in our dealings, are self-regulated by a code of conduct as enshrined in the “TATA Code of Conduct”. We request your support in helping us adhere to the code in letter and spirit. We request that any violation or potential violation of the code by any person be promptly brought to the notice of the Local Ethics Counsellor or the Principal Ethics Counsellor or the CEO of TCS. All communication received in this regard will be treated and kept as confidential.

Confidentiality Notice

Both parties undertake to hold information shared in the course of this business relationship in strictest confidence and undertakes not to disclose such information, either in whole or in part, to any person other than those of its officers, employees, and agents who need to know the confidential information for the purpose explicitly authorized for.

Confidential Information shall mean any information disclosed by one party (hereinafter the “Disclosing Party”) to the other (hereinafter the “Receiving Party”), either directly or indirectly, in writing, by inspection of tangible objects (including, without limitation, documents, prototypes, samples, media, documentation, discs and code). Confidential Information shall include, without limitation, documents, any materials, trade secrets, know-how, formulae, processes, algorithms, ideas strategies, inventions, data, network configurations, system architecture, designs, flow charts, drawings, proprietary information, business and marketing plans, financial and operational information, and all other non-public information, material or data relating to the current and /or future business and operations of the Disclosing Party and any analysis, compilations, studies, summaries, extracts or other documentation prepared by the Receiving Party based on information disclosed by the Disclosing Party. Confidential Information may also include information disclosed to the Receiving Party by third parties on behalf of the Disclosing Party.

REVISION LIST

Revision No.	Revision Date	Revision Description	Page No.	Rationale for Change	Change Type (Add / modify / delete)
1.					
2.					
3.					
4.					
5.					
6.					

Table of Contents

1. REFERENCE	6
2. SCOPE OF WORK (SOW), EXCLUSIONS & TIMELINES.....	6
2.1.1 SCOPE OF WORK.....	6
2.1.2 EXCLUSIONS	6
2.1.3 LAN INTEGRATION PERIOD	6
3. COMMERCIALS	7
3.1 ITEMS.....	7
3.1.1 COST OF COMPONENT OF HARDWARE SUPPLY ITEMS. (A).....	7
3.1.2 COST OF COMPONENT OF SERVICES. (B)	7
3.1.3 TOTAL COST OF OWNERSHIP (TCO)	7
3.1.4 PAYMENT TERMS.....	8
4. TECHNICAL AND OPERATIONAL TERMS AND CONDITIONS	8
5. COMMERCIAL TERMS AND CONDITIONS	9
5.1 OFFER VALIDITY.....	9
5.2 CONTRACT DURATION	9
5.3 LANGUAGE OF COMMUNICATION	9
5.4 WORK ORDER	9
5.5 CUSTOMER LOCATION	9
5.6 ACCEPTANCE	9
5.7 MODE OF DELIVERY	10
5.8 THIRD PARTY LICENSES/ AGREEMENTS.....	10
5.9 TAXES	10
5.10 ASSISTANCE	11
5.11 METHODOLOGY AND TECHNIQUES	11
5.12 DELEGATION	11
5.13 ADDITIONAL SUPPORT AND SERVICES.....	11
5.14 TRAVEL AND RELATED EXPENSES	11
5.15 TAXES AND DUTIES.....	11
5.16 WARRANTY.....	12
5.17 NON-EMPLOYMENT.....	12
5.18 CONFIDENTIALITY.....	12
5.19 RISK PURCHASE	13
5.20 SUB-CONTRACTING	14
5.21 GENERAL INDEMNITY	14
5.22 PATENT INDEMNITY.....	14
5.23 PATENT INFRINGEMENT	15
5.24 NOTICES.....	15
5.25 FORCE MAJEURE	16
5.26 WAIVER	16
5.27 SEVERABILITY	17
5.28 ASSIGNMENT	17
5.29 NON-EXCLUSIVITY	17
5.30 INDEPENDENT RELATIONSHIP	17
5.31 MODIFICATION.....	17
5.32 PUBLICITY.....	17

5.33	ENTIRE UNDERSTANDING	17
5.34	SURVIVAL	18
5.35	LIABILITY.....	18
5.36	INTELLECTUAL PROPERTY RIGHTS.....	18
5.37	STATUTORY AND REGULATORY REQUIREMENTS.....	19
5.38	RELIEF EVENTS.....	19
5.39	TERMINATION	20
5.40	TATA CODE OF CONDUCT.....	20

The total number of pages in this document is **21**.

1. Reference

With the References of AMR Phase-4 LOA, Ref#: ER-II/KOL/CS/I-2446/P-2420/1929 Dated. 20/07/2020, Amendment Ref#: ER-II/KOL/CS/I-2446/P-2420/Amend-II/4374 Dated. 05/07/2021 and PGCIL OCC meeting dated 21-Apr-22, we are submitting the proposal for LAN integration with existing DCU of AMR system at 71 locations in PGCIL ER. Power Grid Corporation of India Ltd. (PGCIL) hereinafter referred to as customer in this proposal.

2. Scope of Work (SoW), Exclusions & Timelines

2.1.1 Scope of Work

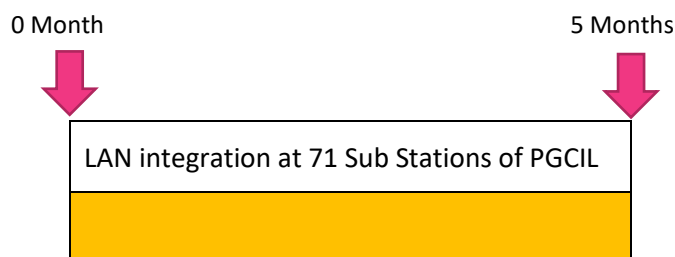
1. Integrating DCU with PGCIL LAN connection at 71 Sub Stations in Eastern Region of PGCIL.
2. Out of 71 locations, 50 are normal Sub Station type and 21 are Kisok type locations.
3. Fiber optical cable and media converters will be used for Kisok type locations to establish communication in long distance between DCU and LAN Switch of PGCIL.
4. Required Cabling work to be done to connect the DCU with the Switch port of LAN connectivity Set-Up, which is already present at Sub Stations.

2.1.2 Exclusions

1. Any civil work that is required at substations.
2. Opening Port in LAN Switch of PGCIL is not in our scope. PGCIL has to provide the required port.
3. Connectivity from respective Sub Stations to ERLDC data center should be direct path. No IP nating/hop in between.
4. MICC/CIP are not applicable against the HW items, as these are running items and will be directly installed at Respective Sub Stations.

2.1.3 LAN Integration Period

Indicative time line for the execution of the project is given below



3. Commercials

3.1 Items

The Costs for LAN integration work at 69 locations is mentioned in the below table.

3.1.1 COST of Component of Hardware Supply Items. (A)

SL No	Item Description	Unit	Qty	Unit- Ex Work Cost (INR)	Unit- Ex Work Cost (INR)
1	Fibre Optical Cable with Converters and other accessories	Mtr.	18000	94.50	17,01,000.00
Total Cost					17,01,000.00

3.1.2 COST of Component of Services. (B)

SL No	Item Description	Unit	Qty	Unit- Ex Work Cost (INR)	Unit- Ex Work Cost (INR)
1	Integration of PGCIL LAN with existing DCU	No	71	15564	11,05,044.00
2	Additional Charges for LAN Integration at Kiosk Sites	No	21	17830	3,74,430.00
Total Cost					14,79,474.00

3.1.3 TOTAL COST OF OWNERSHIP (TCO)

TOTAL COST OF HW SUPPLY (w/o taxes) (A)	TOTAL COST OF Services (w/o taxes) (B)	TOTAL COST OF OWNERSHIP (w/o taxes) A+B+C = T
17,01,000.00	14,79,474.00	31,80,474.00

Total Cost of Ownership in figures without taxes: 31,80,474.00 /-

Total Cost of Ownership in words without taxes: Thirty-One Lakhs Eighty Thousand Four Hundred Seventy-Four Rupees Only.

Note:

- 1) *These prices are exclusive of all applicable taxes, duties, freight, and insurance. Taxes, duties, freight, and insurance will be extra, as applicable at the time of invoicing pursuant to the relevant 'Taxes and Duties' clause as detailed in this document.
- 2) Any change in the existing tax rates or introduction of any new taxes (applicable for this contract) will be on customer's account and will be charged at the rate applicable at the time of invoicing.

3.1.4 PAYMENT TERMS

The following payment terms are applicable for the project.

SL No	Payment Milestone
HW SUPPLY	
1	Item will be billed quarterly with equivalent amount of qty Supplied
Services	
2	Item will be billed quarterly with equivalent amount of qty completed

NOTE:

1. *Applicable Road Permit / C-Form has to be provided by PGCIL.*
2. *All payment shall be released within 30 days from the date of invoice submission. Delayed payments may attract penalty @2% per month or part thereof.*

4. Technical and Operational Terms and Conditions

1. Opening Port in LAN Switch of PGCIL is not in our scope. PGCIL has to provide the required port.
2. Connectivity from respective Sub Stations to ERLDC data center should be direct path. No IP nating/hop in between.
3. PGCIL should provide a good Bandwidth Network (3-5 MBPS minimum) for this LAN connectivity.
4. No Civil work to be done in this Scope.
5. MICC/CIP are not applicable against the HW items, as these are running items and will be directly installed at Respective Sub Stations.

5. Commercial Terms and Conditions

The assignment will be governed by the following commercial terms and conditions.

5.1 Offer Validity

This offer is valid till May 30, 2022. Acceptance from PGCIL is expected within this period. Acceptance can be in the form of Firm Order/Contract/Letter of Award. Revalidation of offer is mandatory if acceptance is not received within the timeframe stated here.

5.2 Contract Duration

This contract will be valid for a time period as detailed in the above [Section 2.3](#) of this proposal and subject to finalization between PGCIL and TCS. This Commercial is valid with the assumption that start date of this project will be effective from 01-Jun-22.

5.3 Language of Communication

The official language of communication for the proposed assignment will be English. Further, all deliverable documents will be in the English language.

5.4 Work Order

As the first step for the assignment, post finalization of the job, PGCIL will issue TCS a Work Order with reference to TCS' proposal and acceptance of the terms and conditions.

5.5 Customer Location

This project will be done at current Data Center (ERLDC, Kolkata) premises. Required documents and signing will be done from PGCIL-ER2 RGQ office, Kolkata.

5.6 Acceptance

Keeping the project duration in mind, each deliverable delivered by TCS, which is subject to acceptance, shall be reviewed and accepted by Customer within a period of two (2) days from the date of delivery. All deliverables will be deemed accepted by Customer on successful closure of review comments, whereupon Customer shall provide sign-off letter to TCS. However, if Customer does not provide any review comments within the above mentioned period of two (2) days from delivery or written acceptance on deliverables is not received within two (2) days of its delivery, then notwithstanding anything contained herein, the deliverables shall be deemed to be unconditionally

and absolutely accepted by the Customer at the end of the two (2) day period allotted for provision of such review comments.

The cost of correction of the deliverables shall be to the account of the Customer if the failure is for reasons not solely and entirely attributable to the TCS. This clause will be applicable for acceptance related to all types of deliverables, including the acceptance of such deliverables which ensures Go Live of the corresponding component as well.

5.7 Mode of Delivery

The mode of delivery for different components shall be as follows:

- a. All documentation including specifications, manuals etc. shall be delivered in softcopy format only via electronic mail.
- b. The hardware items, spares, etc. will be delivered and installed at Sub Stations.
- c. All third-party licenses, if applicable, shall be delivered in softcopy/electronic format.
- d. Links to download sites, for licensed software downloads, as provided by OEM, shall be shared with Customer. All such downloads will be carried out by Customer.

5.8 Third Party Licenses/ Agreements

Customer shall be responsible for signing of all Third Party Licenses/Agreements as required for timely execution of the project. All terms and conditions will be as detailed in the corresponding End User License Agreements.

5.9 TAXES

Prices quoted are exclusive of all applicable taxes, duties, freight, and insurance. Taxes, duties, freight, and insurance will be extra, as applicable at the time of invoicing pursuant to the relevant '**Taxes and Duties**' clause as detailed in this document. Building CESS is not part of this job.

5.10 Assistance

PGCIL will ensure, through its Project Co-ordinator, transfer of information, specification of mutually agreed change-requirements (Change Requests), availability of materials such as documents and equipment, meetings with relevant users and other personnel among other requisites for TCS to understand and document the same for the purpose of time-bound formal approval by the PGCIL, before the service is undertaken by TCS.

