Annexure B.1

Annexure-I

Agenda for ERPC: Paradeep – Andaman HVDC Interconnection

Sl. No.	Items	Details
1.	**Name of scheme**	Paradeep – Andaman HVDC Interconnection
2.	**Scope of the scheme**	Brief scope of works is given below: i. Establishment of ±320kV, 250MW HVDC station at a suitable location in Paradeep, Odisha ii. Establishment of ±320kV, 250MW HVDC station at a suitable location in Port Blair, Andaman iii. ±320kV, 250MW HVDC bipole link with DMR from Paradeep HVDC to Port Blair (about 1150km) iv. Paradeep (ISTS) – Paradeep (HVDC) 400kV D/c line v. 2 nos. 400kV GIS line bays at Paradeep (ISTS) GIS S/s for termination of Paradeep (ISTS) – Paradeep (HVDC) 400kV D/c line. vi. 2 nos. 400kV GIS line bays at Paradeep (HVDC) GIS S/s for termination of Paradeep (ISTS) – Paradeep (HVDC) 400kV D/c line. ***Note:*** *For data connectivity to load dispatch centre different options like laying of submarine fiber optic along with power cable or laying of power cable with inbuilt fiber optic would be finalised during detailed study.*
3.	**Depiction of the scheme on Transmission Grid Map**	Enclosed at **Exhibit-I**
4.	**Upstream/downstream system associated with the scheme**	Establishment of Paradeep (ISTS) 765/400kV S/s presently under TBCB by 2025-26.
5.	**Objective / Justification**	A meeting was taken by Hon'ble Minister of Power on 25-05-2023 regarding power supply in ANI, wherein it was decided that based on various issues such as import of fuel, transportation, regasification and storage of gas, the establishment of LNG project is not viable in the near future and in view of energy security and further usage of gas for electricity generation which is also a fossil fuel, the LNG project may not be taken forward. To meet the

Sl. No.	Items	Details
		power requirement through clean / green energy and to meet the target of greening the islands, a HVDC link was proposed in the meeting held under the Chairpersonship of Chairperson (CEA) on 07-06-2023. Clean / green power through this link could be supplied to North, Middle and South Andaman. The interconnection of North, Middle and South Andaman through 66kV link with funding support from Govt. of India is already under tendering stage. The peak demand of North, Middle and South Andaman is expected to increase to about 72MW by 2029-30 & 92MW by 2042 (as per 20th EPS). Accordingly, to meet the growing demand from 100% clean / green energy from National grid, a HVDC link has been planned from Paradeep, Odisha to Port Blair (tentatively at Bambooflat), Andaman & Nicobar Islands through undersea cable. It is proposed that ±320kV undersea cable is the techno-economical alternative to feed the load of Andaman Islands. In this alternative, rating of HVDC cable would be suitable for 250MW power transfer capacity. HVDC Bipole with DMR has been proposed to maintain the redundancy of both cable and HVDC terminal so that in case of outage of any cable/terminal, the power to Andaman Islands could be supplied at reduced capacity (i.e. about half the rated capacity). The rating of HVDC link has been considered as 250MW, which translates to about 400A. Considering the present demand of Andaman, it is proposed that out of 250MW HVDC, 1st phase would comprise of 125MW terminal at both ends with tentative timeframe of implementation as 2029-30 and 2nd phase would be taken up in future depending upon demand growth. In first phase with only 125MW terminal, there shall not be any terminal redundancy.
6.	**Estimated Cost**	INR 15,950 Cr @
7.	**Impact on the total Annual Transmission Charges in % along with the existing ATC**	A. ATC (considering levelized tariff @13.5% of estimated cost): ₹2,153 Cr. B. Present ATC: ₹44338.33Cr.* C. A/B: 4.856%
8.	**Need of phasing, if any**	NA
9.	**Implementation timeframe**	60 months#

Sl. No.	Items	Details
10.	**Inclusion of any wild life/ protected area along the transmission line route**	Marine Survey for undersea portion & survey for Forest area in Andaman Island may be carried out.
11.	**Deliberations with RPC along with their comments**	**ERPC may add their deliberations here.**
12.	**System Study for evolution of the proposal**	Enclosed at **Exhibit-II**

[@] *Estimated cost is broad indicative in nature based on information presently available in various sources. Detailed cost estimation is required to be prepared based on survey including transmission line route prior to finalisation of implementation plan. Survey needs to be carried out for planning of interconnections substations locations & its type, undersea cable route, communication system, etc. prior to take up its implementation.*

**Total YTC allowed for Sep 2023, as per notification of transmission charges payable by DICs for billing month of Nov 2023 dated 25-10-2023 published on NLDC website (available at https://posoco.in/download/notification-of-transmission-charges-for-dics-for-the-billing-month-of-november-2023/?wpdmdl=54335)*

[#] *Depends on factory booking position and Availability of vessel for laying cable*

Exhibit-I

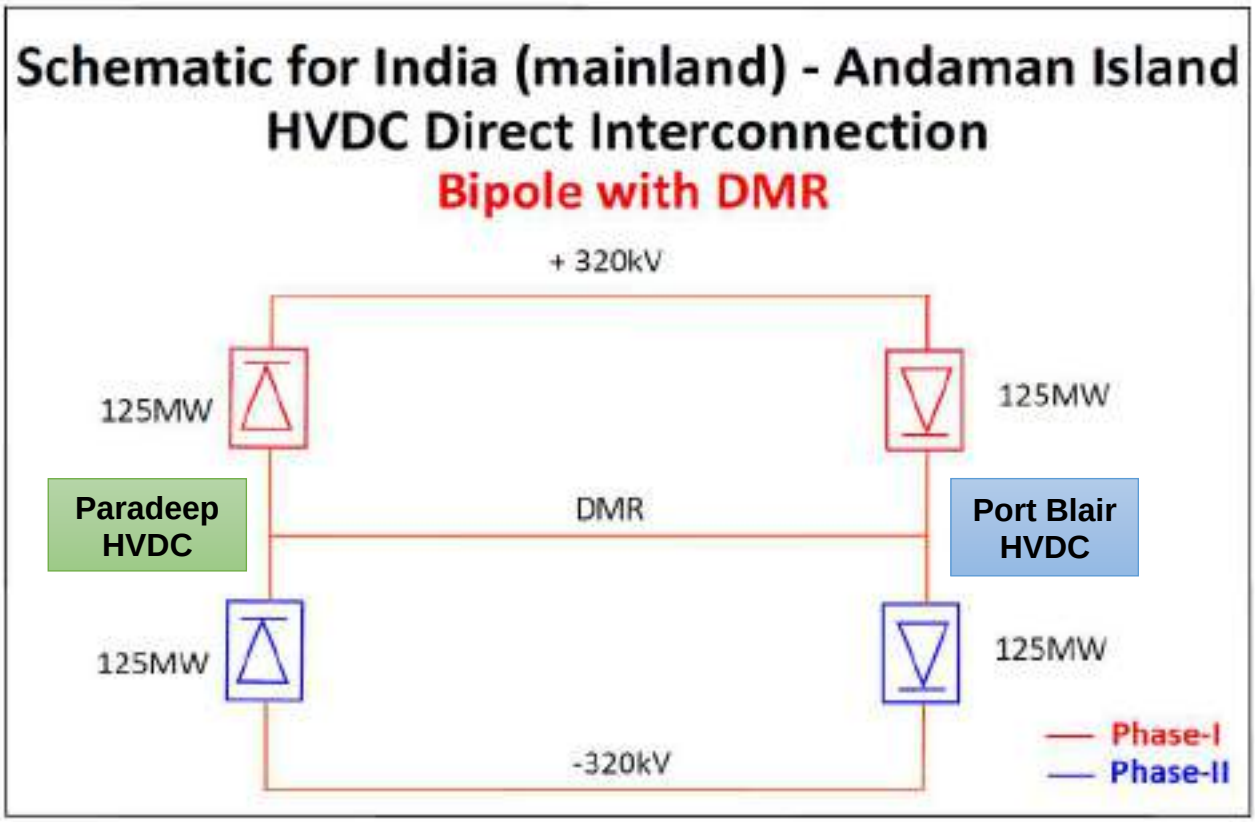

Schematic for India (mainland) - Andaman Island
HVDC Direct Interconnection
Bipole with DMR
+ 320kV
125MW
125MW
Paradeep HVDC
DMR
Port Blair HVDC
125MW
125MW
-320kV
Phase-I
Phase-II

Exhibit-II


Power Map of Andaman Island
Case: High RE
Timeframe - 2029-30
Installed Capacity: 171 MW
(D - 87MW, H - 5.25MW, R - 79MW)
Peak Demand: 79MW
NORTH ANDAMAN
IC- 15MW [5.76MW(D), 5.25MW (H), 4MW(R)]
PD- 5.4MW
DIGLIPUR
IC- 5.76MW (D)
PD- 5.4MW
KHEP
50km
MAYABUNDER
IC- 1MW (D)
PD- 1.96MW
MIDDLE ANDAMAN
IC- 12MW [12MW(D)]
PD- 12.4MW
50km
RANGAT
IC- 10MW (D)
PD- 9.6MW
40km
LONG ISLAND
STRAIT ISLAND
BARATANG
IC- 1MW (D)
PD- 0.8MW
SOUTH ANDAMAN
IC- 144MW
[69MW(D),75MW(R)]
PD- 61.3MW
80km
SWARAJ DWEEP
SAHEED DWEEP
JIRKATANG
PD- 0.1MW
STEWARTGANJ
BAMBOOFLAT
HVDC Terminal
CHATTAM ISLAND
MITHAKARI
DAIRY FARM
N.C. DOLLYGANJ
GARACHARMA
MANGLUTAN
MANJERY
To BARATANG
To JIRKATANG
SOUTH ANDAMAN
Proposed 66kV OH Dc line
STEWARTGANJ
IC- 60MW (R), BESS - 168MWh
36MW Despatch
BAMBOOFLAT
IC- 17.1MW(D)
PD- 6.0MW
HVDC Terminal
CHATTAM ISLAND
IC- 20MW (D)
PD- 4.2MW
1km
MITHAKARI
IC- 25MW (R)
BESS - 50MWh
DAIRY FARM
PD- 9.2MW
N.C. DOLLYGANJ
IC- 25MW (R)
BESS-20MWh
PORT BLAIR
GARACHARAMA
IC- 5MW (R)
PD- 17.1MW
MANGLUTAN
PD- 5MW
MANJERY
PD- 2.6MW
RUTLAND ISLAND
LEGEND
66kV Inter-Island Interconnection
66kV Generation Linked Scheme
66kV Strengthening in South Andaman
132kV HVDC Linked Scheme
33kV Strengthening in South Andaman
Existing 33kV line
Existing S/s
Proposed 66kV or 132kV S/s
Proposed 33kV S/s
Upcoming Generating stations
HVDC Station
IC- Installed Capacity; (D) - Diesel; (H)- Hydro; (R)- Renewable; PD- Demand; (B) - BESS; (S)- Solar; (C) - Cable; (OH) - Overhead Line


Power Map of Andaman Island
Case: Low RE
Timeframe - 2029-30
Installed Capacity: 171 MW
(D - 87MW, H - 5.25MW, R - 79MW)
Peak Demand: 79MW
NORTH ANDAMAN
IC- 15MW [5.76MW(D), 5.25MW (H), 4MW(R)]
PD- 5.4MW
DIGLIPUR
IC- 5.76MW (D)
PD- 5.4MW
KHEP
IC- 5.25MW (H)+4MW (R)
50km
MAYABUNDER
IC- 1MW (D)
PD- 1.9MW
MIDDLE ANDAMAN
IC- 12MW [12MW(D)]
PD- 12.4MW
50km
RANGAT
IC- 16MW (D)
PD- 9.8MW
40km
LONG ISLAND
STRAIT ISLAND
BARATANG
IC- 1MW (D)
PD- 0.6MW
SOUTH ANDAMAN
IC- 144MW
[69MW(D),75MW(R)]
PD- 61.3MW
80km
SWARAJ DWEEP
JIRKATANG
PD- 0.1MW
SAHEED DWEEP
STEWARTGANJ
BAMBOOFLAT
HVDC Terminal
CHATTAM ISLAND
MITHAKARI
DAIRY FARM
NLC, DOLLYGANJ
GARACHARMA
MANGLUTAN
MANJERY
To BARATANG
To JIRKATANG
SOUTH ANDAMAN
Proposed 66kV OH D/c line
STEWARTGANJ
IC- 66MW (R); BESS - 150MWh
30MW Diesel Backup
BAMBOOFLAT
IC- 17.1MW(D)
PD- 6.1MW
HVDC Terminal
CHATTAM ISLAND
IC- 20MW (D)
PD- 4.0MW
5km
MITHAKARI
IC- 20MW (R);
BESS - 50MWh
PD- 14.6MW
Dairy Farm
PD- 8.2MW
NLC, Dollygan
IC- 20MW (R)
BESS-20MWh
PORT BLAIR
GARACHARAMA
IC- 6MW (R)
PD- 17.1MW
MANGLUTAN
PD- 5MW
MANJERY
PD- 2.6MW
RUTLAND ISLAND
LEGEND
66kV Inter-Island Interconnection
66kV Generation Linked Scheme
66kV Strengthening in South Andaman
132kV HVDC Linked Scheme
33kV Strengthening in South Andaman
Existing 33kV line
Existing S/s
Proposed 66kV or 132kV S/s
Proposed 33kV S/s
Upcoming Generating stations
HVDC Station
IC- Installed Capacity; (D) - Diesel; (H)- Hydro; (R)- Renewable; PD- Demand; (B) - BESS; (S)- Solar; (C) - Cable; (OH) - OverHead Line

Annexure B.2.1.

Annexure II

List for Requirement of Additional FOTE in ER at AGC locations

Sr No.	Name	Available FOTE (Qty)	Required Equipment (Qty)
1	Farakka STPS Stage II	3	Not Required
2	Farakka STPS Stage III		Not Required
3	Kahalgaon STPS Stage II	1	1 no. being installed in project; hence not required
4	Talcher STPS Stage I	1	Additional 1 no. SDH required for resource disjoint
5	Talcher STPS Stage II		
6	Barh STPS Stage I	1	Additional 1 no. SDH required for resource disjoint
7	Barh STPS Stage II		
8	KBUNL Stage II	1	Additional 1 no. SDH required for resource disjoint
9	Nabinagar STPP Stage I	1	Additional 1 no. SDH required for resource disjoint
10	Darlipali STPP	1	Additional 1 no. SDH required for resource disjoint
11	Northkaranpura STPP	1	Additional 1 no. SDH required for resource disjoint
12	Teesta V	1	Additional 1 no. SDH required for resource disjoint
13	Rangit	1	Additional 1 no. SDH required for resource disjoint
14	MPL	2	Not Required
Total quantity required		**08 numbers**	

Annexure- B.2.2

Requirement of Additional FOTE for redundancy at AGC locations in ER

S. No.	Items	Details
1.	Scope of the scheme	Eight numbers of FOTE STM-16 at AGC locations of Eastern Region for redundancy
2.	Depiction of the scheme on FO Map	NA
3.	Objective / Justification	Additional FOTE at all AGC operated generating stations in Eastern region is required in view of resource disjoint and criticality of AGC operation for grid operation purpose as failure of single equipment may lead to disruption in AGC operation. Further, at many locations redundant ethernet port are not available as per NLDC requirement. The NLDC requirement is as follows: ➢ 1+1 Ethernet port for main NLDC ➢ 1+1 Ethernet ports are for backup NLDC The list of AGC locations and equipment requirement is enclosed as **Annexure B.2.1.** The total eight nos. of FOTE STM16 equipments are required for redundancy as per enclosed list.
4.	Estimated Cost	Rs. 2.40 crores (approx.) (Two crores & forty lacs only)
5.	Implementation time frame	06 months from date of allocation.
6.	Implementation mode	To be implemented by POWERGRID in RTM mode.
7.	Deliberations	The proposed scheme was deliberated in the 3rd & 4th Communication Planning meeting (CPM) (**Annexure B.2.2** attached for the MoM of 3rd & 4th CPM respectively) of CTUIL held on 26.12.2022 & 27.07.2023 respectively where in POWERGRID confirmed the quantity of additional FOTE required at AGC locations . The agenda for this scheme was also deliberated in 12thERTeST meeting held on 09.11.2022 (MoM attached as **Annexure B.2.2**). This scheme after ERPC approval/review shall be put up to NCT for approval.

Due to unavailability of NTPC representative in the meeting, this agenda remained unupdated.In order to explore other alternatives,it was agreed to put up the agenda in the upcoming TCC/ERPC meeting.

FO connectivity of Nabinagar I

2) Additional FOTE at AGC locations

Additional FOTE at all AGC operated generating stations in Eastern region is required in view of resource disjoint and criticality of AGC operation for grid operation purpose as failure of single equipment may lead to disruption in AGC operation.

Further, at many locations redundant ethernet ports are not available as per NLDC requirement. The requirement of NLDC is as follows:

- 1+1 Ethernet port for main NLDC.
- 1+1 Ethernet ports are for backup NLDC.

AGC Locations are listed as below:

1)Barh-2

2)MPL

3)Kahalgaon-2

4)Teesta-V

5)Rangit

6)NPGCL

7)Farakka-II

8)Farakka-III

9)MTPS Stage-II

10)Talcher-II

11)Talcher-I

12)Barh-1

POWERGRID may provide details of existing FOTE and requirement of additional ports/cards/FOTE at these AGC locations in view of above.

This agenda was also deliberated in 12thTeST meeting and TeST committee advised POWERGRID to share details of existing FOTE and requirement of additional ports/cards/FOTE at these AGC locations to CTUIL.

Members may further deliberate the issue.

Deliberation:

POWERGRID informed that additional FOTE is required at all mentioned AGC locations except Farakka. Port availability at these locations as per NLDC requirement shall be provided by POWERGRID.
POWERGRID requested necessary support for installation of equipment may be provided by GENCOS.
ERPC stated that AGC station Darlipali is missing in the list and it may be also included.
POSOCO may provide the updated list of AGC locations.

3) Connectivity of STU node on fibre in view of AMR.

The meter readings from several locations (mostly STU nodes) (list of location shall be provided by ERLDC) in each region are intermittent and having communication issues as the meters at the state nodes are not having secure & reliable communication links and are operational on public domain communication links like GPRS.

CTUIL requested ERLDC to furnish the list of such identified nodes so as to propose the connectivity of such nodes on captive OPGW network for receiving the data successfully.

NLDC has provided list of such nodes for Eastern region which is attached as **Annexure I**.

Deliberation in this regard was also held in 12th TeST meeting of ERPC wherein various utilities informed that status in many cases in **Annexure I** is erroneous.

TeST committee advised all utilities to share correct status regarding OPGW connectivity of mentioned nodes to CTUIL at earliest.

ERLDC may please update the information of **Annexure I** in coordination with NLDC.

Members may deliberate.

Deliberation:

POSOCO stated that updated list has been provided to CTUIL recently.

FO connectivity of Nabinagar I

2) Additional FOTE at AGC locations

Additional FOTE at all AGC operated generating stations in Eastern region is required in view of resource disjoint and criticality of AGC operation for grid operation purpose as failure of single equipment may lead to disruption in AGC operation.

Further, at many locations redundant ethernet ports are not available as per NLDC requirement. The requirement of NLDC is as follows:

- 1+1 Ethernet port for main NLDC.
- 1+1 Ethernet ports are for backup NLDC.

AGC Locations are listed as below:

1)Barh-2

2)MPL

3)Kahalgaon-2

4)Teesta-V

5)Rangit

6)NPGCL

7)Farakka-II

8)Farakka-III

9)MTPS Stage-II

10)Talcher-II

11)Talcher-I

12)Barh-1

POWERGRID may provide details of existing FOTE and requirement of additional ports/cards/FOTE at these AGC locations in view of above.

This agenda was also deliberated in 12thTeST meeting and TeST committee advised POWERGRID to share details of existing FOTE and requirement of additional ports/cards/FOTE at these AGC locations to CTUIL.

Deliberation in the 3rd CPM:

POWERGRID informed that additional FOTE is required at all mentioned AGC locations except Farakka. Port availability at these locations as per NLDC requirement shall be provided by POWERGRID.
ERPC stated that AGC station Darlipali is missing in the list and it may be also included.
GRID-INDIA may provide the updated list of AGC locations.

GRID-INDIA has shared the updated list shown below. POWERGRID may provide and confirm equipment requirements at all AGC locations.

Sr No.	Name	Available Equipment (Qty)	Required Equipment(Qty)
1	Farakka STPS Stage II		
2	Farakka STPS Stage III		
3	Kahalgaon STPS Stage II		
4	Talcher STPS Stage I		
5	Talcher STPS Stage II		
6	Barh STPS Stage I		
7	Barh STPS Stage II		
8	KBUNL Stage II		
9	Nabinagar STPP Stage I		
10	Darlipali STPP		
11	Northkaranpura STPP		

12	Teesta V		
13	Rangit		
14	MPL		

Members may deliberate.

Deliberation:

POWERGRID provided the detail of existing FOTE at AGC locations of ER along with already planned equipment in different projects and additional requirement for the redundancy at AGC locations.

POWERGRID informed that total 08 nos. of STM 16 FOTE are required as per table below. The forum agreed with the same. The agenda shall be put up for TCC/ERPC review.