Necessary and sufficient time will have to be spent by PGCIL personnel with TCS personnel during this stage of the assignment.

5.11 Methodology and Techniques

TCS standards, methodology, tools, and techniques will be used for maintaining the software, in the absence of PGCIL standards. However, in the event of any PGCIL specific standards, the same can be used for maintaining the software application.

5.12 Delegation

Neither PGCIL nor TCS will have the right to delegate any rights or obligations concerning the proposal without the written consent of the other party.

5.13 Additional Support and Services

In case the PGCIL requires any additional support in execution of its tasks in respect of the assignment, it shall be provided to them by TCS on availability-basis at then current market rate of TCS.

5.14 Travel and Related Expenses

In case, the assignment requires any travel by TCS experts outside the customer location mentioned above, PGCIL will bear all expenses for such travel.

5.15 Taxes and Duties

TCS shall be reimbursed its liability for payment of any statutory duty/tax/levy including interest and/or new or an increase in the rates of existing taxes or any other sum, if any payable in respect of any sales tax and/or any other state or central levy, including GST. This will apply retrospectively, if so applicable upon TCS.

5.16 Warranty

Except as set forth in the Agreement to be finalized, TCS makes no warranties to PGCIL, express or implied, with respect to any services or deliverables provided hereunder, including, without limitation, any implied warranties of merchantability or fitness for a particular purpose. All such other warranties are hereby disclaimed by TCS.

5.17 Non-Employment

PGCIL will neither offer to employ nor employ, directly or otherwise, any TCS employee associated for the purpose of or with the proposed assignment during the period between the date of this proposal and two years from the completion of the assignment arising from it.

5.18 Confidentiality

Both parties and their respective employees may, in the course of their business relationship with the other, acquire or be exposed to information that is proprietary or confidential to the other party, its affiliates or its or their respective Purchasers.

Both parties undertake to hold all such information in strictest confidence and further undertakes not to (i) disclose such information either in whole or in part to any person other than those of its officers, employees and agents who need to know the confidential information for the purpose authorized hereunder provided that each such officer, employee or agent has agreed in writing to maintain the confidentiality of the confidential information in accordance with the terms hereof or (ii) use such information for any purpose whatsoever save as may be strictly necessary for the performance of the obligations of that party under this Agreement.

The receiving party shall indemnify and hold harmless the other party and their directors, officers, employees, agents, and representatives from and against all or any claims, damages, losses, liabilities, or expenses (including, but not limited to, reasonable attorneys' fee and disbursements), [however incurred], arising out of a breach of this undertaking by either party or their officers.

The parties agree that money damages would not be a sufficient remedy for any breach of this undertaking by the receiving party, and that in addition to the remedies provided in this Agreement and any other remedies, the aggrieved party shall be entitled to specific performance and injunctive or other equitable relief as a remedy for any such breach.

However, nothing in this clause shall prevent the receiving party from treating confidential information as non-confidential, if such information is:

- i) in the possession of, or was known to receiving party prior to its receipt, without an obligation to maintain its confidentiality.
- ii) becomes generally known to the public without violation of this agreement by the receiving party.
- iii) obtained by receiving party from a third party (i) who the receiving party does not know to have violated, or to have obtained such information in violation of any obligation to the disclosing party with respect to such information, (ii) who does not require the receiving party to refrain from disclosing such information and (iii) who has the right to disclose it, without the obligation to keep such information confidential.
- iv) independently developed by receiving party without the use of confidential Information and without the participation of individuals who have had access to confidential information.
- v) is required to be disclosed by the receiving party under the compulsion of law, or by order of any court or government or regulatory body to whose supervisory authority the receiving party is subject; provided that, in any such event, the receiving party shall give the disclosing party notice in writing as soon as practicable (which shall, subject to the applicable law, be prior notice where possible and not later than 30 days after the disclosure) of any disclosure, and the receiving party shall use its best effort to obtain assurance that the disclosed information will be accorded confidential treatment.

This clause shall survive the expiry or earlier termination of this Agreement and for a period of two years thereafter.

5.19 Risk Purchase

During the period of contract, if the contractor fails to rectify any defect pointed out to him, the same shall be got done by POWERGRID at the risk and cost of contractor, which shall not exceed 5% of the value of the undelivered goods/services and recovered from any other amount payable to the contractor.

5.20 Sub-Contracting

TCS shall be free to sub-contract any portion of the work. Details of sub-contractors will be shared with Customer for reference purposes. Responsibility for the sub-contractors performance and compliance to contract terms and conditions shall be with the TCS.

5.21 General Indemnity

Customer will, during the period of the coverage of this Contract defend, indemnify and hold TCS harmless from any costs, expenses, loss, injury, claim or damage resulting from (i) any death or injury to any person or property of TCS arising out of the use or possession of the equipment or location of Customer by TCS or its personnel (ii) any action or claim that may be made or initiated against the TCS by any third parties alleging infringement of their rights arising out of any materials provided by Customer to the TCS and the limitation or liability provided herein shall not apply to such loss, injury, claim or damages.

5.22 Patent Indemnity

Customer shall indemnify and hold harmless TCS and its employees, officers and subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which TCS may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Agreement arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided by Customer.

5.23 Patent Infringement

TCS shall have no liability for any claim of infringement based on: (i) use of a superseded or altered release of some or all of the deliverables including, but not limited to, Customer's failure to use corrections, fixes, or enhancements made available by TCS ; (ii) the combination, operation, or use of some or all of the deliverables or any modification thereof furnished under this Agreement with information, software, specifications, instructions, data, or materials not furnished by TCS if the infringement would have been avoided by not combining, operating, or using the deliverables or the modification thereof; (iii) some or all of the deliverables or the modification thereof, which is based on Customer's material, data or design; (iv) any change, not made by TCS, to some or all of the deliverables or any modification thereof or (v) use of the deliverables otherwise than for the purposes authorized hereunder.

If any of the deliverables is held or is believed by TCS to infringe, TCS shall have the option, at its expense, to (i) modify the deliverables so as to make it non-infringing, (ii) obtain for Customer a license to continue using the deliverables, or (iii) terminate the license for the infringing part of the deliverables and refund a pro rata portion of the fees paid for that portion of deliverables. This clause provides for TCS's entire liability and Customer's exclusive remedy for claims of infringement of intellectual property rights related to the deliverables.

Each of the parties shall separately defend, indemnify, and hold each other harmless from and against any liability, loss, costs, or expenses (including reasonable Attorney's fees) arising out of or resulting from breach of the provisions herein.

5.24 Notices

All notices, requests, demands and other communications under this proposal or in connection herewith shall be given to or made upon the respective parties as follows –

- TCS – Anando Bhattacharya, Tata Consultancy Services, Delta Park Eden, Plot B1, Salt Lake Electronics Complex, Sector V, Salt Lake, Kolkata 700091, West Bengal, Phone # 9874162233
OR
- TCS – Sourav Bera, Tata Consultancy Services, Delta Park Eden, Plot B1, Salt Lake Electronics Complex, Sector V, Salt Lake, Kolkata 700091, West Bengal, Phone # 03366369242,

- PGCIL – as informed to TCS from time to time

Or to such other person or addresses as any of the parties shall have notified to the others.

All notices, requests, demands, and other communications given or made in accordance with the provisions of this proposal shall be in writing by letter, fax, or email.

5.25 Force Majeure

If the performance specified in the proposal is prevented, restricted, delayed, or interfered with by reason of:

- Fire, explosion, cyclone, floods.
- War, revolution, acts of public enemies, blockage of embargo.
- Any law, order proclamation, ordinance, demand, or requirements of any Government or authority or representative of any such Government, including restrictive trade practices or regulations.
- Strikes, shutdowns or labour disputes which are not instigated for the purpose of avoiding obligations herein; or
- Any other circumstances beyond the control of the party affected.

then notwithstanding anything here before contained, if such an event lasts for a continuous period of thirty (30) days then either party may at any time thereafter while such performance continues to be excused, terminate this assignment without liability, by notice in writing to the other party. However, TCS shall be entitled to receive payments for all services rendered by it under this assignment.

5.26 Waiver

No forbearance, indulgence, or relaxation by any party at any time to require performance of any provision of this proposal shall in any way affect, diminish or prejudice the right of such party to require performance of that provision and any waiver by any party or any breach of any provisions of this proposal shall not be construed as a waiver or an amendment of the provisions itself or a waiver of any right under or arising out of this proposal.

5.27 Severability

If any term, clause, or provision of this proposal shall be judged to be invalid for any reason whatsoever, such invalidity shall not affect the validity or operation of any other term, clause or provision of this proposal and such invalid term clause or provision shall be deemed to have been deleted from this proposal.

5.28 Assignment

Neither party shall be entitled to assign or transfer all or any of its rights, benefits, and obligations under this proposal without the prior written consent of the other party.

5.29 Non-exclusivity

TCS shall be free to do similar business either for itself or for any other party or offer similar services to any third parties but without in any way affecting the services agreed to be offered by TCS under this proposal.

5.30 Independent Relationship

This proposal is not intended to create a relationship such as a partnership, joint venture, agency, or employment relationship. Neither party may act in a manner which expresses or implies a relationship other than that of independent party nor bind the other party.

5.31 Modification

This proposal may be modified only by an amendment executed in writing by a duly authorized representative for each party.

5.32 Publicity

Neither party shall publicize any information pertaining to this assignment or the other party without seeking the prior written consent of the other party.

5.33 Entire Understanding

This proposal together with the Schedules, Annexure, and Exhibits hereto and executed by the Parties hereto constitutes the entire understanding between the Parties hereto with respect to the subject matter hereto and supersedes and cancels all previous negotiations thereof.

5.34 Survival

The clauses of this proposal which by their nature are intended to survive shall so survive the termination / expiry of this proposal.

5.35 Liability

TCS shall not be held liable for any delay or failure in its obligations, if and to the extent such delay or failure has resulted from a delay or failure by or on behalf of Customer to perform any of Customer's obligations. In such event, TCS shall be (a) allowed additional time as may be required to perform its obligations, and (b) entitled to charge Customer for additional costs incurred, if any, as may be mutually agreed upon between the parties.

Neither party shall be liable to the other for any special, indirect, incidental, consequential (including loss of profit or revenue), exemplary or punitive damages or loss of data whether in contract, tort, or other theories of law, even if such party has been advised of the possibility of such damages.

The total cumulative liability of either party arising from or relating to this Contract shall not exceed the total amount paid to TCS by Customer under that applicable work in the last twelve (12) months for the services that gives rise to such liability (as of the date the liability arose).

5.36 Intellectual Property Rights

- i. Subject to provisions of the Scope of Agreement including the Scope of Work and Financials as finalized between both organizations, all deliverables created and developed by TCS specifically and exclusively for Customer, together with any associated copyright and other intellectual property rights, shall be the sole and exclusive property of Customer, provided all payments due to TCS for the deliverables rendered under the Agreement, have already been paid by Customer to TCS.
- ii. All Intellectual Property Rights of TCS in its software, tools, processes, utilities, methodology, proprietary products and/or components including any development, customization, enhancement etc. carried out by TCS thereto of and on its own software, tools, processes, utilities, methodology, proprietary products and/or components in the course of providing services hereunder, shall remain the exclusive property of TCS ("TCS Pre-Existing IP") and Customer shall not acquire any right title or interest of any nature on TCS Pre-Existing IP except to the extent provided herein.

- iii. Similarly, all Intellectual Property Rights (IPR) in any Third-Party Software used in providing services including those forming part of or incorporated into the deliverables shall remain with the respective Third-Party owners / vendors licensor and Customer shall have user rights in accordance with End User License Agreement (EULA) as applicable to use of such software.
- iv. Each party shall be entitled to use in the normal course of its business and in providing same or similar services or development of similar deliverables for its other clients, the general knowledge and experience gained and retained in the unaided human memory of its personnel, in the performance of the Agreement. For the purpose of clarity, TCS shall be free to provide any services or design any deliverable (s) that perform functions same or similar to the deliverables being provided hereunder for Customer, for any other client or customer of TCS (including without any limitation any affiliate, competitor, or potential competitor of Customer).

5.37 Statutory and Regulatory Requirements

All the required details with respect to statutory and regulatory requirements relevant to the realization of the product/service will be made available to TCS by Customer. Where such requirements will not/cannot be provided to TCS, the onus shall be on Customer to make it explicitly known to TCS at the very outset.

5.38 Relief Events

TCS shall not be liable or responsible for any delay or failure to perform Support Services and/or Development Services or other services under this Proposal to the extent that such delay or failure to perform has arisen as a result of any delay or failure by Customer or its employees or agents to perform any of its duties and obligations as set out in this Proposal and the applicable Work Package/Statement of Work. In the event that TCS is delayed or prevented from performing its obligations due to such failure or delay on the part of Customer, TCS shall be allowed an additional period of time to perform its obligations and unless otherwise agreed the additional period shall be equal to the amount of time for which TCS is delayed or prevented from performing its obligations due to such failure or delay on the part of Customer. TCS shall be entitled to invoice Customer for the TCS's incremental costs (over and above the Charges) as a result of such failure or delay on the part of Customer.

5.39 Termination

Either party can terminate the agreement with **Two (2) months'** notice in writing for non-performance of any of the articles of this agreement by the other party or for any other reasons.

Termination shall be without prejudice to any other rights or remedies a party may be entitled to hereunder or at law and shall not affect any accrued rights or liabilities of either party nor the coming into force or continuation in force of any provision hereof which is expressly intended to come into force or continue in force on or after the termination.

In the event of this assignment being terminated, PGCIL shall be liable to make payments of the entire amount due under this assignment for which services have been rendered by TCS' consultants. Forthwith on the expiry or earlier termination of this agreement, each party shall, return to the other party all documents and materials, belonging to the other party with regard to this assignment or shall at the option of the disclosing party destroy all documents or materials in connection with this assignment

5.40 Tata Code of Conduct

We, in our dealings, are self-regulated by the "Tata Code of Conduct. We request your support in helping us adhere to the Code in letter and spirit. We request that any violation or potential violation of the Code by any person be promptly brought to the notice of the Ethics Counsellor (corporate.ethics@tcs.com) or the CEO of TCS. All communication received in this regard will be treated and kept as confidential.

Contact

For more information contact,

Anando Bhattacharya

Client Partner

Energy, Resources, Utilities, & Infrastructure (ERUI),

Tata Consultancy Services

Eden Building, Plot – B1, Block EP & GP

Sector V, Salt Lake, Kolkata 700091

India

Cell: +91 9874162233

Mailto: anando.bhattacharya@tcs.com

About Tata Consultancy Services (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled infrastructure, engineering, and assurance services. This is delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development. A part of the Tata Group, India's largest industrial conglomerate, TCS has a global footprint and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

For more information, visit us at www.tcs.com.

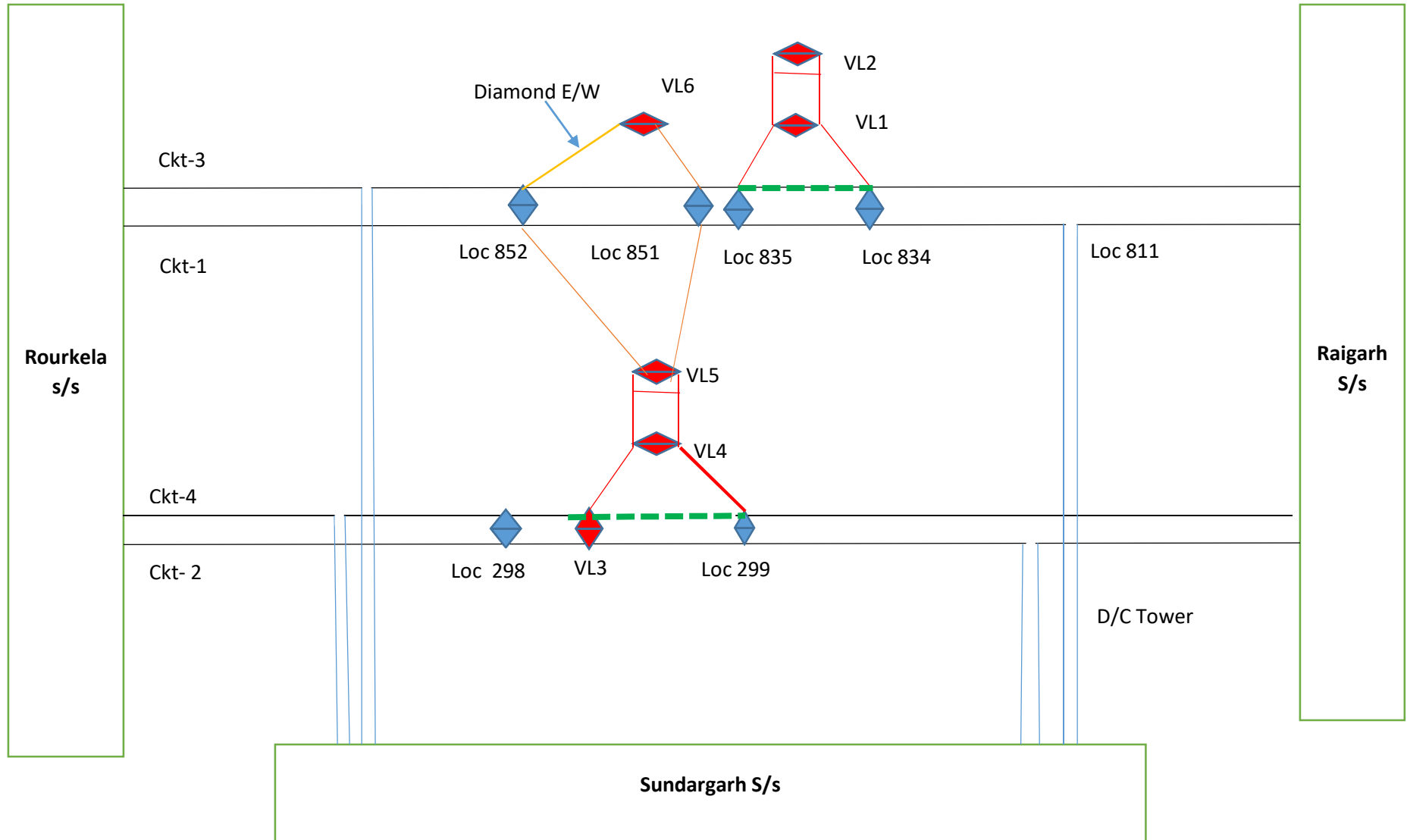
IT Services


Business Solutions

Consulting

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DIAGRAM FOR REMOVAL OF VEDANTA TOWER FROM RAIGARH Ckt#1 &3 and & Ckt# 2& 4 AND MAKING DIRECT LINK



 VL1...5 – Vedanta Tower are required to be removed from temporary arrangement.

 To be made direct on permanent basis

Input Data

Sl.No	Description	Unit	Qty	Remarks
	400kV SnG-RGH-1&3			
1	834-835	Mtr	400	
2	834-VL1	Mtr	250	
3	835-VL1	Mtr	250	
4	VL1-VL2	Mtr	350	
	400kV SnG-RGH-1&3			
1	298-299	Mtr	390	
2	298-VL3	Mtr	220	
3	299-VL4	Mtr	110	
4	VL3-VL4	Mtr	93	
5	VL4-VL5	Mtr	94	
6	VL5-VL6	Mtr	180	
7	851-852	Mtr	400	
8	VL5-851	Mtr	250	
9	VL5-852	Mtr	250	
10	VL6-851	Mtr	250	
11	VL6-851	Mtr	250	

Type of Tower: VL1 -DD+0, VL2-DD+0, VL3-DD+0, VL4- DD+12, VL5-DD+30



पश्चिमबङ्ग पश्चिम बंगाल WEST BENGAL

G 262684

**Connection Agreement
Between
Power Grid Corporation of India Limited
&
Sterlite Energy Limited**

THIS AGREEMENT is made on the Twenty Second Day of December Two Thousand and Ten.

BETWEEN

Power Grid Corporation of India Limited, a Company incorporated under the Companies Act, 1956 having its registered office at B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110016 (hereinafter called the "CTU") which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include its successors or permitted assigns and for the purposes of this Connection Agreement the CTU shall act through its Executive Director, Eastern Region-II Head Quarter having address at J-1-15, Block - EP, Sector - V, Salt Lake City, Kolkata - 700091;

AND



R. P. Singh
रवि प्रकाश सिंह Ravi P. Singh
कार्यकारी निदेशक, पूर्वी क्षेत्र-II/Executive Director, ER-II
पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
POWER GRID CORPORATION OF INDIA LIMITED
J-1-15, ब्लॉक-EP, सेक्टर-V, शंकरा नगर, कोलकाता-700 091
J-1-15, Block-EP, Sector-V, Shankar Nagar, Salt Lake City, Kolkata-700 091

Sterlite Energy Limited, a Company registered under the Companies Act, 1956, having registered office at **SIPCOT Industrial Complex, Maduria Bye Pass Road, T V Param, P.O. Tuticorin, Tamilnadu 628 002**, hereinafter called as the "Applicant" or "SEL", which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include its successors or permitted assigns, through its Senior Vice President(Power)

"CTU" and the "Applicant" or "SEL" are hereinafter collectively referred to as "Parties" and individually as "Party".

WHEREAS,

The Applicant has applied to the CTU vide their letter no. SEL/PGCIL/con-4/01 dated 28.09.2010 for connection of its **Sterlite Energy Limited Thermal Power Plant** with the CTU's Transmission System and use of the CTU's Transmission System to transmit electricity to and /or from the Inter-State Transmission System.

AND WHEREAS,

The CTU has agreed to connect to the M/s Sterlite Energy Limited Thermal Power Plant at the Connection Point i.e. 400 kV switchyard located at M/s Sterlite Energy Limited, Thermal Power Plant, Jharsuguda with the

- (i) 400/220 kV Rourkela Substation and Raigarh Substation using the Transmission and Communication System of the CTU namely 400 kV D/C Rourkela (PG)- Raigarh (PG) - 210 KM with LOOP-IN-LOOP-OUT Connectivity at M/s SEL Switchyard having 25 KM Transmission Line (under the scope of M/s Sterlite Energy Limited) as Interim Arrangement; and
- (ii) S/Y of M/s Sterlite Energy Limited to Jharsuguda Pool 400 kV D/C with associated line bays (under the scope of M/s Sterlite Energy Limited) and LILO of Rourkela - Raigarh 400 kV D/C Line (existing line) at Jharsuguda pool (utilizing the LILO portion of the interim arrangement) (under the scope of POWERGRID) as Final Arrangement

to transmit electricity as well as real time data to and/or from the CTU's Transmission and Communication System

AND WHEREAS,



R. P. Singh
रवि प्रकाश सिंह / Ravi P. Singh
सह-प्रबन्धक निदेशक, पूर्वी क्षेत्र-II/Executive Director, ER-II
पावर ग्रीड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
POWER GRID CORPORATION OF INDIA LIMITED
J-4-13, एन.डी.ए., टाउन-4, संजयजी नगर, बंगलूरु-560 004
J-4-13, Enclave-II, Sector-4, Sanjay Nagar, Bangalore-560 004

The Parties have therefore agreed to enter into this Connection Agreement to record the terms and conditions upon which the Parties will carry out their respective Connection Works, in addition to the estimated cost of works required to be carried out by the CTU related to the interconnection, in accordance with the Connection Agreement.

The parties shall separately take up modalities for implementation of the works on mutually agreed terms and conditions. The scope of works, time schedule for completion of works, including the timelines for the various milestones to be reached for completion of works, shall form an Appendix to this agreement, and shall form the basis for evaluating if the works by the parties are being executed in time. Similarly, for the regular O&M of the connection equipments owned by the Applicant and located in the CTU's premises/switchyard, the parties shall separately take up the O&M agreement on mutually agreed terms and conditions.

The connectivity through LILO of 400 kV D/C Rourkela (PG) - Raigarh (PG) transmission line and the associated bays at M/s Sterlite Energy Limited at their switchyard is expected to be commissioned by 15th January, 2011. The expected date of establishing connectivity through final arrangement shall be as per BPTA.