Sr No.	**Name**	**FOTE Available Equipment (Qty)**	**Required Equipment (Qty)**
1	Farakka STPS Stage II	3	Not Required
2	Farakka STPS Stage III		Not Required
3	Kahalgaon STPS Stage II	1	1 no. being installed in project; hence not required
4	Talcher STPS Stage I	1	Additional 1 no. SDH required for resource disjoint
5	Talcher STPS Stage II		
6	Barh STPS Stage I	1	Additional 1 no. SDH required for resource disjoint
7	Barh STPS Stage II		
8	KBUNL Stage II	1	Additional 1 no. SDH required for resource disjoint
9	Nabinagar STPP Stage I	1	Additional 1 no. SDH required for resource disjoint
10	Darlipali STPP	1	Additional 1 no. SDH required for resource disjoint

11	Northkaranpura STPP	1	Additional 1 no. SDH required for resource disjoint
12	Teesta V	1	Additional 1 no. SDH required for resource disjoint
13	Rangit	1	Additional 1 no. SDH required for resource disjoint
14	MPL	2	Not Required
Total quantity required		**08 Nos.**	

3) Connectivity of STU node on fibre in view of AMR.

The meter readings from several locations (mostly STU nodes) (list of location shall be provided by GRID-INDIA) in each region are intermittent and having communication issues as the meters at the state nodes are not having secure & reliable communication links and are operational on public domain communication links like GPRS. Deliberation in this regard was also held in 12th TeST meeting of ERPC.
GRID-INDIA has identified a list of such nodes for each region. It is proposed to provide the connectivity of such nodes on captive OPGW network for receiving the data successfully.
The line length from STU node to nearest ISTS node may be provided by Grid-India/STU/State constituent along with line name, line ownership etc as per attached format(**Annexure II)**. Till date none of the state has provided the data.

Members may deliberate.

Deliberation:
CTUIL stated that even after repeated follow up and emails, the requisite data has not been provided by states.
ERLDC stated that the agenda may be discussed in TeST meeting where state representatives will be present. The forum agreed with the same.

4) Congestion in ISTS communication network:

The communication networks have STM16 link capacity at most of the places, however few links having STM 4 or lesser capacity. There may be few links /nodes the capacity of whom may have been utilised more than 75 percent. The detail of such nodes/links may be intimated by POWERGRID/GRID-INDIA which are having congestion in terms of traffic/bandwidth so that planning for capacity enhancement of the node/link may be done.

Deliberation in 3rd Meeting:

POWERGRID agreed that such nodes/links shall be intimated to CTUIL on review of network.

ITEM NO. B.2: Additional FOTE at AGC locations: CTU

Additional FOTE at all AGC operated generating stations in eastern region is required in view of resource disjoint and criticality of AGC operation for grid operation purpose.

Further, at many locations redundant ethernet ports are not available as per NLDC requirement. The requirement of NLDC is as follows:

- 1+1 Ethernet port for main NLDC.
- 1+1 Ethernet ports are for backup NLDC.

Locations are listed as below:

1)Barh-2 2) MPL 3) Kahalgaon-2 4) Teesta-V 5) Rangit 6) NPGCL 7) Farakka-II 8) Farakka-III 9) MTPS Stage-II 10) Talcher-II 11) Talcher-I 12) Barh-1

Powergrid may provide details of existing FOTE and requirement of additional ports/cards/FOTE at these AGC locations in view of above.

Members may discuss.

Deliberation in the meeting

CTU representative informed that in view of resource disjoint and criticality of AGC operation for grid operation purpose, additional FOTE need to be present at all AGC operated generating stations. He further informed that it had been observed that at many stations, redundant ethernet ports are not available as per NLDC requirement i.e. 1+1 Ethernet port for main NLDC and 1+1 Ethernet ports are for backup NLDC.

Powergrid representative informed that at Farakka, 3 FOTE is available and 4th FOTE is under supply stage and at all other generating stations mentioned in list, single FOTE is available.

TeST committee advised Powergrid to share details of existing FOTE and requirement of additional ports/cards/FOTE at these AGC locations to CTU.

ITEM NO. B.3: Connectivity of STU node on fibre in view of AMR: CTU

The meter readings from several locations (mostly STU nodes) in each region are intermittent and having communication issues as the meters at the state nodes are not having secure & reliable communication links and are operational on public domain communication links like GPRS.CTUIL requested ERLDC to furnish the list of such identified nodes so as to propose the connectivity of such nodes on captive OPGW network for receiving the data successfully.

Members may discuss.

Annexure-B.3.2

Bandwidth Congestation details in ER

Sl. No	From Stations	To station	Bandwidth usage	Single Node that affects multiple node	Installated Bandwidth Capacity	Year of Installation
1	ERLDC Kolkata	KASBA	96%	ERLDC	STM-16	2016
2	ERLDC Kolkata	SUBHASHGRAM PG	92%			
3	Kasba	SUBHASHGRAM PG	100.00%	KASBA	STM-16	2016
4	Kasba	Jeerat	95.40%			
5	Jeerat	RAJARHAT PG	74.70%	JEERAT	STM-16	2016
6	Jeerat	Behrampur PG	87.20%			
7	Jeerat	Farakka NTPC	88.60%			
8	Behrampur PG	Farakka NTPC	81.60%	Behrampur PG	STM-16	2015
9	Farakka NTPC	Malda PG	85.30%			
10	Farakka NTPC	KAHALGAON NTPC	87.30%			
11	Farakka NTPC	DURGAPUR PG	86.30%	Farakka NTPC	STM-16	2016
12	Malda PG	Purnea 400 PG	74.60%	MALDA PG	STM-16	2015
13	Malda PG	Dalkhola PG	74.20%			
14	Purnea 400 PG	Binaguri 400KV PG	92.50%	Purnea 400 PG	STM-16	2016
15	Purnea 400 PG	Kishanganj PG	79.30%			
16	Dalkhola	Kishanganj PG	77.42%	Dalkhola	STM-16	2015
17	Kishanganj	SAHARSA	93.03%	Kishanganj	STM-16	2016
18	Kishanganj	Binaguri 400KV PG	92.10%			
19	SAHARSA	KPTL Darbhanga	92.60%			
20	Binaguri 400KV PG	RONGPO	76.87%	Binaguri 400KV PG	STM-16	2015
21	Binaguri 400KV PG	BIRPARA	74.30%			
22	KPTL Darbhanga	DARBHANGA ECI	92.63%	KPTL Darbhanga	STM-4	2015
23	Kahalgaon	LAKHISARAI	79.02%	Kahalgaon	STM-16	2015
24	Lakhisarai	BSF 400 KV	87.65%	Lakhisarai	STM-16	2015
25	BSF 400 KV	SASARAM	89.23%	BSF 400 KV	STM-16	2015
26	BSF 400 KV	MUZAFFARPUR	72.30%			
27	Arrah PG	PATNA PG	100.00%	Arrah PG	STM-4	2015
28	Arrah PG	BSF 400 KV	100.00%			
29	Sasaram PG	Gaya 765	79.60%			
30	Sasaram PG	AB380 Rept.	90.30%			
31	Gaya 765	Essar (chandwa)	90.45%	Gaya 765	STM-4	2015
32	Essar (chandwa)	Ranchi 765	87%	Essar (chandwa)	STM-4	2015
33	Ranchi 765	Ranchi 400	84.23%	Ranchi 765	STM-4	2015
34	Ranchi 400	Chaibasa	81.97%	Ranchi 400	STM-16	2015
35	Ranchi 400	Maithan PG	79.90%			
36	Maithan PG	KAHALGAON	75.96%			
37	Durgapur PG	KANCHANPUR	76.64%	Durgapur PG	STM-16	2016
38	Jamshedpur PG	Chaibasa	79.34%	Jamshedpur PG	STM-16	2015
39	Chaibasa	Rourkela	76.87%	Chaibasa	STM-16	2015
40	Rourkela	Jamshedpur PG	76.48%	Rourkela	STM-16	2016
41	Rourkela	JHARSUGUDA	85.80%	JHARSUGUDA	STM-4	2015

Annexure- B.3.1

Requirement of Additional FOTE at various ISTS nodes in ER due to exhaustion of existing capacity.

S. No.	Items	Details
1.	Scope of the scheme	Upgradation of capacity(bandwidth) at various Eastern region stations due to exhaustion of existing capacity
2.	Depiction of the scheme on FO Map	NA
3.	Objective / Justification	In Eastern region, the communication network has STM16 link capacity at most of the places, however at few links/nodes have STM 4 or lesser capacity. For the few links /nodes, the capacity has been utilised for more than 75 percent. The detail of such nodes/links was intimated by POWERGRID(enclosed as **Annexure-B.3.2**) which are having congestion in terms of traffic/bandwidth so that planning for capacity enhancement of the node/link may be done. **4th Communication Planning meeting (CPM) deliberation**: CEA suggested that the upgradation of capacity may be taken up considering change of technology to MPLS. CTUIL welcomed the suggestion and stated that the MPLS implementation shall take longer time in view of committee report and subsequent approvals. In view of this, out of the above links provided by POWERGRID only links with congestion of approximately 90% and above & few other important stations shall be taken up on priority for upgradation. Accordingly, the list of nodes in ER with capacity utilisation of approximately 90% and above & few other important stations is enclosed as **Annexure-B.3.3** As per list, capacity upgradation of four numbers of STM4 FOTE(Fiber Optic Terminal Equipment) to STM-16 FOTE and thirteen nos. of STM16 FOTE to STM 64 FOTE is required.
4.	Estimated Cost	**Rs. 10.82 crores (approx.)** (Ten crores & Eighty two lacs only)
5.	Implementation time frame	**06 months** from date of allocation.
6.	Implementation mode	To be implemented by **POWERGRID** in **RTM** mode.

7.	Deliberations	The proposed scheme was deliberated in the 3rd and 4th Communication Planning meeting (CPM) (**Annexure B** attached for the MoM of 4th CPM) of CTUIL held on 27.07.2023. The cost of the scheme is based on the unit prices of STM16 FOTE and STM 64 FOTE provided by POWERGRID. However, since the upgradation cost by replacement of higher capacity card at few nodes where Tejas make equipment is installed from STM 4 to 16 and STM 16 to 64 is not currently available (to be provided by POWERGRID), the cost estimate of the scheme has been prepared for procurement of new equipment. POWERGRID shall update the upgradation cost and the the cost estimate shall be modified accordingly. Further, commercial implications due to these replacement/upgradations shall also be deliberated. This scheme after ERPC review shall be put up to NCT for approval.

Appendix-1

Sr No.	Node Name(with approx 90% capacity exhausted)	Upgradation/replacement required	Detail of Card/Equipment required for upgradation	Estimated Cost	Existing FOTE make and model
1	Kasba	STM 16 to STM 64	Existing Equipment Cannot be upgraded. New STM 64 SDH Equipment Required	74 Lakhs	STM 16: Coriant hIT 7080
2	ERLDC	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
3	Jeerat	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
4	Subhashgram	STM 16 to STM 64		74 Lakhs	a) STM 16: ECI NPT 1200 b) STM 4: Coriant hIT 7025
5	Farakka	STM 16 to STM 64		74 Lakhs	a) STM 16: ECI NPT 1200 b) STM 16: hIT 7080 c) STM 4: Alcatel
6	Kahalgaon	STM 16 to STM 64		74 Lakhs*	STM 16: Coriant hIT 7080 *New equipment under separate project is planned*
7	Saharsa	STM 16 to STM 64		74 Lakhs*	a) *STM 16: Tejas TJ 1400* b) STM 16: ABB FOX 515H
8	Binaguri	STM 16 to STM 64		74 Lakhs*	a) *STM 16: Tejas TJ 1400* b) STM 4: Coriant hIT 7025
9	Purnea	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
10	Kishenganj	STM 16 to STM 64		74 Lakhs	STM 16: ECI NPT 1200
11	Sasaram	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
12	AB380 Repeater	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
13	Allahabad	STM 16 to STM 64		74 Lakhs*	a) *STM 16: Tejas TJ 1400* b) STM16: ECI NP1200 c) STM 1: Fiberhome IBAS 180
14	Gaya	STM 4 to STM 16	Existing Equipment Cannot be upgraded. New STM 16 Equipment Required	30 Lakhs	STM 4: Coriant hIT 7025
15	Essar Chandwa	STM 4 to STM 16		30 Lakhs*	*a) STM 16: Tejas TJ 1400* b) STM 4: Coriant hIT 7025
16	Darbhanga(KPTL)	STM 4 to STM 16		30 Lakhs	
17	Arrah	STM 4 to STM 16		30 Lakhs	STM 4: Coriant hIT 7025

- Upgradation Cost by replacement of cards(STM16 to STM64, STM1 to STM4) to be provided by POWERGRID
- Amplifiers cost is included in cost estimate

Annexure-B.3.3

Appendix-1

Sr No.	Node Name(with approx 90% capacity exhausted)	Upgradation/replacement required	Detail of Card/Equipment required for upgradation	Estimated Cost	Existing FOTE make and model
1	Kasba	STM 16 to STM 64	Existing Equipment Cannot be upgraded. New STM 64 SDH Equipment Required	74 Lakhs	STM 16: Coriant hIT 7080
2	ERLDC	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
3	Jeerat	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
4	Subhashgram	STM 16 to STM 64		74 Lakhs	a) STM 16: ECI NPT 1200 b) STM 4: Coriant hIT 7025
5	Farakka	STM 16 to STM 64		74 Lakhs	a) STM 16: ECI NPT 1200 b) STM 16: hIT 7080 c) STM 4: Alcatel
6	Kahalgaon	STM 16 to STM 64		74 Lakhs*	STM 16: Coriant hIT 7080 *New equipment under separate project is planned*
7	Saharsa	STM 16 to STM 64		74 Lakhs*	a) *STM 16: Tejas TJ 1400* b) STM 16: ABB FOX 515H
8	Binaguri	STM 16 to STM 64		74 Lakhs*	a) *STM 16: Tejas TJ 1400* b) STM 4: Coriant hIT 7025
9	Purnea	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
10	Kishenganj	STM 16 to STM 64		74 Lakhs	STM 16: ECI NPT 1200
11	Sasaram	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
12	AB380 Repeater	STM 16 to STM 64		74 Lakhs	STM 16: Coriant hIT 7080
13	Allahabad	STM 16 to STM 64		74 Lakhs*	a) *STM 16: Tejas TJ 1400* b) STM16: ECI NP1200 c) STM 1: Fiberhome IBAS 180
14	Gaya	STM 4 to STM 16	Existing Equipment Cannot be upgraded. New STM 16 Equipment Required	30 Lakhs	STM 4: Coriant hIT 7025
15	Essar Chandwa	STM 4 to STM 16		30 Lakhs*	a) *STM 16: Tejas TJ 1400* b) STM 4: Coriant hIT 7025
16	Darbhanga(KPTL)	STM 4 to STM 16		30 Lakhs	
17	Arrah	STM 4 to STM 16		30 Lakhs	STM 4: Coriant hIT 7025

- Upgradation Cost by replacement of cards(STM16 to STM64, STM1 to STM4) to be provided by POWERGRID
- Amplifiers cost is included in cost estimate

Annexure –B.4

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: CTU/E/01/Dikchu

Date: 18-07-2023

To: As per Distribution List

Subject: Minutes of Meeting regarding scheduling of power from Dikchu HEP in Sikkim under GNA Regulations, 2022

Dear Sir/Ma'am,

A meeting to discuss the scheduling of 96MW power from Dikchu HEP in Sikkim under GNA Regulations, 2022 was held on 26th June, 2023 through video conferencing. In this regard, please find enclosed minutes of the meeting.

धन्यवाद/ Thanking you,

भवदीय / Yours faithfully,

राजेश कुमार
18/07/2023

(राजेश कुमार) / (Rajesh Kumar)
वरिष्ठ महाप्रबंधक/ Sr. General Manager

Distribution List:

1. Chief Engineer (PSP&A-II) Central Electricity Authority Sewa Bhawan, R.K.Puram New Delhi-110066	**2. Member Secretary** Eastern Regional Power Committee 14, Golf Club Road, Tollygunge Kolkata-700033
3. Director (SO) Grid Controller of India Limited 9th Floor, IFCI Towers, 61, Nehru Place, New Delhi-110016	**4. Executive Director** Eastern Regional Load Despatch Centre 14, Golf Club Road, Jubilee Park, Golf Gardens, Tollygunge, Kolkata, West Bengal - 700095
5. Authorised Signatory Sneha Kinetic Power Projects Pvt. Ltd. C-35, Lane-1, Sector-2, New Shimla Shimla, Himachal Pradesh-171009	

Minutes of Meeting held on 26-06-2023 regarding scheduling of 96MW power from Dickhu HEP in Sikkim under GNA Regulations, 2022

1.0 Dy. COO (CTUIL) welcomed the participants to the meeting. The list of participants is enclosed at **Annexure-I.**

2.0 CTU informed that the present meeting has been convened based on the letter received from M/s Sneha Kinetic Power Projects Private Limited (SKPPPL) dated 06-06-2023 (enclosed at **Annexure-II**) wherein M/s SKPPPL has requested the formalities to be fulfilled for scheduling of 96MW power from its Dikchu HEP in Sikkim under GNA Regulations, 2022.

3.0 CTU mentioned the following about the matter:

- An interim ISTS connectivity of 96MW was granted to M/s SKPPPL as per CERC order dated 03-12-2014 in Petition No. 157/MP/2014 wherein CERC allowed LILO of one circuit of Teesta III HEP – Kishanganj 400kV D/c (Quad) line (subsequently LILOed at Rangpo S/s) at Dikchu HEP as an interim arrangement connectivity of Dikchu HEP. In the said order, it is also mentioned that the interim arrangement is to be removed upon completion of originally planned 220kV Dikchu – Rangpo line (to be initially operated at 132kV) by Govt. of Sikkim.
- The intra-state connectivity system (under the scope of Sikkim) was revised from original plan in the 1st meeting of ERPC-TP held on 14-02-2020, wherein following was decided in regard to Connectivity system of Dikchu HEP:

  "the following scope of works in regard to connectivity system of Dikchu HEP was agreed:

  (i) LILO of one circuit of Dikchu Pool-Singhik 220kV D/c (Twin Moose) line (to be initially operated at 132kV) – by Govt. of Sikkim

  (ii) *LILO of one circuit of Teesta-III – Rangpo/Kishanganj 400kV D/c (Quad) line at Dikchu HEP would be disconnected from Dikchu HEP switchyard and original Teesta-III – Rangpo – Kishanganj 400kV D/c (Quad) line would be restored by generation developer upon commissioning of above LILO."*
- LILO of one circuit of Dikchu Pool – Singhik 220kV D/c line (operated at 132kV) at Dikchu HEP is being implemented under Comprehensive Scheme (being implemented by POWERGRID under Consultancy). POWERGRID vide email dated 23-06-2023 has informed that the above scheme is expected by Dec 2023.
- Presently, no LTA exists from Dikchu HEP, and ERLDC confirmed that power is being evacuated from Dikchu HEP under STOA only.
- Now M/s SKPPPL vide said letter has requested for the formalities required to schedule 96MW power under the GNA Regulations, 2022 without affecting

the operation of the plant. In this regard, it is to mention that the most suitable provision under GNA Regulations, 2022 was observed is ***2nd proviso of Regulation 22.4 (a)***, which is quoted below:

> *"For Connectivity grantees covered under Regulation 4.1 of these regulations, the effective date of GNA of such Connectivity grantees shall be the start date of Connectivity or COD of ATS, whichever is later.*
>
> *Provided that where only some of the transmission elements of the ATS have achieved COD before the COD of the ATS and the Connectivity grantee seeks part effectiveness of its Connectivity, the Nodal Agency shall make such part Connectivity and corresponding GNA effective, subject to availability of transmission system.*
>
> ***Provided also that where such GNA is yet to become effective, such entity shall be eligible to get its power scheduled partly or fully of the quantum of Connectivity sought for, subject to availability of transmission system by treating such access as deemed T-GNA, and shall not be required to pay T-GNA charges."***

4.0 In view of the above, it was proposed that once the scheduling of power under GNA Regulations, 2022 starts, the scheduling of power from Dikchu HEP may be done under T-GNA till commissioning of final intra-state connectivity system.

5.0 ERLDC mentioned that as per Regulation 26.1 of the GNA Regulations 2022, M/s SKPPPL for its Dikchu generation would not fulfill the eligibility requirements for grant of T-GNA as they are injecting entity. CTU mentioned that T-GNA may be allowed by Grid-India from Dikchu HEP to eligible entities under Regulation 26.1 till commissioning of final intra-state connectivity system.

6.0 ERLDC further mentioned that as per the present interim arrangements viz. LILO of one circuit of Teesta III HEP – Kishanganj 400kV D/c (Quad) line (subsequently LILOed at Rangpo S/s) at Dikchu HEP, under the outage of Dikchu – Rangpo 400kV line section, there is an operational constraint in evacuation of power (considering overload capacity) of both Teesta-III & Dikchu HEPs simultaneously during the high hydro condition due to the limiting constraints in 400kV cable installed at Teesta-III switchyard (2000A rated cable section in Quad Moose line). Accordingly, curtailment of power of Dikchu HEP would be required under T-GNA. ERPC also supported the operational constraints raised by ERLDC.

7.0 CTU clarified that Teesta-III HEP has been granted deemed GNA of 536MW. Further, they the generation developer has already opted for transition of balance quantum i.e. 664MW (1200-536), under Regulation 37.6 (1), which has already been agreed for grant on existing ISTS in the 19th CMETS-ER with start date as "Date from which scheduling under GNA starts as per CERC notification/communication". As per Regulation 37.6 (1) (a), grant shall be made after submission of requisite Conn-BG by generation developer of Teesta-III HEP. Further, the Regulation 29.2 states that "The GNA grantees shall have priority over the T-GNA grantees for use of the ISTS.". Thus, curtailment of power under T-GNA, if any, would be as per the provisions in the GNA Regulations, 2022.

8.0 It was also noted in the meeting that, the ISTS transmission charges and deviation calculation for Dikchu HEP for T-GNA shall be as per applicable Regulations of CERC.

9.0 Dikchu HEP developer noted that power scheduled with present ISTS interim arrangement under T-GNA is liable to curtailed as per provisions of GNA Regulations, 2022.

10.0 After detailed deliberations, it was agreed that 96MW of power can be scheduled from Dikchu HEP (in Sikkim) of M/s SKPPPL under T-GNA in line with various provisions of the GNA Regulations, 2022. This arrangement shall strictly continue only till completion/commissioning of final intra-state connectivity system of Dikchu HEP by Govt. of Sikkim i.e. LILO of one circuit of Dikchu Pool – Singhik 220kV D/c line (operated at 132kV) at Dikchu HEP. Further, the ISTS transmission charges and deviation calculation for Dikchu HEP for T-GNA in ISTS shall be as per applicable Regulations of CERC.

– x – x – x -

At present, all Nodes of POWERGRID are having redundant power supply, either from ULDC DCPS or from Substation Charger. However at Kasba Node which is critical for data reporting of all Central Sector and State sector stations at ERLDC, there is only single power supply from ULDC DCPS. Therefore, it would be beneficial to all stakeholders in case a redundant power supply is made available at Kasba Node. At present, POWERGRID is implementing the project: Strengthening of OPGW network in Eastern Region. Therefore, it would be prudent to include 01 no. 48V DCPS with BB within scope of above project for better redundancy of power supply for communication equipment. Since, the Kasba node is within WBSETCL premises, necessary space to be provided by WBSETCL.

Members may deliberate.

Deliberation: POWERGRID explained the requirement of redundant power supply at Kasba node as mentioned above. Grid-India agreed for the same.

Forum suggested POWERGRID to carryout the survey of WBSETCL premises for arranging suitable space requirement and accordingly put up the agenda in test meeting.

8. Revised connectivity for redundant path of Teesta-III

Presently, Teesta III is connected through Teesta III -Rangpo PLCC link.

First Fibre path for Teesta III is under implementation through Teesta III-Rangpo ckt 2 under ER-Additional Requirement Project.

The ckt 1 of Teesta-III-Rangpo line is LILOed at Dikchu HEP. The OPGW on Dikchu HEP - Rangpo portion is already planned for Teesta III – Rangpo ckt 1.

The ownership of these lines are as follows:

Teesta-III – Rangpo: TVTL & POWERGRID

LILO point L to LILO Line up to DIKCHU HEP:

Proposed connectivity of Teesta- III – LILO point L: TVTL & POWERGRID

Members may confirm

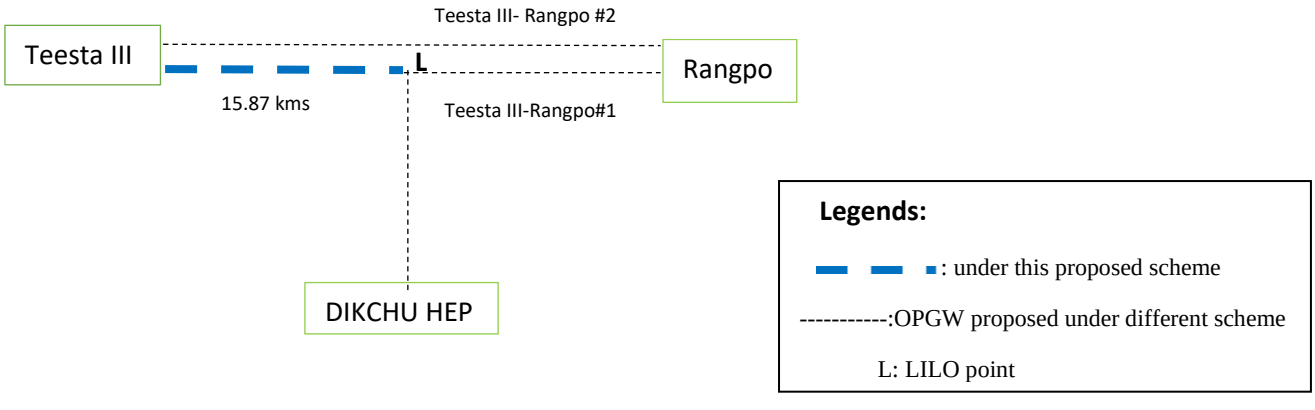
Thus, the Redundant Fibre path for Teesta-III was planned by laying of OPGW on Teesta III-Dikchu HEP portion (approx. 26km line length) of Teesta III – Rangpo ckt1. However, as per MoM dtd 18.07.2023(attached as **Annexure IV**) regarding scheduling of power from Dikchu HEP in Sikkim under GNA regulation 2022, it is understood that connectivity of Dikchu HEP with ISTS is an interim arrangement and shall be eliminated on readiness of intra state transmission system (expected by Dec 2023).

Accordingly, the connectivity of OPGW for protection path of Teesta III is revised. Now, OPGW is proposed on Teesta III to LILO point for Dikchu HEP (15.87 km) on Teesta III-Rangpo ckt 1. The revised diagram for the scheme is enclosed

Redundant path Connectivity of Teesta III

: connectivity of Teesta III.

Schematic diagram of FO connectivity of Teesta III



Deliberation:

POWERGRID stated that they are already implementing this scheme. They further stated that suggestion of removal of Dikchu HEP to LILO point Transmission line by Dec 2023 will hamper the DOCO and recovery of the investment made for this scheme. ERLDC stated that they will also look up into the matter and revert.

In view of above, CTU proposed to take up the matter to ERPC TeST meeting for deliberation of this issue and further feasibility of provision of OPGW from Teesta III to LILO point.

9.**Strengthening of Communication link between SLDCs to ERLDC:** There are many instances of outage of data/voice at ERLDC due to failure of communication link including last

Annexure B.5

OPGW laying work on 400kV Bokaro-Kodarma line

S. No.	Items	Details
1.	Scope of the scheme	OPGW laying work on 400kV Bokaro-Kodarma line with required terminal equipments.
2.	Depiction of the scheme on FO Map	NA
3.	Objective / Justification	During the discussion held in the 47th ERPC meeting held on 25.11.2022(MoM attached as **Annexure II**), DVC had proposed laying of OPGW along with terminal equipment in nine (09) links through POWERGRID. It was deliberated that out of these 09 links, Bokaro-Koderma link (105km) is an ISTS link owned by POWERGRID. Also, Joda-Jamshedpur (DVC) link (140km) is a tie line between DVC & Odisha, regarding which decision is to be taken. Accordingly, the remaining 07 links (owned by DVC) have already been taken up for implementation and the same is presently in tendering stage. Bokaro-Koderma owned by POWERGRID is an ISTS link and OPGW on this line may be laid under ISTS. JODA-Jamshedpur link is understood to be a non ISTS link as it is owned by DVC and OPTCL and was not implemented under ULDC scheme. DVC/ POWERGRID may take up agenda for laying of OPGW on this line to ERPC.
4.	Estimated Cost	Rs. 4,72,50,000/- (approx.) (Four Crores & Seventy Two Lacs and Fifty Thousands only) excluding taxes and duties as applicable.
5.	Implementation time frame	18 months from date of allocation.
6.	Implementation agency	To be implemented by POWERGRID **in line with CERC order dtd. 27.12.2023 for petition no. 94/MP/2021**.
7.	Deliberations	The proposed scheme was deliberated in the 47th ERPC meeting held on 25.11.2022. Further, the scheme was also deliberated w.r.t the Bokaro-Kodarma and Joda -Jamshedpur lines in the 4th Communication Planning meeting (CPM) of CTUIL for ER region held on 27.07.2023 (the MoM of 4th CPM attached as **Annexure III**) wherein it was suggested that as Bokaro-Kodarma line is an ISTS line, OPGW on this line may be laid under ISTS. Accordingly, this scheme i.e. **laying of OPGW on 400kV Bokaro-Kodarma line,** after ERPC review shall be put up to NCT for approval.

B) Teesta-III Node

Presently, Teesta III is connected through Teesta III - Rangpo PLCC link. First Fiber path is under implementation through Teesta III- Rangpo circuit#1. Teests-III-Rangpo#2 is LILOed at Dikchu. The Redundant Fiber path for Teesta-III may be planned through LILO of Teesta III-Rangpo #2. For redundant fiber path, OPGW may be laid on Teesta III- Dikchu portion (approx. 26 kms line length) of Teesta III - Rangpo#2.

OPGW is already planned on Dikchu -Rangpo portion of Teesta III - Rangpo#2 .

The detailed scheme is attached at **Annexure-1.4B.**

12th TeST Committee accorded the scheme and referred it to TCC for further approval.

Deliberation in the 47th TCC meeting:

TCC concurred and referred it to ERPC for approval.

Deliberation in the 47th ERPC meeting:

ERPC approved.

B1.5. Upgradation of OPGW network in DVC for strengthening and redundancy of communication network in DVC sector.

DVC intends for strengthening of communication network of DVC through laying of OPGW based communication system for following major purposes:

a) In the present communication network of DVC, there are some nodes having single connectivity. For redundant connectivity, OPGW connectivity for the stations is to be established in redundant paths.
b) Strengthening of the existing communication network will enable reliable real-time data transfer for smooth grid operations.
c) OPGW connectivity is required for establishment of DTPC in some lines.
d)

Following is the list of links where OPGW laying along with terminal equipment is proposed:

S/n	Name of Link	Voltage Level	Approx. Length (Km)
1	BokaroA-Koderma	400kV	105
2	Dhanbad-Patherdih	132kV	22
3	CTPS-Kalyaneswari LILO at RTPS	220kV	125
4	Parulia-Bardhaman	220kV	90
5	DTPS-Parulia (LILO at DSPTS) LILO part (48F)	220kV	8
6	BokaroA-Jamshedpur (DVC)	220kV	155
7	Joda-Jamshedpur (DVC)	220kV	140
8	MejiaA-Ramgarh220	220kV	155
9	BTPSA-BTPS B (UGFO)	UG	5
		Total	**805**

Further details are attached at **Annexure-B1.5**

DVC intends to execute the implementation of OPGW laying in the above-mentioned links of total 805 Km through Powergrid.

Powergrid is agree to execute the OPGW laying in the above-mentioned links of total 805 Km on tariff route (RTM Mechanism). Estimated cost for this work will be approx. 32 Crs. Powergrid will fund the project and the cost will be recovered through tariff as decided by CERC as per earlier ULDC schemes.
12th TeST Committee agreed to the proposal of Powergrid and referred it to CCM for further concurrence.

In 47th CCM meeting, Powergrid representative submitted that they would execute the OPGW laying work and the tariff would be recovered as decided by CERC as per earlier ULDC schemes. Upon deliberation, it emerged that only one line i.e., Joda-Jamshedpur (DVC), is natural ISTS line and the rest of the lines are part of DVC system. Further, Powergrid informed that the approximate cost of OPGW laying work would be Rs. 4 Lakhs/Km.

CCM approved the cost of Joda-Jamshedpur (DVC) line (140 Km) at Rs. 4 Lakhs/Km and the referred the same to upcoming TCC/ERPC for further concurrence.

Powergrid was advised to make separate bilateral agreement with DVC regarding cost recovery of other intra state lines.

Deliberation in the 47th TCC meeting:

CTU stated that BokaroA-Kodarma line is an ISTS link owned by Powergrid. Hence for implementation of OPGW on this line, the view of ERPC needs to be submitted to CTU.

CTU also stated that, the OPGW installation on the remaining links (Sl. No 2-9) shall be implemented by their owner/s. However, the owner/s can get the implementation work done by any other agency/utility by their consent.

ERPC secretariat representative informed that Joda-Jamshedpur (DVC) line is a tie line between DVC & Odisha and ownership of line lies with DVC and Odisha. The approximate cost of OPGW laying work in this line would be Rs 5.6 crores.

After detail deliberation, TCC opined that for Joda – Jamshedpur line, the cost of OPGW laying work may be recovered from DVC and Odisha proportionately. For BokaroA-Koderma line, Powergrid would execute the OPGW laying project on tariff mode, whereas for the remaining lines TCC advised Powergrid to make a separate agreement with DVC.

TCC referred to ERPC for its approval.

Deliberation in the 47th ERPC meeting:

ERPC approved.

details total BW capacity required for the substation, OPGW and associated FOTE details, NMS details etc.

The same is also mentioned by ERLDC in various meetings, however it is yet to act for the same.

It may be mentioned that said database is to be developed on priority due to following reasons.

a. Proper breakdown and Preventive maintenance of the existing communication system.
b. Optimum utilization of communication system.
c. Upgradation or replacement of system in timely manner.

Members may deliberate.

Deliberation:

POWERGRID stated that database may be retrieved from the UNMS system that is being implemented.

5) **Periodic Testing and Maintenance Philosophy for Communication Links(by ERLDC).**

Members may deliberate.

Deliberation:

CTUIL informed that it has already submitted the procedure to CERC on 'Maintenance &Testing of Communication system" on dated 28.10.2021. CERC has to release the same.

6) OPGW on Bokaro-Koderma and Joda-Jamshedpur links (by POWERGRID):

During the discussion held in the 47th ERPC meeting held on 25.11.2022 (relevant extracts attached), DVC had proposed laying of OPGW along with terminal equipment in nine (09) links through POWERGRID. It was deliberated that out of these 09 links, Bokaro-Koderma link (105km) is an ISTS link owned by POWERGRID. Also, Joda-Jamshedpur (DVC) link (140km) is a tie line between DVC & Odisha, regarding which decision is to be taken. Accordingly, the remaining 07 links (owned by DVC) have already been taken up for implementation and the same is presently in tendering stage. In view of the above, Bokaro-Koderma and Joda-Jamshedpur links may please be taken up for discussion in the meeting.

Members may deliberate.

Deliberation:

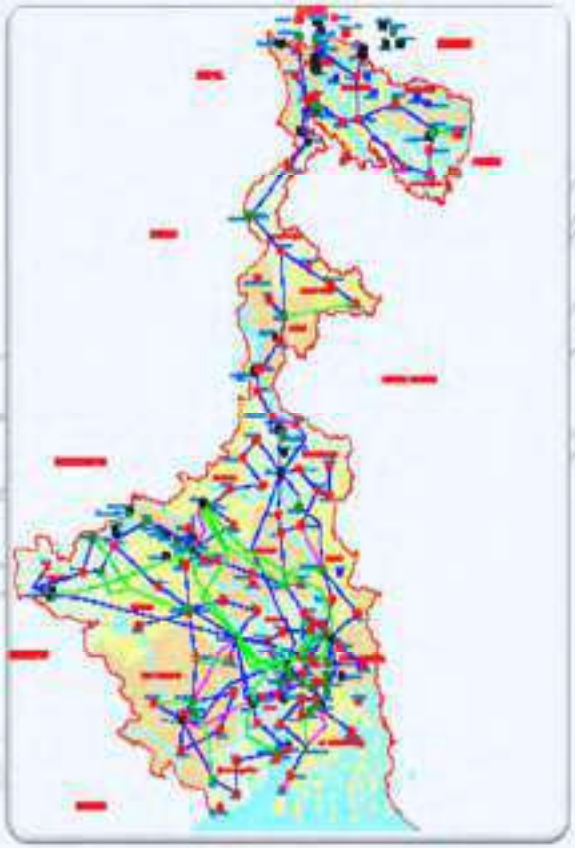
Bokaro-Koderma being an ISTS link agenda for laying OPGW on this line shall be taken up to ERPC-TeST meeting by CTUIL.

JODA-Jamshedpur link is understood to be a non ISTS link as it is owned by DVC and OPTCL and was not implemented under ULDC scheme. In view of this, DVC/ POWERGRID shall take up agenda for laying of OPGW on this line to ERPC .

7.Agenda for Redundant Auxiliary Power Supply System at Kasba Node (by POWERGRID ER-II)

Annexure-B.7

WEST BENGAL STATE ELECTRICITY TRANSMISSION COMPANY LIMITED



SUMMARY OF PROPOSAL

Replacement of existing conductor by higher capacity HTLS conductor in different 220KV transmission lines of WBSETCL.

Central Planning Department
Vidyut Bhavan, 9th Floor.
Salt Lake City, Kolkata

31st October, 2023

SUMMARY OF PROPOSAL

For Official Use - To be filled by the Nodal Agency of PSDF	
Project Proposal Number : _____	Date of Receipt : _____

To be filled by the Applicant Organization / Utility	
1. Name of the requesting Organization / Utility :	West Bengal State Electricity Transmission Company Limited (WBSETCL).
2. Short Summary of Project / Scheme / Activity	
a. Name of the Project / Scheme / Activity :	Replacement of existing conductor by higher capacity HTLS conductor in different 220KV transmission lines of WBSETCL
b. Objective of the Project /Scheme/ Activity :	Improvement of State Transmission System by relieving congestion in intra-state transmission system by capacity enhancement of existing network with an objective to maintain N-1 contingency and to improve reliability and voltage profile in the State as well as National Grid.
c. Authorized Person For this Project / Scheme / Activity	Name : Mr. Debashis Chaki E-mail ID : cpd.wbsetcl@gmail.com Land line No : 033 2359 2652 Mobile No. : 09434910019 Fax No : 033 2359 1955
d. Nature of the Project / scheme / Activity : Inter – State / Intra – State (Please Specify)	Intra-State.
e. Identified Beneficiaries	The state of West Bengal in particular and the nation in general.
f. Merits of the scheme	With implementation of the scheme, overall redundancy in the system will be improved. So, any contingency can be tackled. Improvement in reliability of power supply can be achieved and All India Grid will be safe in synchronization with West Bengal State grid.
g. Limitations, if any	No limitation envisaged. Only partial shutdown is required to replace the conductor. This can be managed judiciously with minimum power interruptions.

h.	Time frame for Implementation	The scheme is scheduled to be completed within 25 months progressively from the date of receipt of sanction of the fund/grant.
i.	Estimated Cost of Project / Scheme / Activity	**Rs. 252.34 Crore.**

Date: _____

Signature: _____ 01/11/2024

Name: (DEBASHIS CHAKI)
Chief Engineer
Construction Department
WBSETCL

(Authorized Representative)

DETAILED PROPOSAL (DP)

1. Details of the Requesting Organization / Entity

1.1 Details of Organization / Entity

Name of Organization / Entity	West Bengal State Electricity Transmission Company Limited (WBSETCL).
Acronym or Abbreviation (if applicable)	**WBSETCL**

1.2 Details of Head of the Organization

Name (Mr. / Ms. / ~~Mrs.~~)	Santanu Basu, IAS
Designation	Managing Director
E-mail Address	md@wbsetcl.in
Landline No.	033 2337 0206
Fax No.	033 2337 0206
Address	Vidyut Bhavan (8th floor :: A-Block), Block – DJ, Sector – II, Salt Lake,
City	Kolkata
Postal Code	700 091

1.3 Details of Project In-charge/Project Manager (Authorized Person) for this project /scheme/activity (Not below the rank of Dy. Gen. Manager / Supdt. Engg.)

Name (Mr. / ~~Ms.~~ / ~~Mrs.~~)	Debashis Chaki
Designation	Chief Engineer, Central Planning Department
E-mail Address	cpd.wbsetcl@gmail.com
Landline No.	033 2359 2652
Mobile No.	09434910019
Fax No.	033 2359 1955
Address	Vidyut Bhavan (9th floor :: A-Block), Block – DJ, Sector – II, Salt Lake,
City	Kolkata
Postal Code	700 091

Any Change in above mentioned details may be notified to the Nodal Agency of PSDF immediately.

2. Justification of the Proposal:

2.1 Analysis of the Objective:

Scheme for Renovation and Modernization of transmission systems for relieving congestion:

Intra-state transmission networks of West Bengal have constraints in meeting the demand for power in several pockets/ regions within the State of West Bengal. Whereas new lines/ connectivity could not be established due to severe ROW problem, replacement of existing conductor by high performance conductor has been envisaged to relieve the congestion.

The use of High Temperature and Low Sag (HTLS) Conductors is an attractive method of increasing transmission line thermal rating. The conventional ACSR Conductors are able to withstand a continuous temperature of 75 deg C to 85 deg C. In case of emergency, for a short duration the conductors can work up to 105 deg C without any sign of deformation. In order to increase the thermal rating of existing lines, one method involves replacing ACSR conductors with special "High-Temperature Low-Sag" (HTLS) conductors having approximately the same diameter as the original ACSR but being capable of operation at temperatures as high as 250 deg C, with less thermal elongation than ACSR. Ideally, these special HTLS conductors can be installed and operated without the need for extensive modification of the existing structures and foundation. With the use of this new generation HTLS conductor, power carrying capacity will be raised almost double from its existing capacity.