NOW, THEREFORE, THIS AGREEMENT WITNESSETH AS UNDER:

The words/expressions used in this Agreement, unless as defined below or repugnant to the context, shall have the same meaning as assigned to them by the Electricity Act, 2003 and the rules or regulations framed there under including those issued/framed by CERC (as defined hereunder), as amended or re-enacted from time to time or the General Clauses Act, failing which it shall bear its ordinary English meaning. The words/expressions when used in this Agreement shall have the respective meanings as specified below:

1. DEFINITIONS



R. Singh
रवि प्रकाश सिंह / Ravi P. Singh
कार्यवाहक निदेशक, पूर्वी क्षेत्र-II/Executive Director, CR-II
शुभर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
POWER GRID CORPORATION OF INDIA LIMITED
2-1-12, 40th GP, सेक्टर-V, कोलकाता सिटी, कोलकाता-700 001
2-1-12, Block-GP, Sector-V, Salt Lake City, Cal-700 001

- 1.1. The "Agreement" or the "Connection Agreement" means this Connection Agreement between CTU and the Applicant.
 - 1.2. CEA means Central Electricity Authority constituted u/s 70(1) of the Electricity Act, 2003
 - 1.3. "CERC Connectivity Regulations" means, Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-state Transmission and related matters) Regulations, 2009, notified by CERC, including amendments, modification, changes made from time to time
 - 1.4. Grid Standard means Central Electricity Authority (Grid Standards) Regulations, 2010 including amendments, modification, changes made from time to time
 - 1.5. CTU, means Power Grid Corporation of India Limited, notified by the Central Government as Central Government Utility u/s 38 of the Electricity Act, 2003.
 - 1.6. DCP means Data Collection Point for conveying the data of flow of power from Sterlite Energy Limited Thermal Power Plant to its customers i.e. Rourkela (PG) 400/220 kV S/s data collection centre.
 - 1.7. Grid Code or IEGC means Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulation, 2010, notified u/s 79 (1) (h) of the Electricity Act, 2003, including amendments, modification, changes made from time to time .
 - 1.8. "Meters Regulations" means Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006
 - 1.9. NLDC means National Load Despatch Centre constituted u/s 26(1) of the Electricity Act, 2003.
 - 1.10. RLDC means Eastern Regional Load Despatch Centre and other Regional Load dispatch centres constituted u/s 27(1) of the Electricity Act, 2003.
 - 1.11. ISTS means Inter-State Transmission System.
2. General Terms and Conditions for Connectivity



R. Singh
रवि प्रकाश सिंह/Ravi P. Singh
कार्यवाहक निदेशक, पूर्वी क्षेत्र-II/Executive Director, CR-II
पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
POWER GRID CORPORATION OF INDIA LIMITED
3-1-12, पॉस्ट-एच, सेक्टर-4, बॉम्बे कैंप, कोलकाता-700 091
3-1-16, ब्लॉक-6P, सेक्टर-4, ईस्ट लार्ज सिटी, कोलकाता-700 091

- 2.1. The Parties agree to the following General Conditions:
- (a) The parties have agreed to abide by the CERC Connectivity Regulations, in respect of procedure of grant of connectivity and other matters.
 - (b) The Applicant shall be responsible for planning, design, construction, and safe and reliable operation of its own equipments in accordance with the CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007, CEA (Technical Standards for Construction of electrical plants and electric lines) Regulations, Grid Standard, Grid Code and other statutory provisions.
 - (c) The Applicant shall provide necessary facilities for voice & data communication for transfer of real time operational data such as voltage, frequency, real and reactive power flow, energy, status of circuit breakers & isolators, transformer taps and other parameters from their station to DCP of CTU as per Grid Code at their own cost. CTU shall provide access to Applicant's data transfer through communication network in case spare channels are available or to be created on mutually agreed terms and conditions. The location of DCP of CTU shall be the nearest station connected electrically where wideband communication capacity of CTU is available. Additional communication system from DCP to the concerned RLDC shall be the responsibility of CTU; however its cost shall be borne by the Applicant. The responsibility of data transfer shall be that of the Applicant.
- 2.2 The following documents and their schedules which have been initialed by the parties and annexed hereto shall be deemed to form an integral part of this Agreement, in the order of precedence listed below :-
- (a) Long Term Open Access granted by the CTU vide its letter no. C/ENG/E/00/SEF/OA dated 14.05.2009.
 - (b) Application submitted vide letter no. SEL/PGCIL/con-4/01 dated 28.09.2010 seeking connection to the Inter-State transmission system.
 - (c) Acceptance conveyed by CTU for Connection vide letter no. ER-II/kol/PESM/ dated 08.12.2010.



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एग्जिक्यूटिव डायरेक्टर, पूर्वी क्षेत्र-II/Executive Director, ER-II
पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
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J-1-15, Block-EP, Sector-V, Salt Lake City, Cal-700 001

2.2.1 Compliance to Statutory/Regulatory Clearances

- (i) Notwithstanding anything in the Agreement to the contrary, the CTU & Applicant shall be responsible for obtaining the statutory clearances/approvals for carrying out the works requiring connection to the ISTS. Accordingly, the provisions of the Agreement dealing with the carrying out of the Works, either by the CTU or the Applicant (unless otherwise agreed mutually) in all respects would be conditional on and subject to the CTU being satisfied that the necessary approvals/clearances are available with the Applicant.
- (ii) M/s Sterlite Energy Limited shall comply to the instructions given by WRLDC/ERLDC from time to time to ensure safe grid operation.

3. Payment of Charges and Costs

3.1. Monthly Transmission Tariff

The Applicant hereby declares and agrees that it shall pay the Monthly Transmission Tariff for above referred transmission lines and for use of Inter-State Transmission System including ULDC/NLDC charges, as and when Long term access, Medium-term open access or Short-term open access is availed by the Applicant, in accordance with the relevant regulations of CERC in this regard.

3.2. Additional costs

The Applicant declares and hereby agrees that it shall pay the cost towards modification/alterations to the infrastructure of CTU for accommodating the proposed connection as specified by CTU furnished in the connection details.

3.3. Payment for damages

The Applicant declares and hereby agrees that it shall pay/make good damages, if any, caused by the Applicant to the property of the CTU or inter-state transmission licensee other than the CTU, as the case may be,



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which has been notified by the CTU, as the case may be, within reasonable time of its occurrence, during the course of control, operation and maintenance of the equipment.

3.4. O&M Charges:

The O&M of Equipment of the CTU and Applicant shall be undertaken by the respective parties on their own. Where Applicant requisitions the services and support of CTU for O&M of its equipments, these O&M charges shall be payable in accordance with mutually agreed terms and conditions.

4. Conditions Precedent to the implementation of the Commissioning Instructions

The Applicant shall have to get appropriate "Commissioning Instruction" prior to actually first charging of the equipment with the grid. The charging instruction shall be issued only when the CTU is satisfied (by acting reasonably) that:

- (a) The Connection Works have been completed;
- (b) The Applicant has complied with its all obligations as set out in the Offer Letter;
- (c) The Applicant has established and demonstrated the voice & data communication facilities to concerned RLDC;
- (d) The Applicant has obtained necessary approvals like Electrical Inspectorate of CEA etc. or from other competent authority as applicable;
- (e) The Applicant has complied with its obligations under the CERC Connectivity Regulations.

5. Metering

The Applicant shall install and maintain the Metering equipments, in accordance with the Meters Regulations and Grid Code. The parties shall be responsible for timely and periodic calibration of the meters and metering equipments on mutually agreed period. It shall be the responsibility of SEL to ensure collection of SEM (Special Energy meter) Data and transmission



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of the same to WRLDC/ERLDC every Monday as per the provision of IEGC.

The measurands, status indications to be telemetered and transmitted to WRLDC/ERLDC would be specified by WRLDC/ERLDC and the responsibility for ensuring the same lies with SEL. SEL shall ensure configurations and generation of SOE (Sequence of events) and transmission of the SOE file to WRLDC/ ERLDC. In case of substation Automation, provision of gateway, configuration of data points at gateway level to be ensured by SEL in coordination with CTU/ERLDC/WRLDC Modalities of reconfiguration of data points if any shall have to be done with prior intimation to ERLDC/WRLDC.

6. Communication Equipments

The Applicant shall arrange.

- a) 2 number Data channels (600 Bauds) & 1 number Speech Channels, DCP;
- b) PLCC links – SEL, Jharsuguda TPS to Rourkela (PG) S/s – 2 numbers of 4 kHz links;
- c) 400 kV SEL S/Y to 400 kV Raigarh S/s (PG) – 2 numbers of 4 kHz link;
- d) Total number of PLCC Panels required – 8 numbers, The PLCC equipment can be provided subject to availability of frequencies. Alternatively Applicant shall arrange alternative communication link between M/s Sterlite Energy Ltd. TPS and 400/220 kV S/s at Rourkela and Raigarh.

The Applicant shall also bear the cost of additional communication equipments / cards if any required for integration of M/s Sterlite Energy TPS generation data at DCP.



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2-1-12, एनटी-एफ, टावर-4, गोल कला टावर, तेलुगु-500 001

Sterlite Energy Limited has to ensure that power injection into the regional grid is limited to 400 MW only which is to be regulated through the Power Management System (PMS) to be incorporated in their generation project. The power Management System should be in service at all times and if required that same may be taken out of service only after receiving such permission from ERLDC/WRLDC.

7.1 Site Access

Being restricted area the CTU may give permission or allow access to the employees and/or agents and/or contractors/subcontractors and/or invitees of the Applicant in its premises to carry out preliminary site investigation works, the Connection Works, modification works, inspections, etc., based on a written request by the Applicant or inter-State transmission licensee giving reasonable advance intimation. All such actions are to be carried out under the strict supervision of the CTU's authorized representative to safeguard the safety and security requirements of CTU's installations and safety of the representatives of the Applicant or inter-State transmission licensee.

Similarly the Applicant may also allow, on prior permission, site access to the CTU's employees and/or agents and/or contractors/subcontractors and/or invitees to carry out preliminary site investigation works, inspections and works etc in the connection site of the Applicant, provided that a written request has been made giving reasonable advance intimation.

7.2 Accessibility to the Applicant's premises

Both the parties agree to allow access to each other in their site upon written request. Access to Site shall include the right to bring such vehicles, plant, machinery and construction materials as shall be reasonably necessary to



Pr Singh
Pr Singh
Director, EN-1
Sterlite Energy Limited
Bangalore
21-11-11

carry out the functions in respect of which the access is granted. Being a restricted area, any individual of one party to whom access is given under the Agreement shall comply with all reasonable directions given by the other party and its duly authorized employees and agents to safe guard the interest of safety and security requirements of personnel and equipment. All such access shall be exercisable without payment of any kind.

8. Transfer Assignment and Pledge

The Applicant shall not transfer, assign or pledge its rights and obligations under this connection agreement to any other person.

9. Notice

All correspondence/notices required or referred to under this Agreement shall be in writing and signed by the respective authorized signatories of the parties mentioned herein, unless otherwise notified. Each such notice shall be deemed to have been duly given if delivered or served by registered mail/courier service/speed post with an acknowledgment due to other party (ies) as per authorization by parties.

The authorities of the parties who shall be responsible for the correspondence notices etc. in connection with this agreement shall be informed in advance.

10. Settlement of Disputes and Arbitration

All differences and/or disputes between the parties arising out of or in connection with these presents shall at first instance be settled through amicable settlement at the level of CEO/CMD.

In the event of unresolved disputes or differences as covered under the statutory arbitration provided under The Electricity Act, 2003, the same shall be resolved accordingly.

Notwithstanding the existence of any disputes and differences referred to arbitration, the parties herein shall continue to perform their respective obligations under this Agreement.



R. Singh
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11. **Coordination between the parties**

Executive Director (ED) of the Eastern Region - II of CTU and Head (O&M) of Sterlite Energy Limited shall be nodal authorities for coordination to the implementation of the Connection Agreement from time to time. However for day to day coordination the concerned engineering in charge of the control rooms set up in premises of the respective parties shall maintain coordination of the Connection Agreement. ED and Head (O&M), with due intimations to each other, may delegate certain matters for study, improvement, investigations, deliberations, trouble shooting to their respective officers.

12. **Force Majeure**

Force Majeure herein is defined as any cause which is beyond the control of the CTU or the Applicant as the case may be, which could not be foreseen or with a reasonable amount of diligence could not have been foreseen and which substantially affects the performance of the agreement. Force Majeure events would include:

- Natural phenomenon including but not limited to floods, droughts, earthquake and epidemics;
- War (whether declared or undeclared), invasion, armed conflict or act of foreign enemy in each case involving or directly affecting India, revolution, riot, insurrection or other civil commotion, act of terrorism or sabotage in each case within India;
- Nuclear explosion, radio active or chemical contamination or ionizing radiation directly affecting the generation station, captive generating plant or bulk consumer, inter-state transmission system of the CTU or inter-state



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4-1-10, Block-EP, Sector-V, Salt Lake City, Cal-700 091

transmission licensee other than CTU, or any facility or system that is integral to and substantial for the performance of this agreement.