Following projects have been considered in present DPR:

a) Replacement of existing ACSR Zebra Conductor by high capacity HTLS Conductor along with replacement of 220 KV Feeder and TBS bay CT of the following transmission lines:

1. KTPP-Food Park 220 KV D/C Transmission Line (R.L. = 51.0 KM).
2. Food Park-Jangalpur 220 KV D/C Transmission Line (R.L. = 6.0 KM).
3. Barasat-Kasba 220 KV D/C Transmission Line (R.L. = 39.1 KM).
4. Subhasgram-Kasba 220 KV D/C Transmission Line (R.L. = 23.0KM).
5. Jeerat-Barasat 220 KV D/C Transmission Line (R.L. = 23.3 KM).

Enhancement of Ampacity i.r.o. KTPP-Food Park 220 KV D/C Transmission Line (R.L. = 51.0 KM):

Howrah 220 kV Substation plays an important role in the power scenario of Howrah District. At present, it has 220 kV D/C connectivity with New Chanditala 400 kV Substation and D/C connectivity with KTPP 400 kV Substation of WBPDCL. KTPP-Howrah 220 KV D/C line (R.L. ≈ 71 Km) is the main source of Howrah 220 kV Substation and present power flow in this line has reached around 140 MVA (Per Circuit) which is almost 66% of its thermal capacity (213 MVA). After upgradation of Food Park 132 KV

Substation to 220 KV Sub-Station, 220KV Howrah-KTPP D/C line will be LILOed at proposed Food Park 220 KV Sub-Station which is located around 200 Mtr. away from this transmission line. After this upgradation of Sub-Station, connectivity will be reconfigured as KTPP – Food Park 220 kV D/C with route length of about 51 Km. From load flow study, it is observed that the power flow in this D/C line is beyond its thermal capacity.

As there is no scope for construction of new line due to acute ROW issues, change of existing conductor by HTLS has been contemplated to meet the requirement.

Enhancement of Ampacity i.r.o. Food Park-Jangalpur 220 KV D/C Transmission Line (R.L. = 6.0 KM):

Considering the domestic load growth as well as industrial load growth in that area as was proposed by WBSEDCL, construction of 220 KV Jangalpur Sub-Station was contemplated in the perspective plan of WBSETCL and work is in progress. As the 220 kV KTPP-Howrah transmission line (which will be LILO-ed at Food Park-Howrah after commissioning of Food Park 220 KV Sub-Station) is passing adjacent to the proposed Jangalpur 220 KV Sub-Station which is located only 200 mtr. away, the same D/C line will be LILO-ed at proposed Jangalpur 220 KV Sub-Station. It is observed from the load flow study that aggregated maximum demand of 220 KV Food Park-Jangalpur transmission has reached about 140 MVA, which is about 66% of the thermal capacity (213 MVA) of the existing line. Load restriction has to be imposed in case of failure of one circuit. In this scenario and considering load growth rate of this area, replacement of conductor by HTLS is immediately needed for Food Park-Jangalpur 220 kV D/C line.

Enhancement of Ampacity i.r.o. Barasat-Kasba 220 KV D/C Transmission Line (R.L. = 39.1 KM):

Kasba 220 KV Sub-Station is a vital Sub-Station of WBSETCL as it supplies power to Kolkata and surrounding important 132 KV Sub-Stations like Sonarpur 132KV Sub-Station, Renia 132 KV Sub-Station, Behala 132 KV Sub-Station, Salt Lake 132 KV Sub-Stations etc. Kasba 220 KV Sub-Station has 220 KV D/C connectivity with Barasat 220 KV Sub-Station and Subhasgram 220 KV Sub-Station of WBSETCL. Maximum demand of 220 KV Barasat-Kasba transmission line has reached around 170 MVA (per circuit) which is around 80% loading of its thermal capacity. Load restriction has to be imposed in case of failure of one circuit. Construction of new circuit in this populated region is very much difficult. In this scenario and considering load growth rate of this area, replacement of conductor by HTLS is immediately needed i.r.o. Barasat-Kasba 220 KV D/C Transmission Line for maintaining N-1 contingency.

Enhancement of Ampacity i.r.o. Subhasgram-Kasba 220 KV D/C Transmission Line (R.L. = 23.0KM):

Maximum demand of 220 KV Subhasgram -Kasba transmission line (Zebra conductor) has reached around 170 MVA (per circuit) which is around 80% loading of its thermal capacity (213 MVA). Load restriction has to be imposed in case of failure of one circuit. Construction of new circuit in this populated region is very much difficult. In this scenario and considering load growth rate of this area, replacement of conductor by HTLS is immediately needed i.r.o. Subhasgram -Kasba 220 KV D/C Transmission Line for maintaining N-1 contingency.

Enhancement of Ampacity i.r.o. Jeerat-Barasat 220 KV D/C Transmission Line (R.L. ≈ 23.3 KM):

Maximum demand of 220 KV Jeerat - Barasat transmission line (Zebra conductor) has reached around 150 MVA (per circuit) which is around 70% loading of its thermal capacity (213 MVA). Load restriction has to be imposed in case of failure of one circuit. Construction of new circuit in this populated region is very much difficult. In this scenario and considering load growth rate of this area, replacement of conductor by HTLS is immediately needed i.r.o. Jeerat-Barasat 220 KV D/C Transmission Line for maintaining N-1 contingency.

2.2 Identified Beneficiaries of the Project

The state of West Bengal in particular and the Nation in general.

With implementation of the scheme, the West Bengal State grid, part and parcel of One Grid, will run more efficiently and more effectively. So, reliability of the grid can be achieved at desired level.

2.3 Identified Source of Funding

75% of the total project cost is proposed to be funded through grant from PSDF as per clause no. 6.3(i) of the guideline issued vide no. 10/1/2014-OM of GoI, Ministry of Power, dated: 18.09.2014. Balance amount will be contributed from internal resources.

2.4 Details of Activities for Project / Scheme / Activity

I. Issuance of Technical & Administrative Approval
II. Tendering for supply and execution
III. Procurement of Equipments from reputed manufacturer & Placement of Erection Order.
IV. Receive of material and Execution / Erection.

The In-charge of Area Office in the rank of Superintending Engineer/ Divisional Engineer will supervise the project work in their jurisdiction. Further, progresses of work will be reviewed monthly at head quarter by the Managing Director, WBSETCL with representation from all Area Office.

2.5 Executing Agency

The project will be executed by WBSETCL through reputed vendors awarded through open tender. Major equipments will be procured centrally through tender from reputed manufacturer.

2.6 Time line for Implementation of Project / Scheme / Activity

Time line for implementing this project/ scheme/ activity is given here under considering date of receipt of PSDF grant approval as zero date:

I.	Issuance of Technical & Administrative Approval	:	01 month
II.	Tendering and Award	:	04 months
III.	Supply Erection & Commissioning	:	18 months
IV.	Inspection & closure of the Project	:	02 month

Timeline of the Project / Scheme / Activity	
Likely Duration of Project (in Months)	**25 months**
Start Date	**Date of receipt of 1st instalment of grant**
Likely Completion Date	**March, 2026 (Considering the receipt of 1st instalment of grant in Feb, 2024).**

Timeline of Activities

Sl. No.	Description	Year	2024-25				2025-26			
		Qtr.	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Project Approval & Issuance of TAA		■							
2	1st Disbursement (10% on signing agreement)		■							
3	Bid Preparation		■							
4	Bidding Period		■							
4	Evaluation, Contract Award & Mobilization			■						
5	2nd Disbursement (20% on placement of order)			■						
6	Project Status Report				■	■	■	■	■	
7	3rd Disbursement (60% on receipt of material)				■	■	■	■	■	
8	Execution / Erection				■	■	■	■	■	
10	Project Status Report on completion				■	■	■	■	■	
11	4th final 10% Disbursement									■

Signature: _____

Name: (DEBASHIS CHAKI) Chief Engineer Central Planning Department WBSETCL

(Authorized Representative)

Date: _____

Summary of Detailed Project Report (DPR)

Summary of DPR given – Yes / No **Copy of the DPR attached. – Yes / No**

Replacement of existing conductor by higher capacity HTLS conductor in different 220 KV Transmission Lines of WBSETCL

ABSTRACT COST ESTIMATE	
DESCRIPTION OF WORK	Replacement of existing conductor by higher capacity HTLS conductor in different 220KV transmission lines of WBSETCL.

Sl. No.	Description of the work	Quantity	Unit	Unit Ex-works (INR)	Total Ex-works (INR)	F & I (INR)	GST (INR)	Total Amount (INR)
A. **SUPPLY PART:** Replacement of existing ACSR Zebra Conductor by HTLS conductor and 220KV CT.								
1	KTPP-Food Park 220 KV D/C Line (R.L. = 51.0 kM)	102.00	Km	6604801.00	673689702.00	0.00	121264146.00	79,49,53,848.00
1.1	220KV, 2000-1600/1A, 5C CT.	9.00	Nos.	275000.00	2475000.00	225000.00	486000.00	31,86,000.00
2	Food Park-Jangalpur 220 KV D/C Line (R.L. = 6.0 kM).	12.00	Km	6604801.00	79257612.00	0.00	14266370.00	9,35,23,982.00
3	Barasat-Kasba 220 KV D/C Line (R.L. = 39.1 kM).	78.20	Km	6604801.01	516495439.00	0.00	92969179.00	60,94,64,618.00
3.1	220KV, 2000-1600/1A, 5C CT.	6.00	Nos.	275000.00	1650000.00	150000.00	324000.00	21,24,000.00
4	Subhasgram-Kasba 220 KV D/C Line (R.L. = 23.0 kM).	46.00	Km	6604801.00	303820846.00	0.00	54687752.00	35,85,08,598.00
4.1	220KV, 2000-1600/1A, 5C CT	12.00	Nos.	275000.00	3300000.00	300000.00	648000.00	42,48,000.00
5	Jeerat-Barasat 220 KV D/C Line (R.L. = 23.3 kM).	46.60	Km	6604801.01	307783727.00	0.00	55401070.00	36,31,84,797.00
5.1	220KV, 2000-1600/1A, 5C CT	9.00	Nos.	275000.00	2475000.00	225000.00	486000.00	31,86,000.00
	TOTAL ESTIMATED COST (SUPPLY)							**2,23,23,79,843.00**

Sl. No.	Description of the work	Quantity	Unit	Unit Ex-works (INR)	Total Ex-works (INR)	F & I (INR)	GST (INR)	Total Amount (INR)
B.	**ERECTION PART:** Replacement of existing ACSR Zebra Conductor by HTLS conductor and 220KV CT.							
1	KTPP-Food Park 220 KV D/C Line (R.L. = 51.0 kM)	102.00	Km	19033.00	171297.00	0.00	30833.00	2,02,130.00
1.1	220KV, 2000-1600/1A, 5C CT.	9.00	Nos.	863626.00	10363512.00	0.00	1865432.00	1,22,28,944.00
2	Food Park-Jangalpur 220 KV D/C Line (R.L. = 6.0 kM).	12.00	Km	863626.00	67535553.00	0.00	12156400.00	7,96,91,953.00
3	Barasat-Kasba 220 KV D/C Line (R.L. = 39.1 kM).	78.20	Km	19033.00	114198.00	0.00	20555.00	1,34,753.00
3.1	220KV, 2000-1600/1A, 5C CT.	6.00	Nos.	863626.00	39726796.00	0.00	7150823.00	4,68,77,619.00
4	Subhasgram-Kasba 220 KV D/C Line (R.L. = 23.0 kM).	46.00	Km	19033.00	228396.00	0.00	41112.00	2,69,508.00
4.1	220KV, 2000-1600/1A, 5C CT	12.00	Nos.	863626.01	40244972.00	0.00	7244095.00	4,74,89,067.00
5	Jeerat-Barasat 220 KV D/C Line (R.L. = 23.3 kM).	46.60	Km	19033.00	171297.00	0.00	30833.00	2,02,130.00
5.1	220KV, 2000-1600/1A, 5C CT	9.00	Nos.	19033.00	171297.00	0.00	30833.00	2,02,130.00
	TOTAL ESTIMATED COST (ERECTION)							**29,10,42,129.00**
	GRAND TOTAL (SUPPLY+ERECTION)							**2,52,34,21,972.00**

Implementation schedule / milestones

Target for physical milestones

Particular	Total	2023-24				2024-25				2025-26			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Replacement of existing ACSR Zebra Conductor by HTLS conductor of the following 220KV D/C lines: 1. KTPP-Food Park 220 KV D/C (R.L. = 51.0 KM). 2. FoodPark-Jangalpur 220 KV D/C (R.L. = 6.0 KM) 3. Barasat-Kasba 220 KV D/C (R.L. = 39.1 KM). 4. Subhasgram-Kasba 220 KV D/C (R.L. = 23.0KM). 5. Jeerat-Barasat 220 KV D/C (R.L. = 23.3 KM).	284.80 CKM						30	60	60	60	40	34.8	
Replacement of 220 KV existing CT by 220KV, 2000-1600/1A, 5C Current Transformer	36 Nos.						6	6	6	6	6	6	

Target for financial milestones

(Rs. in Lakh)

Particular	Total Amount	2023-24	2024-25				2025-26			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
PSDF Grant	18925.67		1892.57	1892.57	1892.57	1892.57	3785.13	3785.13	3785.13	
Internal Resource	6308.55		630.85	630.85	630.85	630.85	1261.71	1261.71	1261.71	
Total	25234.22		2523.42	2523.42	2523.42	2523.42	5046.84	5046.84	5046.84	

Signature: _____

Name: _____ (DEBASHIS CHAKI)
Chief Engineer
Central Planning Department

(Authorized Representative) WBSETCL

Date: _____

Financial Implication of the Scheme

1. Summary

Sl. No.	Item	Amount in Rs.
1.	Total Cost Estimate	2,52,34,21,972.00
2.	Funding Proposed from PSDF	1,89,25,66,479.00
3.	Contribution from Internal Sources	63,08,55,493.00
4.	External Borrowings	NIL

2. Details

2.1 Cost Estimate

Cost estimate has been prepared on the basis of latest LOAs placed by WBSETCL and subsequent escalation, existing rate contract of WBSETCL and prevailing market rate. (Item wise referred LOAs are mentioned below)

- For Replacement of existing conductor by 220 KV HTLS along with Hardware fittings and accessories: For preparation of estimate i.r.o. replacement of 220KV existing conductor by HTLS conductor, rate of the following LOAs along with escalation have been considered (Copy attached).
  1. PO No.: CE/(O&M)-II/31/SUPPLY/571(A), Dated: 28.03.2018
  2. PO No.: CE/(O&M)-II/31/SUPPLY/571(B), Dated: 28.03.2018
  3. PO No.: CE/(O&M)-II/31/SUPPLY/987(A), Dated: 27.07.2022
  4. PO No.: CE/(O&M)-II/31/SUPPLY/987(B), Dated: 27.07.2022
- For Replacement of 220KV CT: For preparation of estimate for replacement of 220 KV CT, rate of following LOAs/references have been considered. (Copy attached)
  1. PO No.: CEP/WBSETCL/CT/23-24/8, Dated: 08.06.2023
  2. Rate Contract Of WBSETCL: CE/O&M-II/ENLISTMENT ORDER/SUB-STATION/RATE CONTRACT/2022-23/TIS Dated: 27.04.2022

The detailed cost estimate for implementing the project/ scheme/ activity has been approved by the Board of Directors, WBSETCL in its 90th meeting held on 23rd August, 2023.

3. Funding

3.1 Funding Proposed from PSDF

75% of the total project cost is proposed to be funded through grant from PSDF as per clause no. 6.3(i) of the guideline issued vide no. 10/1/2014-OM of GoI, Ministry of Power, dated: 18.09.2014.

3.2 Contribution from Internal Sources

Balance amount will be contributed from internal resources.

3.3 External Borrowings

No external borrowings will be necessary.

Signature: _____
Name: (DEBASHIS CHAKI)
Chief Engineer
Central Planning Department
WBSETCL
(Authorized Representative)

Date: _____

Brief Details of the Project Appraisal by ~~CTU~~ / STU / ~~RPC~~

Item	Details to be filled by Applicant Utility	
Appraisal By:	**CTU** [ ] **STU** [√] **RPC** [ ]	
Date of Submission to ~~CTU~~ / STU / ~~RPC~~ for approval	31st October, 2023	
Name of the Scheme	Replacement of existing conductor by higher capacity HTLS conductor in different 220 KV transmission lines of WBSETCL.	
Copy of the Appraisal Report by ~~CTU~~ / STU / ~~RPC~~ is Attached at Annexure	**Yes** [√] **No** [ ]	
Summary of observations from ~~CTU~~/ STU/~~RPC~~ Appraisal Report	Summary of Proposal Appraised	Replacement of existing conductor by higher capacity HTLS conductor in different 220KV transmission lines of WBSETCL for improvement of State Transmission System by relieving congestion in intra-state transmission system by capacity enhancement of existing network with an objective to maintain N-1 contingency and to improve reliability and voltage profile in the State as well as National Grid
	Technical Observations	The proposed scheme fulfils the technical requirement as per Grid Standard and found to be ok. With implementation of the scheme, overall redundancy in the system will be improved. So, any contingency can be tackled. Improvement in reliability of power supply can be achieved and All India Grid will be safe in synchronization with West Bengal State grid.
	Financial Observations	The estimated cost arrived at based on latest LOA price and escalation as required and appears to be alright.

Summary of observations from ~~CTU~~/ STU/~~RPC~~ Appraisal Report	Compliance of Grid Standards / Codes by the Applicant	Yes
	Limitations / Short comings pointed out by ~~CTU~~/STU /~~RPC~~ if any	No limitation envisaged. Only partial shutdown is required to replace the equipment. This can be managed judiciously with minimum power interruptions.
	Recommendations of ~~CTU~~/STU/~~RPC~~	Recommended for immediate implementation and posing for 75% PSDF funding as per clause no. 6.3(i) of the guideline issued vide no. 10/1/2014-OM of GoI, Ministry of Power, dated: 18.09.2014.

Signature: _____ (DEBASHIS CHAKI)
Name: Chief Engineer
Central Planning Department
(Authorized Representative) WRLDC

Date: _____

Sl. No. 32 ...20.23

पश्चिमबंगाल पश्चिम बंगाल WEST BENGAL AK 701863

NOTARY 6584/2008

UNDERTAKING

I, Sri Debashis Chaki, Son of Debiprosad Chaki, aged 56 years by faith Hindu, residing at 298, Baishnabghata Patuli, Kolkata-700094 and presently working as Chief Engineer, Central Planning Department of the West Bengal State Electricity Transmission Company Limited (WBSETCL) hereby undertake to comply with the following terms and conditions with regard to funding of the Scheme for "Replacement of existing conductor by higher capacity HTLS conductor in different 220KV transmission lines of WBSETCL" with disbursement from PSDF:

- No tariff shall be claimed for the portion of the scheme funded from PSDF.
- Amount of grant shall be refunded in case of transfer / disposal of the facility being created under this proposal to any other scheme for funding.
- No Grant will be taken / proposed to be taken from any other agency, if the scheme is funded from PSDF.
- The grant shall be refunded back to PSDF in case of non-utilization of the grant within one year of release of installment.

ATTESTED
S. CHAUDHURI
NOTARY
GOVT. OF INDIA
Regd. No.-6584/08
Bidhannagar Court
Dist.-North 24 Pgs.

Date: 01...../.11...../2023

Identified by me
Arijit Bhattacharya
Advocate
Bidhannagar Court
Enrolment No.-1530/2020

01 NOV 2023

Debashis Chaki
Authorized Signatory

(DEBASHIS CHAKI)
Chief Engineer
Central Planning Department
WBSETCL

29715 30 OCT 2023

₹ 50/- Date.....

Name : WB SEPCL

Address : Bidyut Bhavan, Bidhannagar, Sec II,

Vendor : 701-91

Alipore Collectorate, 24Pgs. (South)
SUBHANKAR DAS
STAMP VENDOR
Alipore Police Court, KOI-27

INTENAL APPROVAL DOCUMENT

The matter was placed before the 90th meeting of the Board of Directors held on 23rd August, 2023 vide Agenda Item No. 15. The Board deliberated on the matter and passed the following resolution:

"**RESOLVED THAT** technical and administrative approval be and is hereby accorded towards submission of proposal to the PSDF authority for replacement of existing ACSR Zebra Conductor by high capacity HTLS Conductor along with replacement of 220 KV Feeder and TBS bay CT of 1) KTPP-Food Park 220 KV D/C Transmission Line (R.L. ≈ 51.0 KM), 2) Food Park-Jangalpur 220 KV D/C Transmission Line (R.L. ≈ 6.0 KM), Barasat-Kasba 220 KV D/C Transmission Line (R.L. ≈ 39.1 KM), 4) Subhasgram-Kasba 220 KV D/C Transmission Line (R.L. ≈ 23.0KM) and 5) Jeerat-Barasat 220 KV D/C Transmission Line (R.L. ≈ 23.3 KM) for availing grant for a total estimated amount of Rs. 25234.23 Lakh (excluding Supervision) and to pose the scheme before Power Sector Development Fund (PSDF) for funding, as applicable."

Placed to the Company Secretary for his kind perusal and if deem fit may be forwarded to the Competent Authority. Language of the same may vary during finalisation of the minutes.