- Any event or circumstances of a nature analogous to any events set forth as above within India.

Provided either party shall within fifteen (15) days from the occurrence of such a Force Majeure event, notify the other in writing of such cause(s).

Neither of the parties shall be liable for delays in performing obligations on account of any force majeure causes as referred to and/or defined above.

13. Confidentiality

The parties shall keep in confidence any information obtained under this Connection Agreement and shall not divulge the same to any third party without the prior written consent of the other party, unless such information is

- a) in the public domain,
- b) already in the possession of the receiving party,
- c) required by the Govt. Ministries/Agencies/Court of competent jurisdiction.

The information exchanged herein between the parties shall be used only for the purpose of, and in accordance with, this Agreement and for the purpose stated herein. This clause shall remain in force even after termination of Connection Agreement.

14. Governing Laws and Jurisdiction

The shall agreement be governed by Indian Laws and Rules made there under.

15. Jurisdiction



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पावर ग्रीड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
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J-1-15, ब्लॉक-EP, सेक्टर-V, साई लैक सिटी, नई दिल्ली-110 001

The courts at Delhi shall have exclusive jurisdiction over the matters and issues arising out of this agreement.

16. **Amendment to the Connection Agreement**

In case of Modification to point of connection like re-allocation of bays, upgradation of voltage level etc. by either of the parties, if mutually agreed, an amendment to the Connection Agreement shall be executed between the parties within 30 days of implementing such modification.

IN WITNESS WHEREOF the CTU and the Applicant have caused this Agreement to be executed by duly authorized representative on date above first herein written.

Signed for and on behalf of:-

Powergrid Corporation of India Limited,
Eastern Region Transmission System II,
J-1-15, Block EP, Sector V, Salt Lake
Kolkata - 700091


Authorised Signatory
रवि प्रकाश सिंह/Ravi P. Singh
कार्यपालक निदेशक, पूर्वी क्षेत्र-II/Executive Director, ER-II
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J-1-15, Block-EP, Sector-V, Salt Lake City, Cal-700 091

Witness 

Signed for and on behalf of:-

Sterlite Energy Limited
Bhubaneswar Office
1st Floor, City Mart Commercial Complex
Baramunda, Bhubaneswar- 751 003


Authorised Signatory

Witness 

1. Name of the Link

: Interim Arrangement

LILO of one circuit of Rourkela - Raigarh 400 kV D/C (existing line) at M/s Sterlite switchyard (under the scope of M/s Sterlite Energy Limited.

Final Arrangement

- Sterlite S/Y to Jharsuguda Pool 400 kV D/C with associated line bays (under the scope of M/s Sterlite Energy Limited)
- LILO of Rourkela – Raigarh 400 kV D/C Line (existing line) at Jharsuguda pool (utilizing the LILO portion of the interim arrangement) (under the scope of POWERGRID)

2. Voltage level

: 400 KV

3. Type of Link

: Double Circuit – Twin Moose

4. Reactive compensation to be provided: N/A

5. Maximum Import Capacity through the link : 64 MVA

6. Maximum Export Capacity through the link : 400 MW

7. Date of commissioning

: Interim arrangement expected by 15 th Jan,2011.



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3-1-15, Block-CP, Sector-V, Salt Lake City, Kolkata-700 081

8. Bay Allocated in the Switchyard of Connectivity

a) For Interim Arrangement

Name of the Substation : Rourkela (PG) & Raigarh (PG)

Name of the Bays : Sterlite Bay 1 both at Rourkela & Raigarh

Sl.No.	Bay Nos. at which connectivity is to be established
a)	400 KV Bay No.20 at Rourkela (Sterlite Bay # 1)
b)	400 KV Bay No. 04 at Raigarh(Sterlite Bay # 1')

b) For Final Arrangement

Name of Substation : Jharsuguda Pooling Point

Bay No (s) shall be intimated later.



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Annexure – II

9. a) For Providing Interim Connectivity under Short Term Open Access , equipment provided by CTU in the allocated bay meeting the requirement of Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 which is compatible with the equipment installed at other end.

Name of the Substation : Rourkela (PG) & Raigarh (PG)

Name of the Bays : Sterlite bay # 1 each at Rourkela & Raigarh

Sl.No.	Name of Equipments	Nos.	Ratings.
1.	Circuit Breaker	02	420 KV, 2000A, 40KA – 1 sec.
2.	Isolators	04	420 KV, 2000A, 40KA – 1 sec.
3.	Earth Switches	04	420 KV, 40KA – 1 sec.
4.	CT	12	420 KV, 2000A, 120% extended current rating, 40KA – 1 sec.
5.	CVT	06	420 KV, 4400pF
6.	Wave Trap	02	420 KV, 2000A, 1.0mH, 40KA – 1 sec.
		02	420 KV, 2000A, 0.5mH, 40KA – 1 sec.
7.	390 KV Surge Arrestor	06	390 KV,

- b) For Final Arrangement at Jharsuguda Pooling station : Number of the Switchyard equipments will be finalized later on and the cost for the same will be realized through tariff realization as per CERC Guidelines under BPTA Agreement



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10. a) For Providing Interim Connectivity under Short Term Open Access .Protection Equipment provided by CTU which is meeting the technical standards as per Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations 2007 and is compatible & matching with the equipment installed at other end.

For Sterlite bays at ROURKELA/ RAIGARH Substation :

- a. Distance Protection Relays : Main-I & Main-II
- b. Auto – Reclose.
- c. Over Voltage protection.
- d. LBB protection.

10. b) For Final Arrangement at Jharsuguda Pooling station : Number of the Switchyard equipments as well as protection equipment will be finalized later on and the cost for the same will be realized through tariff realization as per CERC Guidelines under BPTA Agreement.



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J-1-15, ब्लॉक-EP, सेक्टर-V, सैल लीक सिटी, कोलकाता-700 091

Annexure – III (a)

11. a) For Providing Interim Connectivity under Short Term Open Access . System recording Equipments is meeting the technical standards as per Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 which shall be compatible with the equipment installed at other end.

Name of the Substation : Rourkela/ Raigarh

Name of the Bays : Sterlite Bay#1 each at Rourkela and Raigarh .

SL.No.	Name of Equipments	Nos.	Ratings.
1.	Event Logger	-	Existing
2.	Disturbance Recorder	2	In-built in main distance protection relay.
3.	Fault locator	2	In-built in main distance protection relay.

- b) For Final Arrangement at Jharsuguda Pooling station : Number of the recording instrument will be finalized later on and the cost for the same will be realized through tariff realization as per CERC Guidelines under BPTA Agreement.



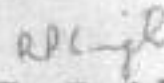
रवि प्रकाश सिंह/Ravi P. Singh
 कार्यकारी निदेशक, पूर्वी क्षेत्र-II/Executive Director, EP-II
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 J-1-15, Block-EP, Sector-V, Sar Lake City, Raiv 700 011

Annexure – III (b)

11. SCADA Equipments shall be meeting the Technical standards as per Central Electricity Authority (Technical standards for Connectivity to the Grid) Regulations, 2007 and shall be compatible to facilitate exchange of data with the existing system installed in the ISTS network.

Sl.No.	Name of Equipments	Nos.	Ratings.
1.	Data Acquisition System - RTU/SAS	-	Initially ERLDC shall accept data on IEC870-5-101 protocol & in future on IEC870-5-104 protocol.
2.	Communication equipment -PLCC	As required	4 KHz PLCC
3.	Any other equipment - Mux/Data & Voice – card required if any at Data Collection Point.	As required	





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 2-1-15, 2100-40, टॉवर-4, साई लैक सिटी, नई दिल्ली 110 095

12. Details of the modification/alteration to existing facilities for accommodating proposed connection and its estimated cost for the interim arrangement

A. Modification/alteration to existing facilities in terminal substation for accommodating proposed connection :

a) Required

Not Required

b) If required, details of modification(s) /alteration(s) are as under :

1. Terminal Bay N/A
2. Protection N/A
3. Metering N/A
4. PLCC/Communication APPLICABLE
5. Others.. N/A

B. Modification/alteration to existing transmission line for accommodating proposed connection

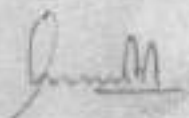
b) Required

Not Required

b) If required, details of modification(s) /alteration(s) are as under :

1. _____
2. _____
3. _____
4. _____

Total estimated Cost of above works (A+B) : Rs (Total Cost will be borne by M/s SEL).





 रवि प्रकाश सिंह/Ravi P. Singh
 कार्यवाहक निदेशक, पूर्वी क्षेत्र-III/Executive Director, ER-II
 पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
 POWER GRID CORPORATION OF INDIA LIMITED
 2-A-12, एनई-एन, ईस्ट-4, लोकनगर सिटी, नई दिल्ली-110028
 2-A-12, Block-EP, Sector-V, Con Lake City, New Delhi-110028

13. Name of Communication Link for Data and Voice Communication : From Raigarh(PG)- Sterlite Sterlite- Rourkela(PG)

14. Communication equipment details up to POWERGRID Data Collection Point

Details are as under:

Requirement of Channels: 2 Nos Data Channel (600Baud) & 1 no. Speech Channel.

Data Collection Point (DCP): 400kV Rourkela S/s (PG) for interim arrangement and final arrangement.

1. PLCC link details as below (To be implemented by M/s Sterlite Energy Limited):

A. Interim Arrangement :

Sterlite Energy Ltd. Generating Station-400 KV S/S (PG)-2Nos. of 4KHz. Link

Total nos. of PLCC Panels required – 4 Nos. under interim arrangement & 4 Nos. under final arrangement.

The PLCC equipment can be provided subject to availability of frequencies alternatively M/s Sterlite Energy Limited shall arrange alternative communication link between M/s Sterlite Energy Limited Generating S/s & 400kV Rourkela S/s of POWERGRID

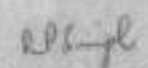
2. Wideband links (POWERGRID Portion):

400 kV Rourkela S/s (PG) – ERLDC, Kolkata.

Notes:-

1. M/s Sterlite Energy Ltd. shall bear the cost of additional communication equipments/cards if any required for integration of M/s Sterlite Energy Limited Generating station data at & 400 KV Rourkela S/s (PG) .
2. 765kV Jharsuguda Pooling station (PG) has been proposed to be a wide band node. Under phase-I generation project in Orissa, 765kV Jharsuguda pooling station(PG) shall be the new data collection point for M/S Sterlite Energy Limited generating station.
3. In future, if PMU (Phasor Measurement Unit) planned to be installed at M/S Sterlite Energy Limited, generating station, then due to requirement of higher band width, wide band link (fibre optic based) need to be established by M/S Sterlite Energy Limited between M/S Sterlite Energy Limited generating S/S & 765kV Jharsuguda pooling station (PG).



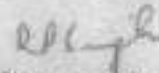

 रवि प्रकाश सिंह / Ravi P. Singh
 कार्यवाहक निदेशक, पूर्व से-11/Executive Director, एन-ई
 पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
 POWER GRID CORPORATION OF INDIA LIMITED
 J-1-15, ब्लॉक-एन, सेक्टर-5, सोलाना रोड, सोनमधर-768 001
 J-1-15, Block-EN, Sector-5, Solan Road, Sonamohar-768 001

Annexure – VI

15. Site responsibility schedule

A. Principle & Procedure:

The responsibility of control, operation, maintenance & all matters pertaining to safety of equipments and apparatus at the connection point shall lie with the owner .



रवि प्रकाश सिंह / Ravi P. Singh
प्रबंधन निदेशक, पूर्ण वेतन-II/Executive Director, ER-II
पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
POWER GRID CORPORATION OF INDIA LIMITED
J-1-15, ब्लॉक-EP, सेक्टर-V, बल्लभ नगर, बल्लभ नगर-700 091
J-1-15, Block-EP, Sector-V, Ball Lake City, Kt-700 091



पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Ref: ODP/SNG/TLM/GEN/2022/

Date:05.01.2022

To
General Manager (Elect)
M/s Vedanta Limited
Jharsuguda

(Kind Attention- Sh Mangu Srinivas, GM)

Sub: Replenishment of missing /hanging tower members at Tower No-V1 and V3 near Kundukela LILO-3 and LILO-4 tapping points.