04/09/2023
(Sourav Kundagrami)
Asst. Company Secretary

Company Secretary/
Director (Operations)
No. TCL/CS/26(90)/6531
Date:04.09.2023

Placed
4/9/23

4/9

CE (CPD)

SG
DE

For n/a pl.
05/09

SUMMARY OF ESTIMATE

SUMMARY OF COST ESTIMATES UNDER PSDF SCHEME

Sl. No.	Description of the work	Quantity	Unit	Unit Rate including all (INR)	Total Cost including all (INR)
A-SUPPLY PART:					
1	Replacement of existing ACSR Zebra Conductor of KTPP-Food Park 220 KV D/C Transmission Line (R.L. = 51.0 kM) by HTLS conductor.	102.00	CKM	7793665.18	79,49,53,848.00
2	Replacement of existing ACSR Zebra Conductor of Food Park-Jangalpur 220 KV D/C Transmission Line (R.L. = 6.0 kM) by HTLS conductor.	12.00	CKM	7793665.17	9,35,23,982.00
3	Replacement of existing ACSR Zebra Conductor of Barasat-Kasba 220 KV D/C Transmission Line (R.L. = 39.1 kM) by HTLS conductor.	78.20	CKM	7793665.19	60,94,64,618.00
4	Replacement of existing ACSR Zebra Conductor of Subhasgram-Kasba 220 KV D/C Transmission Line (R.L. = 23.0 kM) by HTLS conductor.	46.00	CKM	7793665.17	35,85,08,598.00
5	Replacement of existing ACSR Zebra Conductor of Jeerat-Barasat 220 KV D/C Transmission Line (R.L. = 23.3 kM) by HTLS conductor.	46.60	CKM	7793665.17	36,31,84,797.00
	TOTAL	**284.80**			**2,21,96,35,843.00**
1	Replacement of 220 KV existing CT by 220KV, 2000-1600/1A, 5C Current Transformer.	36.00	Nos.	354000.00	1,27,44,000.00
	TOTAL	**36.00**			**1,27,44,000.00**
SUPPLY TOTAL (A)					**2,23,23,79,843.00**
B-ERECTION PART:					
1	Replacement of existing ACSR Zebra Conductor of KTPP-Food Park 220 KV D/C Transmission Line (R.L. = 51.0 kM) by HTLS conductor.	102.00	CKM	1019078.68	10,39,46,025.00
2	Replacement of existing ACSR Zebra Conductor of Food Park-Jangalpur 220 KV D/C Transmission Line (R.L. = 6.0 kM) by HTLS conductor.	12.00	CKM	1019078.67	1,22,26,944.00
3	Replacement of existing ACSR Zebra Conductor of Barasat-Kasba 220 KV D/C Transmission Line (R.L. = 39.1 kM) by HTLS conductor.	78.20	CKM	1019078.68	7,96,91,953.00
4	Replacement of existing ACSR Zebra Conductor of Subhasgram-Kasba 220 KV D/C Transmission Line (R.L. = 23.0 kM) by HTLS conductor.	46.00	CKM	1019078.67	4,68,77,619.00
5	Replacement of existing ACSR Zebra Conductor of Jeerat-Barasat 220 KV D/C Transmission Line (R.L. = 23.3 kM) by HTLS conductor.	46.60	CKM	1019078.69	4,74,89,067.00
	TOTAL	**284.80**			**29,02,33,608.00**
1	Replacement of 220 KV existing CT by 220KV, 2000-1600/1A, 5C Current Transformer.	36.00	Nos.	22458.92	8,08,521.00
	TOTAL	**36.00**			**8,08,521.00**
SUPPLY TOTAL (B)					**29,10,42,129.00**
TOTAL ESTIMATED COST (A+B)					**2,52,34,21,972.00**

DE(E), CRD

(DEBASHIS CHAKI)
Chief Engineer
Central Planning Department
WBSETCL

SUMMARY OF COST ESTIMATES UNDER PSDF SCHEME

SUPPLY PART:

Sl. No.	Description of the work	Quantity	Unit	Unit Ex-works (INR)	Total Ex-works (INR)	F & I (INR)	GST (INR)	Total Amount (INR)
1	Replacement of existing ACSR Zebra Conductor of KTPP-Food Park 220 KV D/C Transmission Line (R.L. = 51.0 kM) by HTLS conductor including Hardware Fitting and accessories.	102.00	CKM	6604801.00	673689702.00	0.00	121264146.00	79,49,53,848.00
1.1	Replacement of 220 KV existing CT by 220KV, 2000-1600/1A, 5C Current Transformer.	9.00	Nos.	275000.00	2475000.00	225000.00	486000.00	31,86,000.00
2	Replacement of existing ACSR Zebra Conductor of Food Park-Jangalpur 220 KV D/C Transmission Line (R.L. = 6.0 kM) by HTLS conductor including Hardware Fitting and accessories.	12.00	CKM	6604801.00	7925612.00	0.00	14266370.00	9,35,23,982.00
3	Replacement of existing ACSR Zebra Conductor of Barasat-Kasba 220 KV D/C Transmission Line (R.L. = 39.1 kM) by HTLS conductor.	78.20	CKM	6604801.01	516495439.00	0.00	92969179.00	60,94,64,618.00
3.1	Replacement of 220 KV existing CT by 220KV, 2000-1600/1A, 5C Current Transformer.	6.00	Nos.	275000.00	1650000.00	150000.00	324000.00	21,24,000.00
4	Replacement of existing ACSR Zebra Conductor of Subhasgram-Kasba 220 KV D/C Transmission Line (R.L. = 23.0 kM) by HTLS conductor including Hardware Fitting and accessories.	46.00	CKM	6604801.00	303820846.00	0.00	54687752.00	35,85,08,598.00
4.1	Replacement of 220 KV existing CT by 220KV, 2000-1600/1A, 5C Current Transformer.	12.00	Nos.	275000.00	3300000.00	300000.00	648000.00	42,48,000.00
5	Replacement of existing ACSR Zebra Conductor of Jeerat-Barasat 220 KV D/C Transmission Line (R.L. = 23.3 kM) by HTLS conductor including Hardware Fitting and accessories.	46.60	CKM	6604801.01	307783727.00	0.00	55401070.00	36,31,84,797.00
5.1	Replacement of 220 KV existing CT by 220KV, 2000-1600/1A, 5C Current Transformer.	9.00	Nos.	275000.00	2475000.00	225000.00	486000.00	31,86,000.00
	TOTAL ESTIMATED COST							**2,23,23,79,843.00**

(DEBASHIS CHAKI)
Chief Engineer
Central Planning Department
WBSETCL

SUMMARY OF COST ESTIMATES UNDER PSDF SCHEME

ERECTION PART:

SL No.	Description of the work	Quantity	Unit	Unit Ex-works (INR)	Total Ex-works (INR)	F & I (INR)	GST (INR)	Total Amount (INR)
1	Dismantling of existing conductor and erection of HTLS conductor with hardware fittings and accessories i.r.o. KTPP-Food Park 220 KV D/C Transmission Line (R.L. = 51.0 kM) by HTLS conductor.	102.00	CKM	863626.00	88089852.00	0.00	15856173.00	10,39,46,025.00
1.1	Dismantling of 220 KV existing CT and erection of new 220KV, 2000-1600/1A, 5C Current Transformer.	9.00	Nos.	19033.00	171297.00	0.00	30833.00	2,02,130.00
2	Dismantling of existing conductor and erection of HTLS conductor with hardware fittings and accessories i.r.o. Food Park-Jangalpur 220 KV D/C Transmission Line (R.L. = 6.0 kM) by HTLS conductor.	12.00	CKM	863626.00	10363512.00	0.00	1865432.00	1,22,28,944.00
3	Dismantling of existing conductor and erection of HTLS conductor with hardware fittings and accessories i.r.o. Barasat Kasba 220 KV D/C Transmission Line (R.L. = 39.1 kM) by HTLS conductor.	78.20	CKM	863626.00	67535553.00	0.00	12156400.00	7,96,91,953.00
3.1	Dismantling of 220 KV existing CT and erection of new 220KV, 2000-1600/1A, 5C Current Transformer.	6.00	Nos.	19033.00	114198.00	0.00	20555.00	1,34,753.00
4	Dismantling of existing conductor and erection of HTLS conductor with hardware fittings and accessories i.r.o. Subhasgram-Kasba 220 KV D/C Transmission Line (R.L. = 23.0 kM) by HTLS conductor.	46.00	CKM	863626.00	39726796.00	0.00	7150823.00	4,68,77,619.00
4.1	Dismantling of 220 KV existing CT and erection of new 220KV, 2000-1600/1A, 5C Current Transformer.	12.00	Nos.	19033.00	228396.00	0.00	41112.00	2,69,508.00
5	Dismantling of existing conductor and erection of HTLS conductor with hardware fittings and accessories i.r.o. Jeerat-Barasat 220 KV D/C Transmission Line (R.L. = 23.3 kM) by HTLS conductor.	46.60	CKM	863626.01	40244972.00	0.00	7244095.00	4,74,89,067.00
5.1	Dismantling of 220 KV existing CT and erection of new 220KV, 2000-1600/1A, 5C Current Transformer.	9.00	Nos.	19033.00	171297.00	0.00	30833.00	2,02,130.00
	TOTAL ESTIMATED COST							**29,10,42,129.00**

(DEBASHIS CHAKI)
Chief Engineer
Central Planning Department
WBSETCL

DETAILED COST ESTIMATE FOR REPLACEMENT OF EXISTING CONDUCTOR BY HIGHER CAPACITY HTLS CONDUCTOR IN DIFFERENT 220 KV TRANSMISSION LINES ALONG WITH 220 KV CURRENT TRANSFPRMERS OF WBSETCL

SUMMARY SHEET OF ABSTRACT ESTIMATE

DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C JEERAT-BARASAT TRANSMISSION LINE BY HTLS CONDUCTOR.
DATE OF ESTIMATE	18-08-2023

SL	DESCRIPTION	AMOUNT
A	ESTIMATED COST FOR SUPPLY OF MATERIALS INCLUDING ALL	Rs 3663.71 Lakh
B	ESTIMATED COST FOR ERECTION OF MATERIALS INCLUDING ALL	Rs 476.91 Lakh
C	TOTAL COST OF SUPPLY & ERECTION	Rs 4140.62 Lakh
D	SUPERVISON COST @ 10% ON SUPPLY & ERECTION	Rs 414.06 Lakh
E	ESTIMATED TOTAL PROJECT COST (C+D)	Rs 4554.68 Lakh

NOTE: RATE IS INCLUSIVE OF ALL CHARGES AND GST.

18/08/23

Md.S.Hossain.DE (E)

ABSTRACT ESTIMATE	
DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C JEERAT-BARASAT TRANSMISSION LINE BY HTLS CONDUCTOR.

SL	DESCRIPTION	QUANTITY	UNIT	UNIT EX-WORKS (INR)	TOTAL EX-WORKS (INR)	F & I (INR)	GST (INR)	TOTAL AMOUNT (INR)
A	SUPPLY PART							
1.0	HTLS CONDUCTOR TO CARRY MINIMUM CURRENT OF 1200 A AS PER TECHNICAL SPECIFICATION.	46.6	CKM	5595733	260761158		46937008	30,76,98,166
2.0	HARDWARE FITTINGS AND ACCESSORIES	1	LOT	47022569	47022569		8464062	5,54,86,631
3.0	220 KV, 2000-1600/1 A, 5 CORE CURRENT TRANSFORMER AS PER TECHNICAL SPECIFICATION.	9	NO	275000	2475000	225000	486000	31,86,000
	TOTAL SUPPLY COST ::							36,63,70,797

18/05/23

ABSTRACT ESTIMATE	
DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C JEERAT-BARASAT TRANSMISSION LINE BY HTLS CONDUCTOR.

B	ERECTION PART						
	DESCRIPTION	QUANTITY	UNIT	UNIT ERECTION CHARGES (INR)	TOTAL ERECTION CHARGES (INR)	GST (INR)	TOTAL AMOUNT (INR)
1.0	DISMANTLING OF EXISTING CONDUCTORS WITH HARDWARE FITTINGS AND RETURN TO STORE	46.6	CKM	180040	8389864	1510176	99,00,040
2.0	ERECTION OF HTLS CONDUCTOR WITH HARDWARE AND ACCESSORIES	46.6	CKM	683586	31855108	5733919	3,75,89,027
3.0	220 KV, 2000-1600/1 A, 5 CORE CURRENT TRANSFORMER AS PER TECHNICAL SPECIFICATION	9	NO	14641	131769	23718	1,55,487
4.0	DISMANTLING OF EXISTING 220 KV CURRENT TRANSFORMER	9	NO	4392	39528	7115	46,643
	TOTAL ERECTION CHARGES						**4,76,91,197**

15/08/23

SUMMARY SHEET OF ABSTRACT ESTIMATE

DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C KTPP-FOOD PARK TRANSMISSION LINE BY HTLS CONDUCTOR.
DATE OF ESTIMATE	18-08-2018

SL	DESCRIPTION	AMOUNT
A	ESTIMATED COST FOR SUPPLY OF MATERIALS INCLUDING ALL	Rs 7981.4 Lakh
B	ESTIMATED COST FOR ERECTION OF MATERIALS INCLUDING ALL	Rs 1041.48 Lakh
C	TOTAL COST OF SUPPLY & ERECTION	Rs 9022.88 Lakh
D	SUPERVISON COST @ 10% ON SUPPLY & ERECTION	Rs 902.29 Lakh
E	ESTIMATED TOTAL PROJECT COST (C+D)	Rs 9925.17 Lakh

NOTE: RATE IS INCLUSIVE OF ALL CHARGES AND GST.

18/08/23

Md.S.Hossain.DE (E)

ABSTRACT ESTIMATE

DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C KTPP-FOOD PARK TRANSMISSION LINE BY HTLS CONDUCTOR.

SL	DESCRIPTION	QUANTITY	UNIT	UNIT EX-WORKS (INR)	TOTAL EX-WORKS (INR)	F & I (INR)	GST (INR)	TOTAL AMOUNT (INR)
A	SUPPLY PART							
1.0	HTLS CONDUCTOR TO CARRY MINIMUM CURRENT OF 1200 A AS PER TECHNICAL SPECIFICATION.	102	CKM	5595733	570764766		102737658	67,35,02,424
2.0	HARDWARE FITTINGS AND ACCESSORIES	1	LOT	102924936	102924936		18526488	12,14,51,424
3.0	220 KV, 2000-1600/1 A, 5 CORE CURRENT TRANSFORMER AS PER TECHNICAL SPECIFICATION.	9	NO	275000	2475000	225000	486000	31,86,000
	SUPPLY COST ::							79,81,39,848

18/08/23

ABSTRACT ESTIMATE	
DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C KTPP-FOOD PARK TRANSMISSION LINE BY HTLS CONDUCTOR.

B	ERECTION PART						
	DESCRIPTION	QUANTITY	UNIT	UNIT ERECTION CHARGES (INR)	TOTAL ERECTION CHARGES (INR)	GST (INR)	TOTAL AMOUNT (INR)
1.0	DISMANTLING OF EXISTING CONDUCTORS WITH HARDWARE FITTINGS AND RETURN TO STORE	102	CKM	180040	18364080	3305534	2,16,69,614
2.0	ERECTION OF HTLS CONDUCTOR WITH HARDWARE AND ACCESSORIES	102	CKM	683586	69725772	12550639	8,22,76,411
3.0	220 KV, 2000-1600/1 A, 5 CORE CURRENT TRANSFORMER AS PER TECHNICAL SPECIFICATION.	9	NO	14641	131769	23718	1,55,487
4.0	DISMANTLING OF EXISTING 220 KV CURRENT TRANSFORMER	9	NO	4392	39528	7115	46,643
	TOTAL ERECTION CHARGES						10,41,48,155

18/05/23

SUMMARY SHEET OF ABSTRACT ESTIMATE

DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C FOOD PARK - JANGALPUR TRANSMISSION LINE BY HTLS CONDUCTOR.
DATE OF ESTIMATE	18-08-2018

SL	DESCRIPTION	AMOUNT
A	ESTIMATED COST FOR SUPPLY OF MATERIALS INCLUDING ALL	Rs 935.24 Lakh
B	ESTIMATED COST FOR ERECTION OF MATERIALS INCLUDING ALL	Rs 122.29 Lakh
C	TOTAL COST OF SUPPLY & ERECTION	Rs 1057.53 Lakh
D	SUPERVISON COST @ 10% ON SUPPLY & ERECTION	Rs 105.75 Lakh
E	ESTIMATED TOTAL PROJECT COST (C+D)	Rs 1163.28 Lakh

NOTE: RATE IS INCLUSIVE OF ALL CHARGES AND GST.

18/08/23

Md.S.Hossain.DE (E)

ABSTRACT ESTIMATE	
DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C FOOD PARK - JANGALPUR TRANSMISSION LINE BY HTLS CONDUCTOR.

SL	DESCRIPTION	QUANTITY	UNIT	UNIT EX-WORKS (INR)	TOTAL EX-WORKS (INR)	F & I (INR)	GST (INR)	TOTAL AMOUNT (INR)
A	SUPPLY PART							
1.0	HTLS CONDUCTOR TO CARRY MINIMUM CURRENT OF 1200 A AS PER TECHNICAL SPECIFICATION	12	CKM	5595733	67148796		12086783	7,92,35,579
2.0	HARDWARE FITTINGS AND ACCESSORIES	1	LOT	12108816	12108816		2179587	1,42,88,403
	SUPPLY COST ::							9,35,23,982

18/05/23

ABSTRACT ESTIMATE	
DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C FOOD PARK - JANGALPUR TRANSMISSION LINE BY HTLS CONDUCTOR.

B	ERECTION PART						
	DESCRIPTION	QUANTITY	UNIT	UNIT ERECTION CHARGES (INR)	TOTAL ERECTION CHARGES (INR)	GST (INR)	TOTAL AMOUNT (INR)
1.0	DISMANTLING OF EXISTING CONDUCTORS WITH HARDWARE FITTINGS AND RETURN TO STORE	12	CKM	180040	2160480	388886	25,49,366
2.0	ERECTION OF HTLS CONDUCTOR WITH HARDWARE AND ACCESSORIES	12	CKM	683586	8203032	1476546	96,79,578
	TOTAL ERECTION CHARGES						1,22,28,944

18/05/23

SUMMARY SHEET OF ABSTRACT ESTIMATE

DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C BARASAT-KASBA TRANSMISSION LINE BY HTLS CONDUCTOR.
DATE OF ESTIMATE	18-08-2023

SL	DESCRIPTION	AMOUNT
A	ESTIMATED COST FOR SUPPLY OF MATERIALS INCLUDING ALL	Rs 6115.89 Lakh
B	ESTIMATED COST FOR ERECTION OF MATERIALS INCLUDING ALL	Rs 798.27 Lakh
C	TOTAL COST OF SUPPLY & ERECTION	Rs 6914.16 Lakh
D	SUPERVISON COST @ 10% ON SUPPLY & ERECTION	Rs 691.42 Lakh
E	ESTIMATED TOTAL PROJECT COST (C+D)	Rs 7605.58 Lakh

NOTE: RATE IS INCLUSIVE OF ALL CHARGES AND GST.

18/8/23

Md.S.Hossain.DE (E)

ABSTRACT ESTIMATE	
DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C BARASAT-KASBA TRANSMISSION LINE BY HTLS CONDUCTOR.

SL	DESCRIPTION	QUANTITY	UNIT	UNIT EX-WORKS (INR)	TOTAL EX-WORKS (INR)	F & I (INR)	GST (INR)	TOTAL AMOUNT (INR)
A	SUPPLY PART							
1.0	HTLS CONDUCTOR TO CARRY MINIMUM CURRENT OF 1200 A AS PER TECHNICAL SPECIFICATION.	78.2	CKM	5595733	437586321		78765538	51,63,51,859
2.0	HARDWARE FITTINGS AND ACCESSORIES	1	LOT	78909118	78909118		14203641	9,31,12,759
3.0	220 KV, 2000-1600/1 A, 5 CORE CURRENT TRANSFORMER AS PER TECHNICAL SPECIFICATION.	6	NO	275000	1650000	150000	324000	21,24,000
	TOTAL SUPPLY COST ::							61,15,88,618

18/08/23

ABSTRACT ESTIMATE	
DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C BARASAT-KASBA TRANSMISSION LINE BY HTLS CONDUCTOR.

B	ERECTION PART						
	DESCRIPTION	QUANTITY	UNIT	UNIT ERECTION CHARGES (INR)	TOTAL ERECTION CHARGES (INR)	GST (INR)	TOTAL AMOUNT (INR)
1.0	DISMANTLING OF EXISTING CONDUCTORS WITH HARDWARE FITTINGS AND RETURN TO STORE	78.2	CKM	180040	14079128	2534243	1,66,13,371
2.0	ERECTION OF HTLS CONDUCTOR WITH HARDWARE AND ACCESSORIES	78.2	CKM	683586	53456425	9622157	6,30,78,582
3.0	220 KV, 2000-1600/1 A, 5 CORE CURRENT TRANSFORMER AS PER TECHNICAL SPECIFICATION.	6	NO	14641	87846	15812	1,03,658
4.0	DISMANTLING OF EXISTING 220 KV CURRENT TRANSFORMER	6	NO	4392	26352	4743	31,095
	TOTAL ERECTION CHARGES						7,98,26,706

18/08/23

SUMMARY SHEET OF ABSTRACT ESTIMATE

DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C SUBHASGRAM-KASBA TRANSMISSION LINE BY HTLS CONDUCTOR.
DATE OF ESTIMATE	18-08-2023

SL	DESCRIPTION	AMOUNT
A	ESTIMATED COST FOR SUPPLY OF MATERIALS INCLUDING ALL	Rs 3627.57 Lakh
B	ESTIMATED COST FOR ERECTION OF MATERIALS INCLUDING ALL	Rs 471.47 Lakh
C	TOTAL COST OF SUPPLY & ERECTION	Rs 4099.04 Lakh
D	SUPERVISON COST @ 10% ON SUPPLY & ERECTION	Rs 409.9 Lakh
E	ESTIMATED TOTAL PROJECT COST (C+D)	Rs 4508.94 Lakh

NOTE: RATE IS INCLUSIVE OF ALL CHARGES AND GST.

18/08/23

Md.S.Hossain.DE (E)

ABSTRACT ESTIMATE

DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C SUBHASGRAM-KASBA TRANSMISSION LINE BY HTLS CONDUCTOR.

SL	DESCRIPTION	QUANTITY	UNIT	UNIT EX-WORKS (INR)	TOTAL EX-WORKS (INR)	F & I (INR)	GST (INR)	TOTAL AMOUNT (INR)
A	SUPPLY PART							
1.0	HTLS CONDUCTOR TO CARRY MINIMUM CURRENT OF 1200 A AS PER TECHNICAL SPECIFICATION.	46	CKM	5595733	257403718		46332669	30,37,36,387
2.0	HARDWARE FITTINGS AND ACCESSORIES	1	LOT	46417128	46417128		8355083	5,47,72,211
3.0	220 KV, 2000-1600/1 A, 5 CORE CURRENT TRANSFORMER AS PER TECHNICAL SPECIFICATION.	12	NO	275000	3300000	300000	648000	42,48,000
	TOTAL SUPPLY COST ::							36,27,56,598

18/05/23

ABSTRACT ESTIMATE	
DESCRIPTION OF WORK	REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR OF 220 KV D/C SUBHASGRAM-KASBA TRANSMISSION LINE BY HTLS CONDUCTOR.

B	ERECTION PART						
	DESCRIPTION	QUANTITY	UNIT	UNIT ERECTION CHARGES (INR)	TOTAL ERECTION CHARGES (INR)	GST (INR)	TOTAL AMOUNT (INR)
1.0	DISMANTLING OF EXISTING CONDUCTORS WITH HARDWARE FITTINGS AND RETURN TO STORE	46	CKM	180040	8281840	1490731	97,72,571
2.0	ERECTION OF HTLS CONDUCTOR WITH HARDWARE AND ACCESSORIES	46	CKM	683586	31444956	5660092	3,71,05,048
3.0	220 KV, 2000-1600/1 A, 5 CORE CURRENT TRANSFORMER AS PER TECHNICAL SPECIFICATION.	12	NO	14641	175692	31625	2,07,317
4.0	DISMANTLING OF EXISTING 220 KV CURRENT TRANSFORMER	12	NO	4392	52704	9487	62,191
	TOTAL ERECTION CHARGES						**4,71,47,127**

18/08/23

SUPPORT DOCUMENTS FOR COST ESTIMATE

ESTIMATE REFERENCE

DESCRIPTION OF WORK

SL	DESCRIPTION	UNIT RATE INCLUDING LOADING, UNLOADING, TRANSPORTATION, INSURANCE ETC. (INR)			CONSIDERED UNIT RATE	REMARKS
A	**SUPPLY PART**	**2018 PO No.: CE/(O&M)-II/31/SUPPLY/571(A), Dated: 28.03.2018**	**2022 PO No.: CE/(O&M)-II/31/SUPPLY/987(A), Dated: 27.07.2022**	**Escalation (%)**		
1	132 KV HTLS Conductor to carry minimum current of 800 A.	2314050.00	3577295.00	54.59		
2	220 KV HTLS Conductor to carry minimum current of 1200 A.	3633593.00			5595733.00	Considering 54% escalation
3	220 KV Hardware Fittings and accessories				1009068.01	PER CKM (Considering average rate from PO No.: CE/(O&M)-II/31/SUPPLY/571(A), Dated: 28.03.2018
4	220KV CT				275000.00	PO No.: CEP/WBSETCL/CT/23-24/8, Dated: 08.06.2023
B	**ERECTION PART**	**2018 PO No.: CE/(O&M)-II/31/SUPPLY/571(B), Dated: 28.03.2018**	**2022 PO No.: CE/(O&M)-II/31/SUPPLY/987(B), Dated: 27.07.2022**			
1	Dismantling of existing 132 KV Conductor with hardware fittings	140656.00	180808.00	28.55		
2	Erection of 132 KV HTLS with hardware fittings	984589.00	524344.00	-46.74		
3	Dismantling of existing 220 KV Conductor with hardware fittings	140656.00			180040.00	Considering 28% escalation
4	Erection of 220 KV HTLS with hardware fittings	1265900.00			683586.00	Considering (-46%) escalation
5	220KV CT installation				14641.00	Rate Contract Of WBSETCL: CE/O&M-II/ENLISTMENT ORDER/SUB-STATION/RATE CONTRACT/2022-23/TIS Dated : 27.04.2022
6	220 KV CT dismantling				4392.00	

WEST BENGAL STATE ELECTRICITY TRANSMISSION COMPANY LTD.
(A Govt. of West Bengal Enterprise)
CIN: U40101WB2007SGC113474
OFFICE OF THE CHIEF ENGINEER (O& M) - II
VIDYUT BHAWAN: 10th FLOOR: D BLOCK,
SALT LAKE CITY, SECTOR-II, KOLKATA: - 700091,
TELE PHONE /FAX NO. (033) 2359-1901. Website: www.wbsetcl.in

MEMO NO: CE/ (O&M) - II/31/SUPPLY/571 (A) DATED: 28.03.2018

To
M/S Sterlite Power Transmission Limited,
F - 1, The Mira Corporate Suites,
1 & 2, Iswar Nagar, Mathura Road,
New Delhi,
PIN - 110 065.

Sub: Letter of Award of Contract' for Supply of Materials including spares for the work of: "Replacement of existing conductor by HTLS/ AL59 conductor i.r.o. different 220 KV and 132 KV Transmission Line under WBSETCL and allied work on Turn Key basis".

Dear Sir(s),

1. This has reference to the following :

   a. Our Tender Notice No. NI e-T No. **CE/ (O&M) - II/HTLS & AL 59/2017-18/11, Dated 07/11/2017.**
   b. Bidding Documents for the subject NIT uploaded comprising the following:

Section I	: Notice Inviting Tender.
Section II	: Instruction to Bidders.
Section III	: Bid data Sheet (BDS).
Section IV	: General Conditions of Contract.
Section V	: Special Conditions of Contract.
Section VIA	: Technical Specification (Civil Part) (available in WBSETCL's Website).
Section VIB	: Technical Specification (Electrical Part) (available in WBSETCL's Website).
Section VIC	: Guaranteed Technical Particulars (available in WBSETCL's Website).
Section VIIA	: Bid Form & Attachments.
Section VIIB	: Annexure, Price Schedule (BOQ) & Bought Out in Excel Format.

Received & Accepted 31-03-18 Sterlite Power Transmission Ltd.

c. Reply of Pre - Bid Quarries and revised BoQ uploaded vide memo no:
   - CE/ (O&M) - II/02/2017-18/NIT - 11/753, Dated 27.11.2017.
   - CE/ (O&M) - II/02/2017-18/NIT - 11/834, Dated 09.12.2017

d. Notice intimating opening of Price Bid uploaded vide memo no. CE/ (O&M) - II/02/2017-18/NIT-11/297, dated 12.02.2018.

e. Your Proposal for the subject NIT uploaded vide No. **764213**, **Dated 12.12.2017.**

2. We confirm having accepted your proposal uploaded vide no. **764213 Dated 12.12.2017** read in conjunction with all the specifications, terms & conditions of the Bidding Documents and your subsequent letters and award on you the Contract of **Supply of Materials including spares** for: "Replacement of existing conductor by HTLS/ AL59 conductor i.r.o. different 220 KV and 132 KV Transmission Line under WBSETCL and allied work on Turn Key basis". (Hereinafter referred to as the 'First Contract').

3. The following scope of work which shall be on the basis of single source responsibility, completely covering all the Equipment specified under the Technical Specifications:

   a. Detailed design of the Equipment/ Materials.
   b. Complete manufacture including shop testing.
   c. Providing engineering drawing, data, operational manual, etc for the Purchaser's approval.
   d. Packing, forwarding, transportation and insurance of Equipment/ Material from the manufacturer's Work to the Site.
   e. Receipt, storage, preservation, insurance and conservation of Equipment/ Material at the Site.

However, the total scope of work on turn-key basis as mentioned in the bid document (under first and second contract) shall include the following but not limited to:-

3.1 The scope of work inter-alia includes:

(i) Design, manufacturing, testing & supply of High Temperature Low Sag (HTLS) conductor Annealed aluminium solid core conductor" except GAP conductor and AL 59 Conductor as well as required associated hardware fittings and accessories viz. suspension clamps, dead end clamps, mid-span compression joints, repair sleeves, T-Connectors, vibration dampers, etc.

(ii) Survey & profiling of existing line route using Total stations, verification of availability of statutory electrical clearances using PLS-CADD software; de-stringing of existing Conductor including dismantling of associated fittings & accessories from the above lines and stringing of each circuit with HTLS conductor

along with associated fittings and accessories with the other circuit under live condition.

3.2 The material to be supplied on final destination at site basis as covered in the bidding documents shall be designed, manufactured, tested, supplied and installed as per the requirements specified in this Tender. The requirements, conditions, appendices etc. as specified in other Sections of bidding documents shall also apply to.

3.3 The standard type disc insulators (70 & 120 KN) along with hardware fittings (except suspension clamps at suspension tower and dead end clamps at tension tower) of the existing line shall be used for re-conductoring of line with HTLS/ AL 59 conductor. The existing insulators and hardware fittings shall be inspected by the contractor for any defects and those found defective shall be replaced after approval of engineer-in-charge with fresh items to be supplied by WBSETCL.

3.4 The ACSR PANTHER/ ZEBRA conductor removed from the existing line is envisaged for re-use/ utilization by the WBSETCL in other projects. Proper handling and safety of the conductor during de-stringing, storage at site, measurement of conductor lengths, rewinding on drums at site and safe transportation to WBSETCL's designated stores along the transmission line shall be included in the scope of work.

3.5 The WBSETCL shall arrange shut down of one circuit at a time and the other circuit shall be kept under charged condition. The contractor shall de-string the existing conductor and restring the circuit with the HTLS/ AL 59 conductor section by section and restore the line in original conditions as per program finalized in co-ordination with site. **Normally Shut down will be allowed form 6 AM to 3 PM on daily basis for the replacement work. Generally the contractor has to do the stringing within this interval so that line can be charged at 3 PM every day.** No idle labour is admissible for non-availability of shut down or Right of Way constraints during erection. Appropriate safety measures along with necessary safety tools and equipments to carry out de-stringing and stringing operations under the above conditions including mechanical/ structural safety of the towers shall be the responsibility of the contractor. Necessary calculations shall be

carried out by the contractor to ensure that by replacing the existing ACSR PANTHER/ ZEBRA conductor with the HTLS/ AL 59 conductor offered, the loadings on the towers due to conductor tensions as well as loads on account of the re-conductoring activities shall be within specified limits. **These calculations shall be submitted by the bidder along with the drawing approval if required.**

3.6 The materials covered in this tender shall be supplied complete in all respects, including all components, fittings and accessories which are necessary or are usual for their efficient performance and satisfactory maintenance under the various operating and atmospheric conditions. Such parts shall be deemed to be within the scope of the Contract, whether specifically included or not in the Specification or in the Contract Schedules. The Supplier shall not be eligible for any extra charges for such fittings, etc.

3.7 The entire stringing work of conductor shall be carried out by tension stringing technique except where geography/ topographical or other site constraints do not permit use of tension stringing equipment. In such cases manual stringing along with other appropriate tools and equipments may be employed with the approval of WBSETCL's site in charge. Contractor is to indicate the sets of Tension Stringing Equipment in his proposal and indicate no. of stringing equipments which the bidder plans to deploy so as to meet his schedule in their offer.

3.8 Uploading of complete technical details of the proposed HTLS conductor with relevant calculation along with the bid to adjudge the sufficiency of existing towers for carrying out the up-rating works. This shall be carried out in compliances / adherence to all safety and standard requirements as per Indian Electricity Rules 1956. Design parameters and submission of detailed drawings of conductor hardware and accessories and preparation of sag tension chart, stringing chart, of the conductor used showing, sag & tension at various temperatures are included in the scope of the Bidder.

3.9 The existing insulators shall be inspected by the contractor in advance for any defects and those found defective shall be replaced with good ones by WBSETCL.

During stringing if any existing insulator found defective, it will be supplied by WBSETCL.

3.10 The entire stringing work of HTLS conductor shall be carried out by tension stringing technique except where geographical / topographical or other site constraints do not permit use of tension stringing equipment. In such cases manual stringing along with other appropriate tools and equipment may be employed with the approval of engineer in charge. The contractor shall indicate in their offer, the sets of tension stringing equipment he is having in his possession and the sets of stringing equipment he would deploy exclusively for this tender. The contractor shall also engage sufficient manpower so that stringing of the conductor in one stretch is complete within the allowed shut down period of one day. **No mid span joint will be allowed & hence the length of the conductor shall be decided by referring the tower schedule.**

3.11 Only important road & river crossings and lines passing over civil structures will have double insulator strings. Vibration dampers are to be provided in all suspension & tension locations.

3.12 The rollers, which will be used during stringing, should be so designed that the line can be charged with the roller.

3.13 Contractor should deploy stringing/ installation experts during erection of the offered type of conductor.

4. We have also notified you vide our Letter of Award No. CE/ (O&M) - II/ 31/ ERECTION/571 (B), DATED: 28.03.2018 for award of 'Second Contract' on you for **Erection Work** of Materials for "Replacement of existing conductor by HTLS/ AL59 conductor i.r.o. different 220 KV and 132 KV Transmission Line under WBSETCL and allied work on Turn Key basis" as per Specification and as per Bid Document No. **CE/ (O&M) - II/HTLS & AL 59/2017-18/11, Dated 07/11/2017** (hereinafter referred to as the 'Second Contract'). You shall also be fully responsible for the works to be executed under the 'Second Contract' and it is expressly understood and agreed by you that any breach under the 'Second Contract' shall automatically be deemed as a breach of this 'First Contract' and vice-versa and any such breach or occurrence or default giving us a right to terminate the 'Second Contract' and/or recover damages there under, shall give us an absolute right to terminate this Contract and/or recover damages under this 'First Contract' as well and vice-versa. However, such breach or default or

occurrence in the 'Second Contract' shall not automatically relieve you of any of your responsibility/obligations under this 'First Contract'. It is also expressly understood and agreed by you that the equipment/materials to be supplied by you under this 'First Contract' when installed and commissioned under the 'Second Contract' shall give satisfactory performance in accordance with the provisions of the Contract.

5. The total Contract Price for the entire scope of work under the Contract shall be ₹ 69, 01, 21,846/- as per the following break up:

i.	Ex- Work price for Main Equipment/material	₹ 58,48,49,022=00
ii.	Transportation including loading, unloading & Insurance charges	Included in above
iii.	GST on Direct and Bought Out Items	₹ 10,52,72,824=00
	TOTAL (i + ii + iii)	₹ 69,01,21,846=00
(Rupees Sixty Nine Crore One Lakh Twenty One Thousand Eight Hundred and Forty Six only)		

6. **Date of Commencement & Completion Period:**
The Contract shall be executed within the specified time given commencing from the date of LoA.

Sl. No	Particulars	Completion Time from the date of LOA
1	Supply of Materials including spares for the work of: Replacement of existing conductor by HTLS/ AL59 conductor i.r.o. different 220 KV and 132 KV Transmission Line under WBSETCL and allied work on Turn Key basis	Time for Completion of the total Works shall be **365 (Three Hundred and Sixty Five)** days from the date of LoA.

The time and date of completion is the essence of this contract. You are required to organize your resources and perform your work.

7. You shall prepare and finalize the Contract Documents for signing of the formal Contract Agreement and shall enter into the Contract Agreement with ***The Chief Engineer, (O&M) – II,*** WBSETCL, Bidyut Bhavan, 10th Floor, "D" Block, Salt Lake City, Kolkata – 700 091, as per the proforma enclosed with the Bidding Documents, on non-judicial stamp paper of appropriate value within 10 (ten) days from the date of this Letter of Award.

Received & Accepted 11.02.2019

8. **Terms of Payment :**

In respect of Equipment/ Materials supplied from within/ outside India, the following payment shall be made on ex-Work basis:

7.1. Ten percent (10%) of the total - **taxable value** of component **before taxes** as **interest bearing** initial advance payment to be paid within thirty (30) days from the submission of tax invoice for **interest bearing** initial advance by the Contractor subject to fulfilment of following

a. Acceptance of Letter of Award(s) and signing of the Contract Agreement(s)

b. Submission of an unconditional Bank Guarantee covering 110 % of the **interest bearing** advance amount which shall be initially kept valid up to ninety (90) days beyond the date of scheduled issuance of Taking-Over Certificate with a claim period of thirty (30) days. However, in case of delay in completion of Works, the validity of this Bank Guarantee shall be extended by the period of such delay. Proforma of Bank Guarantee is enclosed in Annexure No. 4/4a of Section VIIB - Bank Guarantee Form for **interest bearing** Mobilisation Advance.

c. Submission by the main Contractor of an unconditional Bank Guarantee(s) towards Performance Security (ies) in respect of all the Contracts valid up to ninety (90) days after the end of Defects Liability Period **(As per SCC 60 months)** of all the equipment covered under the contract. The proforma of Bank Guarantee is enclosed in Annexure 3/3a of Section VIIB - Form of Performance Security.

d. Submission of a detailed L2 Network based on the work schedule stipulated in Appendix-4 to the Contract Agreement and its approval by the Purchaser

e. Confirmation regarding setting up of site office, where required.

f. The **interest bearing** advance payment shall be adjusted **along with the interest** on pro-rata basis at the time of making seventy percent (70%) payment as per clause 7.2 below. The **interest bearing** advance payment shall be kept outside the purview of Price Variation clause.

7.2. Seventy percent (70%) of the **total -taxable value** of the equipment/ material **before taxes** shall be paid on receipt of material/ equipment along with 3 copies of tax invoice and other relevant documents as detailed below in good order and condition at its storage at respective site store and/ or specified store duly certified by the Controlling officer for payment.

a. Store Receipt Voucher (SRV)
b. Copies of the Contractor's invoice showing LOA reference No., goods description, **HSN/SAC Code**, quantity despatched, unit price, **-taxable amount**

c. Packing List
d. Railway receipt / receipted LR
e. Manufacturer's / Contractor's Guarantee Certificate of Quality
f. Material Inspection & Clearance Certificate (MICC) for despatch issued by the Purchaser's representative and the Contractor's factory inspection report and insurance certificate and

In case of items where price are quoted on Lots/ L.S. basis payment will be made as per agreed billing schedule finalised with the successful Bidder. The breakup of this Lot price should be in conformity with volume of work/ supply involved.

One hundred percent (100%) of charges associated with the taxes and duties of the supply of Equipment / Materials, as admissible, will be released along with the seventy percent (70%) payment.

7.3. Further ten percent (10%) of the total -**taxable value** of the equipment shall be paid after completion of erection.

7.4. Further ten percent (10%) of the total -**taxable value** of the equipment shall be paid on successful Completion of Works of this Contract and Certification by the Purchaser's Representative except as per the relevant provisions under Clause GCC 28.

7.5. The balance ten percent (10%) of the total -**taxable value** of the equipment shall be paid after issue of Taking Over Certificate as per GCC.29.

7.6. All progressive payments on account of supply shall be made on submission of claim / production of three (3) copies of tax invoice and other documents. Minimum value of each claim should be at least ten percent (10%) of total **taxable value of supply** - or Rs.1 Crore value of scheduled item(s) of **taxable value of supply**, whichever is less. The bills shall not be placed more than once in a month.

7.7. **Transportation including Insurance**: One hundred percent (100%) Transportation (including insurance charges) for the equipment covered in Price Schedule No. 1 shall be paid to the Contractor pro-rata to the value of the equipment received at site and on production of invoices by the Contractor. The aggregate of all such prorata payments shall, however, not exceed the total amount identified in the Contract for transportation. However, wherever equipment wise transportation charges (including insurance charges) have been furnished by the Contractor, the payment shall be made after receipt of equipments at Site based on the charges so identified in the Contract.

8. **Contract Performance Guarantee(CPG)**:

An unconditional Bank Guarantee(s) towards Performance Security (ies) in respect of all the Contracts valid up to ninety (90) days after the end of Defects Liability Period of all the equipment covered under the contract is to be submitted by the Main Contractor. The proforma of Bank Guarantee is enclosed in Annexure 3/3a of Section VIIB - Form of Performance Security.

9. **Advance Payment Security Clause:**
The Advance Payment Security Clause for this contract will be guided by the Clause No. G.C.C. 13.1 of the Bid Document. The Mobilisation Advance shall be released in not less than two instalments. The applicable interest rate for Mobilization Advance will be **11% (Eleven percent).**

10. **Price Variation:**
PRICE IS FIRM WITHOUT ANY VARIATION.

11. **Variation of Taxes and Duties:**
Variations for adjustments in taxes and duties (such as - **CGST, WBGST, IGST,** etc.) **(within scheduled completion period)** would be restricted to direct transactions (if any) between the Purchaser and the Contractor. These adjustments shall not be applicable on procurement of raw materials, intermediary components etc. by the Contractor and also not applicable on the bought out items dispatched directly by Sub-Contractor(s) to Site. All other provisions regarding Taxes and Duties will be guided by the Clause no. G.C.C. 14 of the Bid Document.