Dear Sir,

Please refer our earlier letter and discussion held at your conference hall on Dt.22.10.2021 regarding the cited matter and early action for direct connectivity of our 400KV Sundargarh-Raigarh D/C line # 3 and #4. You had assured us to take immediate action for replacement of missing and hanging members at both the towers to keep the tower in safe condition and also parallel action would be taken for direct connectivity of both tappings.

But during joint site visit on 05.01.2022 to finalize the direct connectivity working plan, it is found that nearly 40pcs tower member missing at 1st section of tower No-V-3 near LILO-4 tapping point due to which the main bracing tends to buckle inwards at mid-point. Similar case found at tower No-V-1 LILO-3 tapping point near Kundukela where more than 50pcs tower member missing and hanging at body-II to Top cross arm. It seems no such serious action is being taken for rectification of missing tower members in order to maintain the tower in safe condition.

You are well aware of that these lines are interstate connected lines and random theft/missing of tower members may lead to collapse of towers as well as interruption of power between Eastern and Western Grid.


Some of photographs taken during site visit is attached herewith for your reference.

You are once again requested to take immediate action on following points:

- 1) Fixing up all missing members including tack welding of B&Ns at these 02nos of towers to keep the tower /line in safe and healthy condition latest by 10th Jan'22.
- 2) Intense increase of watch & ward activities near the vicinity of said towers.
- 3) Please intimate us your work plan for direct connectivity of both tapping arrangements.
- 4) An emergence meeting may be arranged tomorrow 2nd half for detail discussion on cited matter.

Thanking You

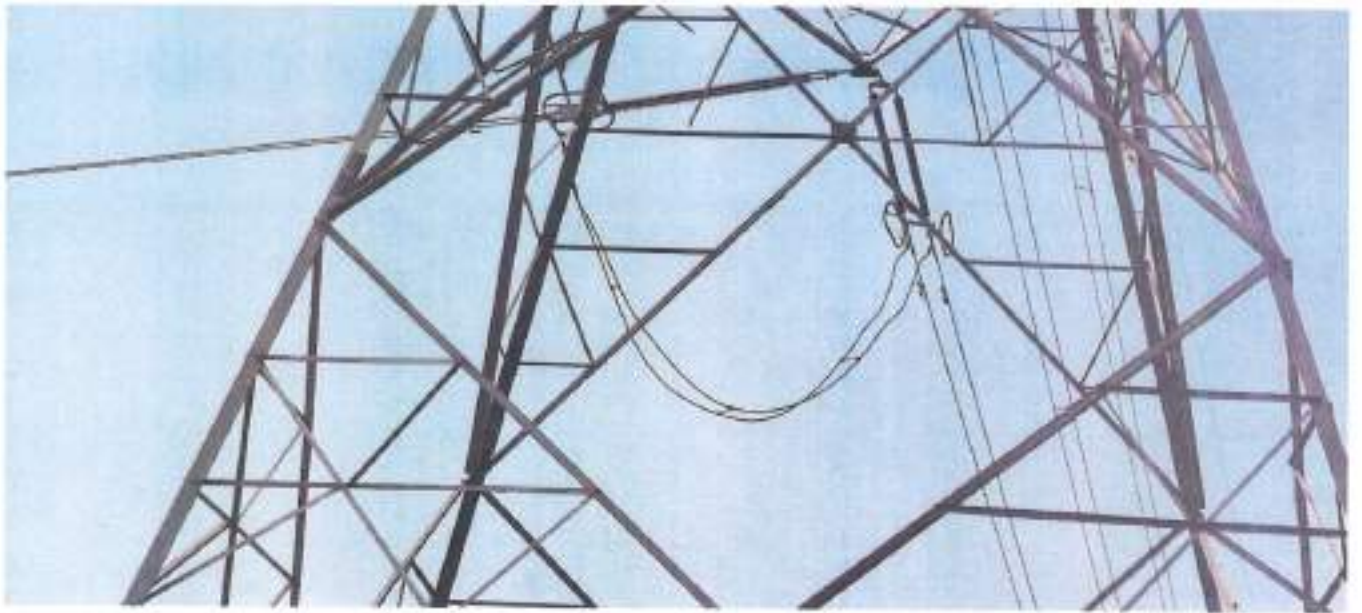
Your's faithfully


05.01.2022
(J. Mohanty)

Sr. GM/ Sundargarh









पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Ref: ODP/SNG/TLM/GEN/2022-2023/

Date:22.04.2022

To
General Manager (Elect.),
M/s Vedanta Ltd.,
Jharsuguda, Odisha.

(Kind Attention-Sh Mangu Srinivas, GM)

Sub: Endangering Grid connectivity, security & stability of 400KV Sundargarh - Raigarh LILO Ckt 3 & 4 at tapping points near Sundargarh by M/s Vedanta Ltd., Jharsuguda (Earlier name Sterilite Energy Ltd.) along with violation of Grid discipline.

Dear Sir,

As per the Agreement dated 22.12.2010 between M/s Vedanta Ltd. (Earlier name Sterilite Energy Ltd.) and POWERGRID, the connectivity to M/s Vedanta Ltd.'s Sub-station was carried out from LILO of 400KV Sundargarh-Raigarh D/C line #3 between Tower No-834(DD+0) & 835 (DD+0) and 400KV Sundargarh-Raigarh D/C line #4 between tower No-299(DD+0) & new Vedanta Tower No-VL3 (DD+0) was done during the year 2011. This activity was taken up as per direction of CERC and instruction of ERLDC/WRLDC in order to charge the Vedanta switchyard at Jharsuguda for sending and receiving of power at Vedanta end with CTU transmission system.

After direct connectivity of Vedanta 400 KV Sub-station with 765/400 KV Sub-station of POWERGRID at Sundargarh, the tapping points of LILO portion of line #3 & #4 was disconnected by M/s Vedanta Pvt. Ltd. in the year 2014 & 2017 respectively, without completion of direct connectivity for POWERGRID, in above-mentioned LILO lines.

As you know, M/s Vedanta has dismantled all towers of LILO portion except 02 nos.of towers near each tapping point and left these 04 towers without any routine maintenance/watch & ward activity. At present, there is no back support at tower no-VL2 and VL5(as shown in the sketch). As there is no watch & ward and routine maintenance work, theft of tower members on these towers have become rampant, subsequently weakening the strength of towers which may lead to collapse of existing Vedanta towers as well as

POWERGRID towers, resulting interruption of power transfer between Eastern and Western Grid.

In this regard, the authority of M/s Vedanta has been informed many times verbally as well as in written communication for replenishment of all missing/hanging members and to provide backstay (back support) for keeping the tower in safe condition and also to take urgent action for direct connectivity of both LILO points.

Some of the correspondences with the photographs of tower condition and record notes of discussion held on dt.25.06.2020 and dt.22.10.2021 have been attached for kind perusal.

In spite of these correspondences & discussion with M/s Vedanta Ltd, since dt.04.03.2019, neither any action has been taken nor any permanent connectivity solution has been implemented. The said LILO lines are in severe danger zone and power flow will be affected as stated.

It is therefore requested to take immediate necessary action for safe guarding of the existing towers and implementation of direct connectivity of 400KV Sundargarh-Raigarh D/C line # 3&4 in order to avoid any future incidents and to maintain Grid discipline for security & stability point of view.

One single line diagram is attached herewith for reference and better visuality of LILO portion.

Thanking You

Your's faithfully



(J.Mohanty)

Sr. GM/ Sundargarh

- Copy to:-1. The Member Secretary, ERPC, Kolkata.-For Kind information pl.
2. The CGM(AM), Odisha Project, Bhubaneswar.
3. The Sr.GM(AM), Odisha Project, Bhubaneswar.

Odisha project, Plot No-4, Unit-41, Niladrivihar, Chandrasekharpur, Bhubaneswar-751021(Odisha)

Record Notes of Discussion held on 25/06/2020, Time 11:00 Hrs with M/s Vedanta Ltd (Earlier Sterlite Energy Limited) at POWERGRID, Sundargarh

Participants List

POWERGRID	M/s Vedanta Ltd
Though VC 1. Sh. Sunil K Thomas (AM) 2. Sh. S K Sahu, DGM(AM)	1) Sh.Mangu Srinivas, GM 2) Sh.Dinesh Patra, Mgr
Sundargarh S/S 3. A.K.Naik, Sr.GM	

CGM(AM), Bhubaneswar welcomed the participants & expressed the concern for the delay in restoration for direct connectivity of 400kV Sundargarh-Raigarh Ckt#3(Earlier name was Ckt#2) and Ckt#4. Following points were deliberated & agreed for moving forward.

- 1) 02 Nos of LILO was constructed in line with Agreement Dt 22/12/2010 between M/s Vedanta Ltd (Earlier name Sterlite Energy Ltd) and M/s POWERGRID. 01(One) LILO was opened in 2014 and 2nd one in Oct 2017 after establishing direct connectivity of 400kV Lines from Meramandli and POWERGRID Sundargarh. However, our Sundargarh-Raigarh ckt 3 & 4 lines are now passing through 05 towers of M/s Vedanta and its immediate removal is required for smooth maintenance, minimizing outage and as per direction of ERLDC. Sketch is attached for reference.
- 2) For removal of LILO in Sundargarh-Raigarh Ckt#3(Earlier Rourkela-Raigarh Ckt#2), LILO materials will be removed and direct connectivity will be done from Loc 834-835.
- 3) For removal of LILO in Sundargarh-Raigarh Ckt#4(Earlier Rourkela-Raigarh Ckt#4): Vedanta Tower VL3 is on the line coridor and its removal will require all conductors & hardware to be provided new. Hence 02 options were deliberated:
 - a. Option -I: Removal of Towers & all conductors & Hardwires/accessories and providing new conductors with stringing materials.
 - b. Option-II: Handing over the tower to POWERGRID with modifications for box cross arm and an equivalent spare tower dismantled from existing tower in good condition with stub and N&Bs. Drawings of Tower, template, foundations & BOM to be provided by M/s Vedanta Ltd

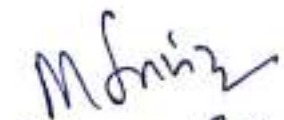
M/s Vedanta will decide an option & intimate by 10/07/2020.

- 4) Earthwire diamonding to be removed between loc 851 to 852 and conductor between VL-5-VL6 of 400kV Sundargarh- Raigarh D/C Ckt#1&3.
- 5) All ROW during Dismantling/ erection and shutdown shall be to the account of M/s Vedanta Ltd. M/s Vedanta will apply at least 02 months in advance for shutdown in OCC meeting through SLDC for each Ckt. However, Vedanta requested PGCIL to facilitate the approval for shutdown.
- 6) Vedanta will supply insulators (Powergrid approved make) from their store & provide documents for concurrence of POWERGRID before use.
- 7) All new materials are to be used from POWERGRID approved source.
- 8) For SI -2 and 3, Vedanta opined to provide the available material (PGCIL approved makes) with them like Insulators or use any of the existing materials of the lines to make good the modifications and requested PGCIL to provide balance materials like conductor, accessories, earthwire etc as required to expeditiously execute the job. POWERGRID will make effort for supplying conductor, hardware fittings/accessories from their store in the best interest of early completion of the job.
- 9) Erection Contractor will be engaged by M/s Vedanta Ltd and then a workplan to be finalized.
- 10) Supervision cost @15% will be paid on the value of the works and a formal agreement to be made between both parties.
- 11) Timelines:

Sl.No.	Description	Date	Action by
1	Confirmations of Option at SI-3	10/07/2020	Vedanta
2	Submission of CLR insulator details	10/07/2020	Vedanta
3	Materials like conductor, Hardware, earthwire available with POWERGRID to be explored.	10/07/2020	POWERGRID
4	Balance Materials to be reused in good condition to be examined & finalized.	15/07/2020	POWERGRID



(A.K.Naik)
Sr.GM,POWERGRID
Sundargarh


(Mangu Srinivas)
GM (Power Systems)
Vedanta Limited, Jharsuguda

**Record Notes of Discussion held with M/s VEDANTA Ltd (Direct connectivity of LILO #3 and #4)
Name of Work: Direct connectivity of 400KV Sundargarh-Raigarh D/C Line #3 (earlier #2) and
400KV Sundargarh-Raigarh D/C line #4**

Date: 22/10/2021; Time: 04.30 PM; Location: M/s Vedanta Ltd, Conference Hall, Jharsuguda.