12. **Goods and service Tax (GST):**
CGST and WBGST or IGST, as the case may be, will be paid at the rate prevailing on the schedule date of or the actual completion date whichever is lower.
GST is payable against documentary evidence on submission of Tax Invoice as per GST Invoice rule along with respective SAC/ HSN code. In no case the rate will not exceed your quoted rate in price bid **beyond Scheduled Completion Period.**
Tax Invoice needs to be raised showing separately the Tax charged in accordance with the provisions of GST Act, 2017.
Any Input Tax credit if arisen on account of GST shall have to be passed on to WBSETCL.

13. Liquidated Damages:
For delay in supply of materials/supply of spares/ completion of project, LD as per the approved schedule shall be imposed on the contractor, at the rate of 0.5% per week or part thereof of delay subject to maximum of 5% of the total contract price except for spares. **The maximum limit of penalty for spares shall be ten percent (10% of corresponding value).**
The provisions of Liquidated Damages for this contract will be guided by the Clause no. G.C.C. 30 (G.C.C. 30.1 to G.C.C. 30.11) of the Bid document.

14. **Guarantee:** The contractor shall warrant that the HTLS conductors, hardware and accessories are new, unused and in accordance with the contract documents and free from defects in material and workmanship. The contractor shall also guarantee for defect free operation of the materials supplied and workmanship towards erection for a period of **sixty (60) calendar months** commencing immediately upon the satisfactory commissioning.

15. **Type Test Certificate:**
The requisite Type Tests will be guided by the Technical Specifications.

16. **Labour Compliance:**
Labour Compliance for this contract will be guided by the Clause no. G.C.C. 7 (G.C.C. 7.2) of the Bid Document.

17. **Insurance:**
Insurance Coverage for this Contract will be guided by the Clause n. G.C.C. 37 and Appendix 3 of Annexure.

18. **Controlling Officer:** The Controlling Officer for different Lines will be as follows:-

Sl. No.	Name of the Line	Controlling Officer	Mobile No.
01.	New Haldia - Haldia - Haldia NIZ 132 KV	S.E. & Area Manager, Haldia Area Office	9434910061
02.	Gokarna - Kuli 132 KV	S.E. & Area Manager, Gokarna Area Office	9434910138
03.	KTPS - Tamluk 132 KV	S.E. & Area Manager, Tamluk Area Office	9434910061
04.	Kasba - KLC - Salt Lake 132 KV	S.E. & Area Manager, Kasba Area Office	9434910040
05.	Kasba - Sonarpur 132 KV		
06.	LILO part of New Town AAIII - Salt lake 132 KV	S.E. & Area Manager, Salt Lake Area Office	9434910048
07.	New Chanditala - Rishra 220 KV	S.E. & Area Manager, New Chanditala 400 KV Area Office	9434910256

19. **Consignee Officer:** To be nominated by the Controlling Officer.

20. **Paying Officer:** The Senior Manager (F&A), Corporate Finance Department, WBSETCL, Vidyut Bhawan, Salt Lake, Kolkata-91 will be the paying officer. The A.G.M. (F&A) attached to C.E. (O&M) - II will be responsible for necessary scrutiny of the bills and passing for payment.

This Letter of Award is being issued to you in original. We request you to return its photocopy duly signed and stamped on each page including all the enclosed Appendices, by the authorised signatory of your company as a proof of your acknowledgement and confirmation.

Please take the necessary action to commence the work and confirm action.

Enclo: As stated above.

Yours faithfully,

For and on behalf of
West Bengal State Electricity Transmission Company Limited

29.3.2018
(Rafikul Islam)
Chief Engineer: (O&M) - II,

Received & Accepted
Dt. 02.04.18.
Sterlite Power Transmission Ltd

Validate | Print | Help — Wise BoQ

Tender Inviting Authority: CHIEF ENGINEER : (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTITING ACSR PANTHER CONDUCTOR BY HTLS CONDUCTOR (i.e.NEW HALDIA-HALDIA-HALDIA NZ 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH-18 Km)

Contract No: CE/ (O&M) – II/HTLS & ALS/2017-18/11 DATED 07.11.2017

Bidder Name : STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR SUPPLY OF MATERIALS AND EQUIPMENTS

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only.)

Sl. No.	Item Description	Quantity	Units	Unit Base Price including Transport, Loading, Unloading, Insurance etc. (in Rs.)	Total Base Price including Transport, Loading, unloading, Insurance etc. (in Rs.)	HSN CODE	CGST (in %)	CGST Amount	SGST (in %)	SGST Amout	IGST/UTGST 7 (in %)	IGST/UTGST Amount	TOTAL GST Amount	TOTAL AMOUNT	TOTAL AMOUNT in Words
1.00	HTLS Conductor to carry minimum current of 800 A as per Technical Specification for 132KV New Haldia-Haldia-Haldia NZ Double Circuit (DIC) Tr. Line (All Road Crossings/Building crossings are to be provided with Double Tension/Suspension Fittings)	36.00	Ckt. Km	2514050.00	83305800.00	7604		0.00		0.00	18.00%	14995044.00	14995044.00	98300844.00	INR Nine Crore Eighty Three Lakh Eight Hundred & Forty Four Only
2.00	Hardware Fittings as per Technical Specification														
2.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type)	420.00	Set	39517.00	16597140.00	7308.2011		0.00		0.00	18.00%	2987485.20	2987485.20	19584625.20	INR One Crore Ninety Five Lakh Eighty Four Thousand Six Hundred & Twenty Five and Paise Twenty Only
2.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type)	108.00	Set	42775.00	4620132.00	7308.2011		0.00		0.00	18.00%	831623.76	831623.76	5451755.76	INR Fifty Four Lakh Fifty One Thousand Seven Hundred & Fifty Five and Paise Seventy Six Only
2.03	Single Suspension Hardware Fittings complete for above Conductor	246.00	Set	6463.00	1589898.00	7308.2011		0.00		0.00	18.00%	286181.64	286181.64	1876079.64	INR Eighteen Lakh Seventy Six Thousand &Seventy Nine and Paise Sixty Four Only
2.04	Double Suspension Hardware Fittings complete for above Conductor	30.00	Set	10120.00	303600.00	7308.2011		0.00		0.00	18.00%	54648.00	54648.00	358248.00	INR Three Lakh Fifty Eight Thousand Two Hundred & Forty Eight Only
2.05	Pilot Insulator Hardware Fittings complete for above Conductor	6.00	Set	6463.00	38778.00	7308.2011		0.00		0.00	18.00%	6980.04	6980.04	45758.04	INR Forty Five Thousand Seven Hundred & Fifty Eight and Paise Four Only

Received & Accepted dt. 02.04.18.

Sterlite Power Transmission Ltd

28/3/18 28/3/2018 28/3/18

3.06	Vibration Damper for above Conductor	1050.00	Set	2963.00	3900840.00	7308 2011		0.00		0.00	18.00%	676087.20	676087.20	3776047.20	INR Thirty Seven Lakh Seventy Six Thousand &Forty Seven and Paise Twenty Only
3.00	Conductor as SPARE as per Technical Specification (5% of the actual requirement)	1.80	Ckt. Km	2314060.00	4165290.00	7604		0.00		0.00	18.00%	749752.20	749752.20	4915042.20	INR Forty Nine Lakh Fifteen Thousand &Forty Two and Paise Twenty Only
4.00	Hardware as SPARE as per Technical Specification (5% of the actual requirement)														
4.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	21.00	Set	39517.00	829857.00	7308 2011		0.00		0.00	18.00%	149374.26	149374.26	979231.26	INR Nine Lakh Seventy Nine Thousand Two Hundred & Thirty One and Paise Twenty Six Only
4.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	5.00	Set	42775.00	213875.00	7308 2011		0.00		0.00	18.00%	38501.10	38501.10	252376.10	INR Two Lakh Fifty Two Thousand Three Hundred & Ninety Six and Paise Ten Only
4.03	Single Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	12.00	Set	6483.00	77796.00	7308 2011		0.00		0.00	18.00%	13960.68	13960.68	91756.68	INR Ninety One Thousand Five Hundred & Sixteen and Paise Eight Only
4.04	Double Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	6.00	Set	10720.00	60720.00	7308 2011		0.00		0.00	18.00%	10929.60	10929.60	71649.60	INR Seventy One Thousand Six Hundred & Forty Nine and Paise Sixty Only
4.05	Pilot Insulator Hardware Fittings complete for above Conductor (5% of the actual requirement)	1.00	Set	6483.00	6483.00	7308 2011		0.00		0.00	18.00%	1163.34	1163.34	7626.34	INR Seven Thousand Six Hundred & Twenty Six and Paise Thirty Four Only
4.06	Vibration Damper for above Conductor (5% of the actual requirement)	54.00	Set	2963.00	160002.00	7308 2011		0.00		0.00	18.00%	28800.36	28800.36	188802.36	INR One Lakh Eighty Eight Thousand Eight Hundred & Two and Paise Thirty Six Only
5.00	Mid span compression Joint as per Technical Specification (1 Set in 1.5 Km)	24.00	Set	51618.00	1238832.00	7616 5990		0.00		0.00	18.00%	222989.76	222989.76	1461821.76	INR Fourteen Lakh Sixty One Thousand Eight Hundred & Twenty One and Paise Seventy Six Only
6.00	Compression Repair sleeve as per Technical Specification (1 Set in 1.5 Km)	24.00	Set	2017.00	48408.00	7616 5990		0.00		0.00	18.00%	8713.44	8713.44	57121.44	INR Fifty Seven Thousand One Hundred & Twenty One and Paise Forty Four Only
Total in Figures					116456411.00								20962153.98	137418564.98	INR Thirteen Crore Seventy Four Lakh Eighteen Thousand Five Hundred & Sixty Four and Paise Ninety Eight Only
Total Rate in Words	INR Thirteen Crore Seventy Four Lakh Eighteen Thousand Five Hundred & Sixty Four and Paise Ninety Eight Only														

Received & Accepted dt. 02.04.18.

Skipper Power Transmission Ltd

28/3/18

28/3/2018

28/3/18

Validate Print Help Wise BoQ

Tender Inviting Authority: CHIEF ENGINEER : (O&M)-I

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTITING ACSR PANTHER CONDUCTOR BY HTLS CONDUCTOR i/c/o.GOKARNA-KUU 132KV DOUBLE CIRCUIT

Contract No: CE/ (O&M) – II/HTLS & AL59/2017-18/11 DATED 07.11.2017

Bidder Name: STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR SUPPLY OF MATERIALS AND EQUIPMENTS

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

Sl. No.	Item Description	Quantity	Units	Unit Base Price Including Transport, Loading, unloading, Insurance etc. (in Rs.)	Total Base Price Including Transport, Loading, unloading, Insurance etc. (in Rs.)	HSN CODE	CGST (in %)	CGST Amount	SGST (in %)	SGST Amount	IGST/UTGST (in %)	IGST/UTGST Amount	TOTAL GST Amount	TOTAL AMOUNT	TOTAL AMOUNT in Words
1.00	HTLS Conductor to carry minimum current of 805 A as per Technical Specification for 132 KV Gokarna-Kuli 132 KV Double Circuit (D/C) Tr. Line (All Road Crossings/Building crossings are to be provided with Double Tension /Suspension fittings)	48.00	Ckt. Km.	2314040.00	111074400.00	7604		0.00		0.00	18.00%	19993392.00	19993392.00	131067792.00	INR Thirteen Crore Ten Lakh Sixty Seven Thousand Seven Hundred & Ninety Two Only
2.00	Hardware Fittings as per Technical Specification														
2.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type)	420.00	Set	39517.00	16597140.00	7308 2011		0.00		0.00	18.00%	2987485.20	2987485.20	19584625.20	INR One Crore Ninety Five Lakh Eighty Four Thousand Six Hundred & Twenty Five and Paise Twenty Only
2.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type)	108.00	Set	42779.00	4620132.00	7308 2011		0.00		0.00	18.00%	831623.76	831623.76	5451755.76	INR Fifty Four Lakh Fifty One Thousand Seven Hundred & Fifty Five and Paise Seventy Six Only
2.03	Single Suspension Hardware Fittings complete for above Conductor	246.00	Set	6483.00	1594818.00	7308 2011		0.00		0.00	18.00%	287181.24	287181.24	1878079.24	INR Eighteen Lakh Seventy Six Thousand &Seventy Nine and Paise Sixty Four Only
2.04	Double Suspension Hardware Fittings complete for above Conductor	30.00	Set	10120.00	303600.00	7308 2011		0.00		0.00	18.00%	54648.00	54648.00	358248.00	INR Three Lakh Fifty Eight Thousand Two Hundred & Forty Eight Only
2.05	Pilot Insulator Hardware Fittings complete for above Conductor	6.00	Set	6463.00	38778.00	7308 2011		0.00		0.00	18.00%	6980.04	6980.04	45758.04	INR Forty Five Thousand Seven Hundred & Fifty Eight and Paise Four Only
2.06	Vibration Damper for above Conductor	1080.00	Set	3463.00	3740040.00	7308 2011		0.00		0.00	18.00%	673207.20	673207.20	4413247.20	INR Thirty Seven Lakh Seventy Six Thousand &Forty Seven and Paise Twenty Only

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3.00	Conductor as SPARE as per Technical Specification (5% of the actual requirement)	2.40	Ckt. Kms	2614050.00	6553720.00	7604		0.00		0.00	18.00%	999659.60	999659.60	6553380.00	INR Sixty Five Lakh Fifty Three Thousand Three Hundred & Eighty Nine and Paise Sixty Only
4.00	Hardware as SPARE as per Technical Specification (5% of the actual requirement)														
4.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	21.00	Set	39517.00	829857.00	7308 2011		0.00		0.00	18.00%	149374.26	149374.26	979231.26	INR Nine Lakh Seventy Nine Thousand Two Hundred & Thirty One and Paise Twenty Six Only
4.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	6.00	Set	42779.00	213895.00	7308 2011		0.00		0.00	18.00%	38501.10	38501.10	252396.10	INR Two Lakh Fifty Two Thousand Three Hundred & Ninety Six and Paise Ten Only
4.03	Single Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	12.00	Set	6463.00	77556.00	7308 2011		0.00		0.00	18.00%	13960.08	13960.08	91516.08	INR Ninety One Thousand Five Hundred & Sixteen and Paise Eight Only
4.04	Double Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	6.00	Set	10120.00	60720.00	7308 2011		0.00		0.00	18.00%	10929.60	10929.60	71649.63	INR Seventy One Thousand Six Hundred & Forty Nine and Paise Sixty Only
4.05	Pilot Insulator Hardware Fittings complete for above Conductor (5% of the actual requirement)	1.00	Set	6463.00	6463.00	7308 2011		0.00		0.00	18.00%	1163.34	1163.34	7626.34	INR Seven Thousand Six Hundred & Twenty Six and Paise Thirty Four Only
4.06	Vibration Damper for above Conductor (5% of the actual requirement)	54.00	Set	2963.00	159902.00	7308 2011		0.00		0.00	18.00%	28800.36	28800.36	188702.36	INR One Lakh Eighty Eight Thousand Eight Hundred & Two and Paise Thirty Six Only
5.00	Mid span compression Joint as per Technical Specification (1 Set in 1.5 Km)	32.00	Set	51618.00	1651776.00	7516 9990		0.00		0.00	18.00%	297319.68	297319.68	1949095.68	INR Nineteen Lakh Forty Nine Thousand &Ninety Five and Paise Sixty Eight Only
6.00	Compression Repair sleeve as per Technical Specification (1 Set in 1.5 Km)	32.00	Set	2017.00	64544.00	7516 9990		0.00		0.00	18.00%	11617.92	11617.92	76161.92	INR Seventy Six Thousand One Hundred & Sixty One and Paise Ninety Two Only
Total in Figures					146042521.00								25287653.78	172330174.78	INR Seventeen Crore Twenty Three Lakh Thirty Thousand One
Total Rate in Words	INR Seventeen Crore Twenty Three Lakh Thirty Thousand One Hundred & Seventy Four and Paise Seventy Eight Only														

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Tender Inviting Authority: CHIEF ENGINEER : (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTITING CONDUCTOR BY HTLS CONDUCTOR i.r.o. KTPS-TABLUK 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH-18 Km)

Contract No: CE/ (O&M) – II/HTLS & AL59/2017-18/11 DATED 07.11.2017

Bidder Name : STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR SUPPLY OF MATERIALS AND EQUIPMENTS

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Sl. No.	Item Description	Quantity	Units	Unit Base Price including Transport, Loading, unloading, Insurance etc. (in Rs.)	Total Base Price including Transport, Loading, unloading, Insurance etc. (in Rs.)	HSN CODE	CGST (in %)	CGST Amount	SGST (in %)	SGST Amount	IGST/UTGST (in %)	IGST/UTGST Amount	TOTAL GST Amount	TOTAL AMOUNT	TOTAL AMOUNT In Words
1.00	HTLS Conductor to carry minimum current of 800 A as per Technical Specification for 132KV KTPS-Tamluk Double Circuit (D/C) Tr. Line (All Road Crossings/Building crossings are to be provided with Double Tension /Suspension Fittings)	36.00	Ckt. Km.	2314050.00	83305800.00	7604		0.00		0.00	18.00%	14995044.00	14995044.00	98300844.00	INR Nine Crore Eighty Three Lakh Eight Hundred & Forty Four Only
2.00	Hardware Fittings as per Technical Specification														
2.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type)	156.00	Set	39517.00	6164652.00	7308 2011		0.00		0.00	18.00%	1109637.36	1109637.36	7274289.36	INR Seventy Two Lakh Seventy Four Thousand Two Hundred & Eighty Nine and Paise Thirty Six Only
2.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type)	48.00	Set	42779.00	2053392.00	7308 2011		0.00		0.00	18.00%	369610.56	369610.56	2423002.56	INR Twenty Four Lakh Twenty Three Thousand &Two and Paise Fifty Six Only
2.03	Single Suspension Hardware Fittings complete for above Conductor	216.00	Set	6483.00	1399728.00	7318 2011		0.00		0.00	18.00%	251951.04	251951.04	1651679.04	INR Sixteen Lakh Forty Seven Thousand Two Hundred & Eighty Nine and Paise Forty Four Only
2.04	Double Suspension Hardware Fittings complete for above Conductor	60.00	Set	10120.00	607200.00	7311 2011		0.00		0.00	18.00%	109296.00	109296.00	716496.00	INR Seven Lakh Sixteen Thousand Four Hundred & Ninety Six Only
2.05	Pilot Insulator Hardware Fittings complete for above Conductor	6.00	Set	6483.00	38898.00	7312 2011		0.00		0.00	18.00%	6980.04	6980.04	45758.04	INR Forty Five Thousand Seven Hundred & Fifty Eight and Paise Four Only
2.06	Vibration Damper for above Conductor	1060.00	Set	2953.00	3200040.00	7312 2011		0.00		0.00	18.00%	576007.20	576007.20	3776047.20	INR Thirty Seven Lakh Seventy Six Thousand &Forty Seven and Paise Twenty Only

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3.00	Conductor as SPARE as per Technical Specification (5% of the actual requirement)	1.80	Ckt. Km	2814050.00	4165250.90	7604		0.00		0.00	18.00%	749752.20	749752.20	4915342.20	INR Forty Nine Lakh Fifteen Thousand &Forty Two and Paise Twenty Only
4.00	Hardware as SPARE as per Technical Specification (5% of the actual requirement)														
4.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	8.00	Set	38517.00	316136.00	7313 2011		0.00		0.00	18.00%	56904.48	56904.48	373040.48	INR Three Lakh Seventy Three Thousand &Forty and Paise Forty Eight Only
4.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	10.00	Set	42779.00	427790.00	7313 2011		0.00		0.00	18.00%	77002.20	77002.20	504792.20	INR Five Lakh Four Thousand Seven Hundred & Ninety Two and Paise Twenty Only
4.03	Single Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	108.00	Set	6483.00	698004.00	7313 2011		0.00		0.00	18.00%	125640.72	125640.72	823644.72	INR Eight Lakh Twenty Three Thousand Six Hundred & Forty Four and Paise Seventy Two Only
4.04	Double Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	3.00	Set	10120.00	30360.00	7313 2011		0.00		0.00	18.00%	5464.80	5464.80	35824.80	INR Thirty Five Thousand Eight Hundred & Twenty Four and Paise Eighty Only
4.05	Pilot Insulator Hardware Fittings complete for above Conductor (5% of the actual requirement)	1.00	Set	6463.00	6463.00	7313 2011		0.00		0.00	18.00%	1163.34	1163.34	7626.34	INR Seven Thousand Six Hundred & Twenty Six and Paise Thirty Four Only
4.06	Vibration Damper for above Conductor (5% of the actual requirement)	54.00	Set	2963.00	160002.00	7313 2011		0.00		0.00	18.00%	28800.36	28800.36	188802.36	INR One Lakh Eighty Eight Thousand Eight Hundred & Two and Paise Thirty Six Only
5.00	Mid span compression Joint as per Technical Specification (1 Set in 1.5 Km)	24.00	Set	51618.00	1238832.00	7616 9990		0.00		0.00	18.00%	222989.76	222989.76	1461821.76	INR Fourteen Lakh Sixty One Thousand Eight Hundred & Twenty One and Paise Seventy Six Only
6.00	Compression Repair sleeve as per Technical Specification (1 Set in 1.5 Km)	24.00	Set	2017.00	48408.00	7616 9990		0.00		0.00	18.00%	8713.44	8713.44	57121.44	INR Fifty Seven Thousand One Hundred & Twenty One and Paise Forty Four Only
Total in Figures					103857155.00								18694287.90	122551442.90	INR Twelve Crore Twenty Five Lakh Fifty One Thousand Four Hundred & Forty Two and Paise Ninety Only
Total Rate in Words	INR Twelve Crore Twenty Five Lakh Fifty One Thousand Four Hundred & Forty Two and Paise Ninety Only														

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dt: 02.04.18.