POWERGRID		VEDANTA	
Sh J Mohanty, Sr. GM (I/c), Sundargarh		Sh. Mangu Srinivas, GM	
Sh. A.K.Naik, Sr.GM		Sh Niranjan Das, Associate GM	
Sh. B.K.Sahoo, CM (TLM)		Sh Piyus Lenka, Dy Manager (TL)	
S.No	Description	Action by	Proposed Date
1	<p>Representatives from, POWERGRID & M/s Vedanta Ltd were present in the meeting.</p> <p>The brief discussion on fixing of missing tower members with watch & ward at Vedanta Towers and action to be taken for direct connectivity of 400KV SNG-RGH Line #3 & #4 is as follows:</p>		
2.	<p>FIXING OF MISSING TOWER MEMBERS WITH WATCH & WARD ACTIVITY:</p> <p>There are number of tower members are missing in Vedanta towers at both LILO points which was detected by POWERGRID staff during routine line patrolling. M/s Vedanta is requested to take immediate action for fixing of missing members on priority with watch & ward to keep the tower in safe and line in healthy condition till final direct connectivity completed. M/s Vedanta agreed to do so on emergency basis.</p> <p>DIRECT CONNECTIVITY OF SNG-RGH LINE #3:</p> <p>M/s Vedanta Ltd is requested to take immediate action for direct connectivity of 400KV Sundargarh-Raigarh D/C Line #3 (earlier #2) and 400KV Sundargarh-Raigarh D/C line #4 as decided during earlier MOM Dtd. 25.06.2020.</p> <p>It is decided to take action for direct connectivity of 400KV Sundargarh-Raigarh line #3 i.e. tapping point between tower No-834 to 835. As such there is no litigation at this section the restringing can be done immediately. So, it is decided that M/s Vedanta Ltd will supply 2500mtr ACSR Moose conductor, Insulators and all other hardware fittings (Only POWERGRID approved manufacturer) required for restringing work of 834 to 835 (400mtr span) section in presence of POWERGRID officials with a payment of 15% supervision cost in advance. The Erection/ stringing gangs shall be arranged by M/s Vedanta Ltd.</p>	<p>M/s Vedanta Ltd.</p> <p>M/s Vedanta Ltd.</p> <p>M/s Vedanta Ltd.</p>	<p>24.10.2021</p> <p>10.11.2021</p> <p>01.12.2021</p>

(Handwritten signatures)

S.No	Description	Action by	Proposed Date
	<p>It is also discussed & decided that if dismantled conductor is of ACSR Moose and hardware fittings is of POWERGRID approved manufacturer supplied and are in good conditions then that may be used in restringing work for LILO #3 direct connectivity work after prior approval of POWERGRID Competent Authority.</p>	M/s Vedanta Ltd.	01.12.2021
	<p>So, to carry out the restringing work for #3 Lilo point Shut Down of said line (400KV Sundargarh-Raigarh Line #3 with auto mode of Sundargarh-Raigarh #1) shall be applied by M/s Vedanta Ltd during Nov'2021..</p>	M/s Vedanta Ltd.	01.12.2021
	<p>DIRECT CONNECTIVITY OF SNG-RGH LINE #4:</p> <p>It is discussed and decided that the DD+0 tower inserted between existing tower no-298 and 299 to be kept as usual with proper modification of all 03 cross arm of ckt#4 to be maintained with adequate electrical clearance from the tower body, including dismantle of existing cross arm. The modification work should be done by M/s Vedanta Ltd. Secondly, one same type of tower (either new or good condition dismantled one) to be supplied by M/s Vedanta Ltd as spare tower for future use by POWERGRID. Besides this all-other hardware fittings, Insulators and ACSR Moose conductor required for restringing work shall be supplied by M/s Vedanta Ltd either from dismantled materials in good conditions or supply of new materials but should be POWERGRID approved manufacturer supply material.</p>	M/s Vedanta Ltd.	15.11.2021
	<p>In case, if M/s Vedanta will not agree on above points then the existing tower inserted between tower no.298 & 299 shall be dismantled by M/s Vedanta ltd. and all materials i.e. conductor, hardware fittings and insulators etc required for restringing work from existing tower no-296 (DB+0) to 299 (DD+0) for a total route length of 1056 mts shall be supplied by Vedanta Ltd along with erection and supervision cost.</p>	M/s Vedanta Ltd.	15.11.2021
	<p>M/s Vedanta Ltd said they have sent above mentioned 02 proposal for approval of their competent authority and as soon as they got the approval (within 15days) they will take up the work accordingly on priority basis.</p>		

Note: For Direct Connectivity of above mentioned 02 lines -M/s Vedanta Ltd stated to complete the entire work within DEC'2021. However, as per POWERGRID request, best effort will be made to complete work as early as possible.

(B.K. Sahoo)

(J. Mahanta)



Eastern Regional Power Committee

14, गोल्फ क्लब रोड, टालीगंज, कोलकाता-700033

Tel. No.: 033-24239651, 24239659 FAX No.: 033-24239652, 24239653 Web: www.erpc.gov.in

ERPC/Operation/IS/2022/ 97

Date: 18.04.2022

To

As per Distribution List

Sub: Constitution of "Technical Committee for finalizing Patna & Ranchi Islanding Scheme"-reg

Sir,

In the 45th TCC/ERPC meeting held on 25.03.2022 & 26.03.2022 respectively, it was decided that technical committees are to be formed for finalizing Patna & Ranchi Islanding Scheme. For Patna Islanding scheme, the committee members will be from BSPTCL, SLDC Bihar, NPGCL(NTPC), Powergrid, ERLDC and ERPC whereas for Ranchi Islanding Scheme the members will be from JUSNL, SLDC Jharkhand, TVNL, Powergrid, ERLDC and ERPC. Based on the receipt of nominations from the concerned utilities, the composition of the technical committees are as follows:

Organization	Name	Member	
ERPC	S Kejriwal, SE	Member (For Both Patna & Ranchi Islanding Scheme)	
	P. P. Jena, EE—Convenor		
ERLDC	A.P. Singh, Manager		
Bihar	A K Choudhury, CE(SO)		Member (For Patna Islanding Scheme)
	S. N. Kumar, CE (O &M)		
NTPC	B K Pandey, AGM(EM)		
	Bipin Kumar, Manager(EM)		
Powergrid	H C Gupta, Chief Manager, Patna S/s		
Powergrid	R K Srivastava, Chief Manager, N. Ranchi S/s	Member (For Ranchi Islanding Scheme)	
Jharkhand	Ajeet Kumar, DGM(STU)		
	Rimil Topno, Sr Manager(SLDC)		
TVNL	Sarvesh Prasad, HOD (Electrical)		
	Bhaskar Kumar, HOD(C&I)		
	Ashish Kr. sharma, ESE(Electrical)		
	Imroz Alam, ESE(Turbine division)		

(Cont.)

The committee may co-opt/associate any other expert in the field as they feel necessary. The Committee may also consult OEM/Vendor as and when required for any inputs.

The committee may submit the report by 15th May 2022.

This issues with approval of Member Secretary, ERPC.

Yours faithfully,

P.P. Jena
15-04-2022

(P. P. Jena)

Executive Engineer(PS)

Distribution List:

- All Members of the Technical Committee for Patna & Ranchi Islanding Scheme
- Member Secretary, ERPC-for kind information

POWER SYSTEM DEVELOPMENT FUND													
Status of the Projects in Eastern Region													
Sl No	State	Entity	Name of the scheme	Grant Approved	Grant sanctioned on	1st Installment grant released on	Completion Schedule	Completion schedule w.r.t date of 1st instalment	Grant aviled so far	Under process of release	Total awards amount of placed of fill date	Latest status	
1	Bihar	BSPTCL	Renovation and Upgradation of protection system of substations.	64.22	42135	42506	24	43236	56.04		69.195	90% grant availed on award cost.	
2			Installation of Capacitor bank in 20 Nos of Grid Sub Station. (74)	18.882	42618	43550	24	44281	16.99		21.55		
Total				83.1					73.03		90.745		
5	Jharkhand	JUSNL	Renovation & Upgradation of protection system of Jharkhand. (161)	138.13	15-Nov-17	28-Mar-19	16	28-Jul-20	114.68	1.01	145.674	90% grant availed on award cost. Project closure is expected by Q-2 of 2021-22.	
6			Reliable Communication & data acquisition system upto 132kV	22.36	24-May-19		24						Price bid has been opened. Tender on awarding stage.
Total				160.49					114.68		145.674		
7	Odisha	OPTCL	Renovation and Upgradation of protection system of substations. (88)			22-Mar-16	24	22-Mar-18	46.04	Final dose of payment: Rs. 10.95 Cr	63.31	90% grant availed. Work in Progress.	
8			Implementation of OPGW based reliable communication at 132 kv and above substations. (128)	25.61	15-Nov-17	29-Mar-19	36	29-Mar-22	23.04			51.22	90% grant availed. Work in Progress.
9			Installation of 125 MVAR Bus Reactor along with construction of associated by each at 400kV Grid S/S of Mendhasal, Meramundali & New Dubari for VAR control & stabilisation of system voltage. (179)	27.23	27-Jul-18	1-Apr-19	18	1-Oct-20	8.17			24.5	90% grant availed. Work in Progress.
10			Implementation of Automatic Demand Management System (ADMS) in SLDC, Odisha. (196)	2.93	24-May-19	19-Feb-20	10	19-Dec-20	0.29			0.29	30% grant availed. Work in Progress.
11			Protection Upgradation and installation on Substation Automatic System (SAS) for seven nos of 220/132/33kV Substations (Balasore, Bidanasi, Bualipadar, Katapali, Narendrapur, New-Bolangir & Paradeep). (209)	29.56	24-May-19	13-Feb-20	18	13-Aug-21	8.87			32.85	30% grant availed. Work in Progress.
12		OHPCL	Renovation and Upgradation of protection and control system of OHPCL. (109)	22.35	22-May-17	25-May-18	24	25-May-20	14.94		21.25	90% grant availed on award cost.	
Total				270.18					101.35		193.42		
14	West Bengal	WBSETCL	Installation of switchable reactor & shunt capacitor for voltage in	43.37	22-May-17	22-Jun-18	19	22-Jan-20	33.07		40.83	90% grant availed on award cost. Will get completed by Oct21	
15			Renovation & Modernisation of Transmission System. (87)	70.13	22-May-17	25-Jun-18	25	25-Jul-20	63.12			96.44	90% grant availed on award cost. Will get
16			Installation of Bus Reactors at different 400kV Substation within the state of West Bengal for reactive power management of the Grid. (210)	71.74	24-May-19	23-Oct-19	19	23-May-21	39.3			45.62	30% grant availed on award cost. 04 Nos. of Reactors will be commissioned by December 2021. LoA of the 5th Reactor is yet to be placed.
17			Project for establishment of reliable communication and data acquisition at different substation at WBSETCL. (222)	31.19	24-May-19	23-Oct-19	25	23-Nov-21	3.12				The tender has been cancelled for OPGW. Re-tendering has to be done.
18			Implementation of Integrated system for Scheduling, Accounting, Metering and Settlement of Transactions (SAMAST) system in West Bengal. (197)	10.08	43910		12						10% grant not yet requested
19		WBDCL	Renovation and Modernization of 220/132 kV STPS switch yard and implementation of Substation Automation System. (72)	23.48	5-Sep-16	18-May-17	18	18-Nov-18	21.13		32.09	Target date for completion of project is Sept. 21 subject to availability of S/D & Covid scenario. Request for release for final 10% grant has been placed.	
21			Renovation and Modernization of switchyard and related protection system of different power stations (BTFS, BKTPS and KTFS) of WBDCL. (155)	45.16	27-Jul-18	27-Mar-19	12	27-Mar-20	34.52		41.68	Target date for completion of project is Oct21, subject to availability of S/D & Covid scenario. 90% grant availed on award cost.	
Total				295.15					194.26		256.661		

162.50 11-May-15

POWER SYSTEM DEVELOPMENT FUND													
Status of the Projects in Eastern Region													
Sl No	State	Entity	Name of the scheme	Grant Approved	Grant sanctioned on	1st Installment grant released on	Completion Schedule	Completion schedule w.r.t date of 1st instalment	Grant aviled so far	Under process of release	Total awards amount of placed of fill date	Latest status	
22	DVC	DVC	Renovation and Upgradation of the protection and control system	25.96	2-Jun-17	31-May-17	24	31-May-19	22.95	2.57	28.603	90% grant availed on award cost.	
23			Recoment of equipment at Paralia, Durgapur, Kalyanewari, Girib	140.50	16-May-17	14-Dec-17	24	14-Dec-19	102.43	0.98	127.684		
Total				166.46					125.38		156.287		
24	Sikkim	ENPD, Sikkim	Drawing of optical ground wire (OPGW) cables on existing 132kV & 66kV transmission lines and integration of leftover substations with State Load Despatch Centre, Sikkim. (173)	10.00	24-May-19		18		3.00		20	30% grant availed on award cost	
Total				10					3		20		
26	ERPC	ERPC	Creation and Maintenance of web based protection database management. (67)	20	17-Mar-16	28-Jun-16	18	28-Dec-17	14.83		16.48	Project Completed	
27			Study Programme on power trading at NORD POOL Academy for Power System Engineers of Eastern Region. (122)	5.46	27-Jul-18	27-Mar-19	13	27-Apr-20	4.61			5.37	
28			Training Program for Power system Engineers of various consti	0.61	27-Jul-18	11-Apr-19	24	11-Apr-21	0.54			0.60888	90% grant availed on award cost.
Total				26.07					19.98		22.45888		
Grand Total				1,011.46					631.68		885.25		

Annexure-C.5

Date of PFR testing scheduled /completed for generating stations in ER

Sr. No	Station	Generating Unit	Test schedule	Remarks
1	TALCHER STAGE 2	3	Unit 3 - 5: 23-11-2020 to 28-11-2020	Testing for unit 6 yet to be conducted
2		4		
3		5		
4		6		
5	Farakka	2	01-02-2021 to 10-01- 2021	Testing completed
6		3		
7		4		
8		5		
9		6		
10	Kahalgaon	1	August'21	Testing completed for Unit 1
11		5		
12		6		
13		7		
14	Barh	4	18-02-2021 to 21-02- 2021	Scheduled
15		5		
16	Teesta V	1	07-01-2021 - 08-01-2021	Testing completed
17	Teesta III	1	30-01-2021 - 10-02-2021	Testing completed
18		2		
19		3		
20		4		
21		5		
22		6		
23	Dikchu	1	Unit#1: 6th & 7th April' 21 Unit#2: 8th & 9th April' 21	Scheduled
24		2		
25	MPL	1	-	Postponed due to some technical issue
26		2		
27	GMR	1	August'21	Testing Completed
28		2		
29		3		
30	JITPL	1	August'21	Scheduled
31		2		
32		3		
33	NPGCL	1	August'21	Testing Completed

34	BRBCL		1 st Week of August'21	Testing Completed
35	APNRL	1&2	July'21-August-21	Testing Completed
36	BBGS	1,2&3	26th Feb 22 - 3rd Mar 22	Scheduled

Annexure C.7

Power Plant	Unit No	PSS tuned (Yes/No)	PSS in Service (Yes/No)	Last PSS Tuning Date	Whether Done in Last 3 Years	Whether Next to be planned	Planned Next PSS Tuning
West Bengal							
Kolaghat-WBPDCL	3	No	Yes	Long Back	No	Yes	To be done within Jan./Feb. 2022 after DAVR replacement.
Bakreshwar-WBPDCL	2	Yes	Yes	2019	Yes	Yes	PSS tuning to be done during Unit O/H in the month of November-December, 2021
Bakreshwar-WBPDCL	4	Yes	Yes	2019	Yes	Yes	BHEL offer received. PSS tuning to be done within Nov. , 2021
Bakreshwar-WBPDCL	5	Yes	Yes	2019	Yes	Yes	BHEL offer received. PSS tuning to be done within Nov. , 2021
PPSP	1	No	Yes	2009	No	Yes	Dec-21
PPSP	2	No	Yes	2009	No	Yes	Dec-21
PPSP	3	No	Yes	2009	No	Yes	Dec-21
PPSP	4	No	Yes	2009	No	Yes	Dec-21
TLDP III	4 x 33			No Detail	No Detail	Yes	To be updated by WBSEDCL
TLDP IV	4 X 44			No Detail	No Detail	Yes	To be updated by WBSEDCL
DVC							
Raghunathpur-DVC	1	No	No		No Detail	Yes	Will be done after AOH
Raghunathpur-DVC	2	No	No		No Detail	Yes	Jun-21
Waria	4	Yes	Yes	2008	No	Yes	Unit Is out of Service
ISGS							
Kahalgaon NTPC	1	Yes	Yes	2017	Yes	Yes	Apr-21
Kahalgaon NTPC	3	Yes	Yes	2016	Yes	Yes	Jul-21
Kahalgaon NTPC	4	Yes	Yes	2015	No	Yes	Mar-21
Kahalgaon NTPC	6	Yes	Yes	2009	No	Yes	Mar-21
Talcher Stage 2	3	Yes	Yes	2016	Yes	Yes	Nov-21
Talcher Stage 2	4	Yes	Yes	No Details	No Details	Yes	Nov-21
Talcher Stage 2	5	Yes	Yes	No Details	No Details	Yes	Nov-21
Talcher Stage 2	6	Yes	Yes	2016	Yes	Yes	Nov-21
Barh NTPC	1						
Barh NTPC	4			2015		Yes	In Next AOH
Barh NTPC	5			During Unit commissioning		Yes	June 2021 (AOH)
Teesta V	1	Yes	Yes	2008	No	Yes	Nov-21
Teesta V	2	Yes	Yes	2008	No	Yes	Nov-21
Teesta V	3	Yes	Yes	2008	No	Yes	Nov-21
BRBCL	2	Yes	Yes	2019	Yes	Yes	Jun-21

BRBCL	3	No	Yes	Vendor to Do	No	Yes	Jun-21
BRBCL	4	No	Yes	Vendor to Do	No	Yes	To be updated
KBUNL	1	Yes	Yes	2014	No	Yes	2021-22
KBUNL	2	Yes	Yes	2014	No	Yes	2021-22
Rangit	3 x 20			Not Available	No	Yes	To be updated by NHPC
IPP							
ADHUNIK	1	Yes	YES	2013	No	Yes	Mar-21
ADHUNIK	2	Yes	YES	2013	No	Yes	Mar-21
JITPL	1	Yes	Yes	2016	Yes	Yes	Jul-21
JITPL	2	Yes	Yes	2016	Yes	Yes	Jul-21
GMR	1	Yes	Yes	2013	No	Yes	Dec-21
GMR	2	Yes	Yes	2013	No	Yes	Dec-21
GMR	3	Yes	Yes	2013	No	Yes	Dec-21
Orissa							
IB TPS	1	Yes	Yes	2011	No	Yes	Mar'2021
IB TPS	2	Yes	Yes	2012	No	Yes	Mar'2021
Upper Indravati	1	Yes	No	2015	No	Yes	To be updated by OHPC
Upper Indravati	2	Yes	No	2015	No	Yes	To be updated by OHPC
Upper Indravati	3	Yes	No	2000	No	Yes	To be updated by OHPC
Upper Indravati	4	Yes	No	2001	No	Yes	To be updated by OHPC
Balimela	1 (60 MW)			No detail		Yes	To be updated by OHPC
Balimela	2 (60 MW)			No detail		Yes	To be updated by OHPC
Balimela	3 (60 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	4 (60 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	5 (60 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	6 (60 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	7 (75 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	8 (75 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Upper Kolab	1	Yes	Yes	2007	No	Yes	To be updated by OHPC
Upper Kolab	2	Yes	Yes	2007	No	Yes	To be updated by OHPC
Upper Kolab	3	Yes	Yes	2007	No	Yes	To be updated by OHPC
Upper Kolab	4	Yes	Yes	2007	No	Yes	To be updated by OHPC
Sterlite	4 X 600			No detail		Yes	To be updated by SLDC
Jharkhand							
Tenughat	1	Yes	Yes	2017	Yes	Yes	Dec-21
Tenughat	2	Yes	Yes	2017	Yes	Yes	Dec-21
Subarnrekha	2 X 65					Yes	To be updated
Bihar							
BTPS	6 (110)					Yes	To be updated by BSPGCL

BTPS	7 (110)					Yes	To be updated by BSPGCL
BTPS	8					Yes	To be updated by BSPGCL
BTPS	9					Yes	To be updated by BSPGCL
Bhutan							
Tala	1	No	Yes			Yes	To be updated by BPC
Tala	2	No	Yes			Yes	To be updated by BPC
Tala	3	No	Yes			Yes	To be updated by BPC
Tala	4	No	Yes			Yes	To be updated by BPC
Tala	5	No	Yes			Yes	To be updated by BPC
Tala	6	No	Yes			Yes	To be updated by BPC
Chukha	1	No	Yes	2005	No	Yes	To be updated by BPC
Chukha	2	No	Yes	2005	No	Yes	To be updated by BPC
Chukha	3	No	Yes	2005	No	Yes	To be updated by BPC
Chukha	4	No	Yes	2005	No	Yes	To be updated by BPC
Mangdechu	1	No	Yes			Yes	Sep-21
Mangdechu	2	No	Yes			Yes	Sep-21

Anticipated Peak Demand (in MW) of ER & its constituents
Jul-22

1	BIHAR	Demand (MW)	Energy Requirement (MU)
	NET MAX DEMAND	6880	4008
	NET POWER AVAILABILITY- Own Sources	554	213
	Central Sector+Bi-Lateral	6553	3953
	SURPLUS(+)/DEFICIT(-)	227	158
2	JHARKHAND		
	NET MAXIMUM DEMAND	1700	1000
	NET POWER AVAILABILITY- Own Source	295	99
	Central Sector+Bi-Lateral+IPP	1193	880
	SURPLUS(+)/DEFICIT(-)	-212	-21
3	DVC		
	NET MAXIMUM DEMAND	3060	2045
	NET POWER AVAILABILITY- Own Source	5046	3117
	Central Sector+MPL	433	332
	Bi- lateral export by DVC	2156	1604
	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	263	-200
4	ODISHA		
	NET MAXIMUM DEMAND (OWN)	5750	2902
	NET MAXIMUM DEMAND (In Case of CPP Drawal)	4550	3450
	NET POWER AVAILABILITY- Own Source	3688	2467
	Central Sector	1981	1398
	SURPLUS(+)/DEFICIT(-) (OWN)	-81	963
	SURPLUS(+)/DEFICIT(-) (In Case, 600 MW CPP Drawal)	1119	415
5	WEST BENGAL		
5.1	WBSEDCL		
	NET MAXIMUM DEMAND	7675	4600
	NET MAXIMUM DEMAND (Incl. Sikkim)	7685	4607
	NET POWER AVAILABILITY- Own Source (Incl. DPL)	5042	2667
	Central Sector+Bi-lateral+IPP&CPP+TLDP	2619	1904
	EXPORT (To SIKKIM)	10	7
	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	-24	-36
5.2	CESC		
	NET MAXIMUM DEMAND	2120	1050
	NET POWER AVAILABILITY- Own Source	830	476
	IMPORT FROM HEL	540	379
	TOTAL AVAILABILITY OF CESC	1370	855
	DEFICIT(-) for Import	-750	-195
	WEST BENGAL (WBSEDCL+CESC+IPCL)		
	(excluding DVC's supply to WBSEDCL's command area)		
	NET MAXIMUM DEMAND	9795	5650
	NET POWER AVAILABILITY- Own Source	5872	3143
	CS SHARE+BILATERAL+IPP/CPP+TLDP+HEL	3159	2283
	SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXPORT	-764	-224
	SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXPORT	-774	-231
6	SIKKIM		
	NET MAXIMUM DEMAND	99	49
	NET POWER AVAILABILITY- Own Source	8	3
	Central Sector	204	140
	SURPLUS(+)/DEFICIT(-)	113	94
	EASTERN REGION		
	NET MAXIMUM DEMAND	26749	15654
	NET MAXIMUM DEMAND (In Case of CPP Drawal of Odisha)	25573	16202
	BILATERAL EXPORT BY DVC (Incl. Bangladesh)	2156	1604
	EXPORT BY WBSEDCL TO SIKKIM	10	7
	EXPORT TO B'DESH & NEPAL OTHER THAN DVC	642	478
	NET TOTAL POWER AVAILABILITY OF ER	26830	16424
	(INCLUDING CS ALLOCATION +BILATERAL+IPP/CPP+HEL)		
	SURPLUS(+)/DEFICIT(-)	71	763
	SURPLUS(+)/DEFICIT(-) (In Case, 600 MW CPP Drawal of Odisha)	1247	215