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Tender Inviting Authority: CHIEF ENGINEER : (O&M)-I

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTITING ACSR PANTHER CONDUCTOR BY AL-59 CONDUCTOR i.r.o. KASBA-KLC-SALTLAKE 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH~24 Km)

Contract No: CE/ (O&M) – (INTLS & AL59)2017-18/11 DATED 07.11.2017

Bidder Name :	STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR SUPPLY OF MATERIALS AND EQUIPMENTS

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Sl. No.	Item Description	Quantity	Units	Unit Base Price including Transport, Loading, unloading, Insurance etc. (in Rs.)	Total Base Price including Transport, Loading, unloading, Insurance etc. (in Rs.)	HSN CODE	CGST (in %)	CGST Amount	SGST (in %)	SGST Amount	IGST/UTGST (in %)	IGST/UTGST Amount	TOTAL GST Amount	TOTAL AMOUNT	TOTAL AMOUNT in Words
1.00	AL-59 Conductor as per Technical Specification for 132KV Kasba-KLC-Saltlake Double Circuit (DIC) Tr. Line (All Road Crossings/Building crossings are to be provided with Double Tension /Suspension Fittings)	48.00	Ckt Km	68966.00	3310368.00	7604		0.00		0.00	18.00%	595865.04	595865.04	3906233.04	INR Three Crore Ninety Lakh Sixty Two Thousand Three Hundred & Ninety Nine and Paise Four Only
2.00	Hardware Fittings as per Technical Specification														
2.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type)	528.00	Set	3319.00	1752432.00	7313 2011		0.00		0.00	18.00%	315437.76	315437.76	2067869.76	INR Twenty Lakh Sixty Seven Thousand Eight Hundred & Sixty Nine and Paise Seventy Six Only
2.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type)	120.00	Set	6307.00	756840.00	7314 2011		0.00		0.00	18.00%	136231.20	136231.20	893071.20	INR Eight Lakh Ninety Three Thousand &Seventy One and Paise Twenty Only
2.03	Single Suspension Hardware Fittings complete for above Conductor	312.00	Set	4455.00	1389960.00	7315 2011		0.00		0.00	18.00%	250192.80	250192.80	1640152.80	INR Sixteen Lakh Forty Thousand One Hundred & Fifty Two and Paise Eighty Only
2.04	Double Suspension Hardware Fittings complete for above Conductor	72.00	Set	6822.00	491184.00	7316 2011		0.00		0.00	18.00%	88413.12	88413.12	579597.12	INR Five Lakh Seventy Nine Thousand Five Hundred & Ninety Seven and Paise Twelve Only
2.05	Pilot Insulator Hardware Fittings complete for above Conductor	8.00	Set	4455.00	26730.00	7317 2011		0.00		0.00	18.00%	4811.40	4811.40	31541.40	INR Thirty One Thousand Five Hundred & Forty One and Paise Forty Only
2.06	Vibration Damper for above Conductor	756.00	Set	1079.00	763992.00	7318 2013		0.00		0.00	18.00%	137507.76	137507.76	901499.76	INR Nine Lakh One Thousand Four Hundred & Thirty Nine and Paise Seventy Six Only

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3.00	Conductor as SPARE as per Technical Specification (5% of the actual requirement)	2.40	Ckt. Km	689661.00	1655186.40	7604		0.00		0.00	18.00%	297933.55	297933.55	1953119.95	INR Nineteen Lakh Fifty Three Thousand One Hundred & Nineteen and Paise Ninety Five Only
4.00	Hardware as SPARE as per Technical Specification (5% of the actual requirement)														
4.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	26.00	Set	2319.00	60294.00	7316.2011		0.00		0.00	18.00%	10853.92	10853.92	101826.92	INR One Lakh One Thousand Eight Hundred & Twenty Six and Paise Ninety Two Only
4.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	0.00	Set	6307.00	37842.00	7316.2011		0.00		0.00	18.00%	6811.56	6811.56	44653.56	INR Forty Four Thousand Six Hundred & Fifty Three and Paise Fifty Six Only
4.03	Single Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	16.00	Set	4450.00	71200.00	7316.2011		0.00		0.00	18.00%	12816.40	12816.40	84110.40	INR Eighty Four Thousand One Hundred & Ten and Paise Forty Only
4.04	Double Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	4.00	Set	6822.00	27288.00	7316.2011		0.00		0.00	18.00%	4911.84	4911.84	32199.84	INR Thirty Two Thousand One Hundred & Ninety Nine and Paise Eighty Four Only
4.05	Pilot Insulator Hardware Fittings complete for above Conductor (5% of the actual requirement)	1.00	Set	4455.00	4455.00	7316.2011		0.00		0.00	18.00%	801.90	801.90	5256.90	INR Five Thousand Two Hundred & Fifty Six and Paise Ninety Only
4.06	Vibration Damper for above Conductor (5% of the actual requirement)	36.00	Set	1079.00	38844.00	7316.2011		0.00		0.00	18.00%	6991.92	6991.92	45835.92	INR Forty Five Thousand Eight Hundred & Thirty Five and Paise Ninety Two Only
5.00	Mid span compression Joint as per Technical Specification (01 set in 1.5 Km)	32.00	Set	897.00	31994.00	7616.9990		0.00		0.00	18.00%	5742.72	5742.72	37648.72	INR Thirty Seven Thousand Six Hundred & Forty Six and Paise Seventy Two Only
6.00	Compression Repair sleeve as per Technical Specification (01 set in 1.5 Km)	32.00	Set	490.00	15936.80	7616.9990		0.00		0.00	18.00%	2868.48	2868.48	18804.48	INR Eighteen Thousand Eight Hundred & Four and Paise Forty Eight Only
Total in Figures					40253835.40								7245690.37	47499525.77	INR Four Crore Seventy Four Lakh Ninety Nine Thousand Five Hundred & Twenty Five and Paise Seventy Seven Only
Total Rate in Words	INR Four Crore Seventy Four Lakh Ninety Nine Thousand Five Hundred & Twenty Five and Paise Seventy Seven Only														

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Dt. 02.04.18.

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Tender Inviting Authority: CHIEF ENGINEER : (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING AAAC PANTHER CONDUCTOR BY AL-59 CONDUCTOR i.r.o. KASBA-SONARPUR 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH-12 Km)

Contract No: CE (O&M) – SPTL/S & AL59/2017-18/11 DATED 07.11.2017

Bidder Name: STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR SUPPLY OF MATERIALS AND EQUIPMENTS

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Sl. No.	Item Description	Quantity	Units	Unit Base Price including Transport, Loading, unloading, insurance etc. (in Rs.)	Total Base Price including Transport, Loading, unloading, insurance etc. (in Rs.)	HSN CODE	CGST (in %)	CGST Amount	SGST (in %)	SGST Amount	IGST/UTGST (in %)	IGST/UTGST Amount	TOTAL GST Amount	TOTAL AMOUNT	TOTAL AMOUNT In Words
1.00	AL-59 Conductor as per Technical Specification for 132KV Kasba-Sonarpur Double Circuit (D/C) Tr. Line (All Road Crossings/Building crossings are to be provided with Double Tension /Suspension Fittings)	24.00	Ckt. Km.	809001.00	19551864.00	7604		0.00		0.00	18.00%	2979336.52	2979336.52	19531199.52	INR. One Crore Ninety Five Lakh Thirty One Thousand One Hundred & Ninety Nine and Paise Fifty Two Only
2.00	Hardware Fittings as per Technical Specification														
2.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type)	204.00	Set	3319.00	677076.00	7318 2011		0.00		0.00	18.00%	121873.68	121873.68	798949.68	INR. Seven Lakh Ninety Eight Thousand Nine Hundred & Forty Nine and Paise Sixty Eight Only
2.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type)	48.00	Set	6307.00	302736.00	7318 2011		0.00		0.00	18.00%	54492.48	54492.48	357228.48	INR. Three Lakh Fifty Seven Thousand Two Hundred & Twenty Eight and Paise Forty Eight Only
2.03	Single Suspension Hardware Fittings complete for above Conductor	108.00	Set	4456.00	481140.00	7318 2011		0.00		0.00	18.00%	86605.20	86605.20	567745.20	INR. Five Lakh Sixty Seven Thousand Seven Hundred & Forty Five and Paise Twenty Only
2.04	Double Suspension Hardware Fittings complete for above Conductor	30.00	Set	6822.00	204660.00	7318 2011		0.00		0.00	18.00%	36838.80	36838.80	241498.80	INR. Two Lakh Forty One Thousand Four Hundred & Ninety Eight and Paise Eighty Only
2.05	Pilot Insulator Hardware Fittings complete for above Conductor	6.00	Set	4455.00	26730.00	7318 2011		0.00		0.00	18.00%	4811.40	4811.40	31541.40	INR. Thirty One Thousand Five Hundred & Forty One and Paise Forty Only
2.06	Vibration Damper for above Conductor	528.00	Set	1079.00	569712.00	7318 2011		0.00		0.00	18.00%	102548.16	102548.16	672260.16	INR. Six Lakh Seventy Two Thousand Two Hundred & Sixty and Paise Sixteen Only

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3.00	Conductor as SPARE as per Technical Specification (6% of the actual requirement)	1.20	Ckt. Km	569661.00	827868.20	7604		0.00		0.00	18.00%	148956.76	148956.76	976559.08	INR. Nine Lakh Seventy Six Thousand Five Hundred & Fifty Nine and Paise Ninety Eight Only
4.00	Hardware as SPARE as per Technical Specification (5% of the actual requirement)														
4.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type) (6% of the actual requirement)	10.00	Set	3318.00	33180.00	7318 2011		0.00		0.00	18.00%	5974.20	5974.20	39154.20	INR. Thirty Nine Thousand One Hundred & Sixty Four and Paise Twenty Only
4.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	3.00	Set	6307.00	18921.00	7318 2011		0.00		0.00	18.00%	3405.78	3405.78	22326.78	INR. Twenty Two Thousand Three Hundred & Twenty Six and Paise Seventy Eight Only
4.03	Single Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	5.00	Set	4455.00	22275.00	7318 2011		0.00		0.00	18.00%	4011.40	4011.40	31561.40	INR. Thirty One Thousand Five Hundred & Forty One and Paise Forty Only
4.04	Double Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	2.00	Set	6822.00	13644.00	7318 2011		0.00		0.00	18.00%	2456.92	2456.92	16099.92	INR. Sixteen Thousand &Ninety Nine and Paise Ninety Two Only
4.05	Pilot Insulator Hardware Fittings complete for above Conductor (5% of the actual requirement)	1.00	Set	4455.00	4455.00	7318 2011		0.00		0.00	18.00%	801.90	801.90	5256.90	INR. Five Thousand Two Hundred & Fifty Six and Paise Ninety Only
4.06	Vibration Damper for above Conductor (5% of the actual requirement)	27.00	Set	1075.00	29133.00	7318 2011		0.00		0.00	18.00%	5243.94	5243.94	34376.94	INR. Thirty Four Thousand Three Hundred & Seventy Six and Paise Ninety Four Only
5.00	Mid span compression Joint as per Technical Specification (01 set in 1.5 Km)	16.00	Set	997.00	15952.00	7616 9090		0.00		0.00	18.00%	2871.36	2871.36	18823.36	INR. Eighteen Thousand Eight Hundred & Twenty Three and Paise Thirty Six Only
6.00	Compression Repair sleeve as per Technical Specification (01 set in 1.5 Km)	16.00	Set	498.00	7968.00	7616 9090		0.00		0.00	18.00%	1434.24	1434.24	9402.24	INR. Nine Thousand Four Hundred & Two and Paise Twenty Four Only
Total in Figures					19781504.20								3562470.76	23353974.96	INR. Two Crore Thirty Three Lakh Fifty Three Thousand Nine Hundred & Seventy Four and Paise Ninety Six Only
Total Rate in Words	INR. Two Crore Thirty Three Lakh Fifty Three Thousand Nine Hundred & Seventy Four and Paise Ninety Six Only														

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Tender Inviting Authority: CHIEF ENGINEER , (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTITING ACSR PANTHER CONDUCTOR BY AI-59 CONDUCTOR i.r.o. S/C LILO Part of NEW TOWN AAII-SALTLAKE GIS 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH=1.5 Km)

Contract No: CEI (O&M) – 89/TLS & ALS/2017-18/11 DATED 07.11.2017

Bidder Name : STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR SUPPLY OF MATERIALS AND EQUIPMENTS

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only.)

Sl. No.	Item Description	Quantity	Units	Unit Base Price including Transport, Loading, unloading, Insurance etc. (in Rs.)	Total Base Price including Transport, Loading, unloading, Insurance etc. (in Rs.)	HSN CODE	CGST (in %)	CGST Amount	SGST (in %)	SGST Amount	IGST/UTGST (in %)	IGST/UTGST Amount	TOTAL GST Amount	TOTAL AMOUNT	TOTAL AMOUNT in Words
1.00	AL-59 Conductor as per Technical Specification for S/C LILO Part of 132 KVNew Town AAII-Saltlake GIS 132 KV Double Circuit (DC) Tr. Line. (All Road Crossings/Building crossings are to be provided with Double Tension (Suspension Fittings)	3.00	Ckt. Km.	650651.00	2068653.00	7604		0.00		0.00	18.00%	372416.94	372416.94	2441069.94	INR Twenty Four Lakh Forty One Thousand Three Hundred & Ninety Nine and Paise Ninety Four Only
2.00	Hardware Fittings as per Technical Specification														
2.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type)	168.00	Set	3315.00	557093.00	7318 2011		0.00		0.00	18.00%	100368.56	100368.56	657558.56	INR Six Lakh Fifty Seven Thousand Nine Hundred & Fifty Eight and Paise Fifty Six Only
2.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type)	48.00	Set	6307.00	302736.00	7318 2011		0.00		0.00	18.00%	54492.48	54492.48	357228.48	INR Three Lacs Fifty Seven Thousand Two Hundred & Twenty Eight and Paise Forty Eight Only
2.03	Pilot Insulator Hardware Fittings complete for above Conductor	8.00	Set	4455.00	26730.00	7318 2011		0.00		0.00	18.00%	4811.40	4811.40	31541.40	INR Thirty One Thousand Five Hundred & Forty One and Paise Forty Only
2.04	Vibration Damper for above Conductor	108.00	Set	1079.00	116532.00	7318 2011		0.00		0.00	18.00%	20975.76	20975.76	137507.76	INR One Lakh Thirty Seven Thousand Five Hundred & Seven and Paise Seventy Six Only
3.00	Conductor as SPARE as per Technical Specification (5% of the actual requirement)	0.15	Ckt. Km	689661.00	103449.15	7604		0.00		0.00	18.00%	18620.85	18620.85	122070.00	INR One Lakh Twenty Two Thousand Seventy Nine and Paise One Hundred Only
4.00	Hardware as SPARE as per Technical Specification (5% of the actual requirement)														

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4.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	6.00	Set	3219.00	28971.00	7318.2011		0.00		0.00	18.00%	5376.78	5376.78	35247.78	INR. Thirty Five Thousand Two Hundred & Forty Seven and Paise Seventy Eight Only
4.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	3.00	Set	6307.00	18921.00	7318.2011		0.00		0.00	18.00%	3405.78	3405.78	22326.78	INR. Twenty Two Thousand Three Hundred & Twenty Six and Paise Seventy Eight Only
4.03	Pilot Insulator Hardware Fittings complete for above Conductor (5% of the actual requirement)	1.00	Set	4455.00	4455.00	7318.2011		0.00		0.00	18.00%	801.90	801.90	5256.90	INR. Five Thousand Two Hundred & Fifty Six and Paise Ninety Only
4.04	Vibration Damper for above Conductor (5% of the actual requirement)	6.00	Set	1079.00	6474.00	7318.2011		0.00		0.00	18.00%	1165.32	1165.32	7639.32	INR. Seven Thousand Six Hundred & Thirty Nine and Paise Thirty Two Only
5.00	Mid span compression Joint as per Technical Specification (01 Set in 1.5 Km)	2.00	Set	997.00	1994.00	7616.9990		0.00		0.00	18.00%	358.92	358.92	2352.92	INR. Two Thousand Three Hundred & Fifty Two and Paise Ninety Two Only
5.01	Compression Repair sleeve as per Technical Specification. (01 Set in 1.5 Km)	2.00	Set	488.00	976.00	7616.9990		0.00		0.00	18.00%	175.68	175.68	1151.68	INR. One Thousand One Hundred & Seventy Five and Paise Twenty Eight Only
Total in Figures					3238733.15								582571.97	3821705.12	INR. Thirty Eight Lakh Twenty One Thousand Seven Hundred & Five and Paise Twelve Only
Total Rate in Words		INR. Thirty Eight Lakh Twenty One Thousand Seven Hundred & Five and Paise Twelve Only													

28/3/18

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Received & Accepted dt. 02.04.18

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Tender Inviting Authority: CHIEF ENGINEER : (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTITNG ACSR ZEBRA CONDUCTOR BY ACCC DRAKE (HTLS) CONDUCTOR i.r.o.NEW CHANDITALA-RISHRA 220 KV SINGLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH~31 Km) AND REPLACEMENT OF EXISTITNG ACSR MOOSE CONDUCTOR BY ACCC DRAKE (HTLS) CONDUCTOR i.r.o.220 KV TRANSFER BUS AT NEW CHANDITALA 400 KV SUB STATION

Contract No: CE/ (O&M) – II/HTLS & AL59/2017-18/11 DATED 07.11.2017

Bidder Name	STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR SUPPLY OF MATERIALS AND EQUIPMENTS

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only.)

SL No.	Item Description	Quantity	Units	Unit Base Price including Transport, Loading, unloading, insurance etc. (in Rs.)	Total Base Price including Transport, Loading, unloading, insurance etc. (in Rs.)	HSN CODE	CGST (in %)	CGST Amount	SGST (in %)	SGST Amount	IGST/UTGST (in %)	IGST/UTGST Amount	TOTAL GST Amount	TOTAL AMOUNT	TOTAL AMOUNT in Words
1.00	HTLS Conductor to carry minimum current of 1200 A as per Technical Specification for 220 KV New Chanditala Single Circuit (S/C) Tr. Line (All Road Crossings/Building crossings are to be provided with Double Tension /Suspension Fittings)	31.00	Ckt. Km.	3639680.00	112841383.00	7504		0.00		0.00	18.00%	20275448.94	20275448.94	133116831.94	INR Thirteen Crore Thirty Nine Lakh Sixteen Thousand Eight Hundred & Thirty One and Paise Ninety Four Only
2.00	HTLS Conductor to carry minimum current of 1200 A as per Technical Specification for 220 KV transfer Bus at New Chanditala 400 KV Sub Station.	0.75	Ckt. Km.	3633560.00	2725194.75	7504		0.00		0.00	18.00%	490535.06	490535.06	3215729.81	INR Thirty Two Lakh Fifteen Thousand Seven Hundred & Twenty Nine and Paise Eighty One Only
3.00	Hardware Fittings as per Technical Specification														
3.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type)	212.00	Set	60763.00	12886556.00	7318.2011		0.00		0.00	18.00%	2319460.08	2319460.08	23373606.08	INR Two Crore Twenty Three Lakh Seventy Thousand Five Hundred & Six and Paise Eight Only
3.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type)	72.00	Set	66019.00	4753368.00	7318.2011		0.00		0.00	18.00%	855606.24	855606.24	5608974.24	INR Fifty Six Lakh Eight Thousand Nine Hundred & Seventy Four and Paise Twenty Four Only
3.03	Single Suspension Hardware Fittings complete for above Conductor	150.00	Set	14077.00	2111550.00	7318.2011		0.00		0.00	18.00%	380079.00	380079.00	2491629.00	INR Twenty Four Lakh Ninety One Thousand Six Hundred & Twenty Nine Only
3.04	Double Suspension Hardware Fittings complete for above Conductor	30.00	Set	17899.00	644364.00	7318.2011		0.00		0.00	18.00%	115985.52	115985.52	760349.52	INR Seven Lakh Sixty Thousand Three Hundred & Forty Nine and Paise Fifty Two Only

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3.05	Pilot Insulator Hardware Fittings complete for above Conductor	8.50	Set	8824.00	57344.98	7316 2011	0.00		0.00	18.00%	5528.62	5528.62	62473.72	INR Sixty Two Thousand Four Hundred & Seventy Three and Paise Seventy Two Only
4.00	Vibration Damper for above Conductor	758.00	Set	4916.00	3726428.00	7316 2011	0.00		0.00	18.00%	335378.36	335378.36	4385485.28	INR Forty Three Lakh Eighty Five Thousand Four Hundred & Eighty Five and Paise Twenty Eight Only
4.00	Conductor as SPARE as per Technical Specification (5% of the actual requirement)	1.00	Ckt. Km.	2632532.00	6011742.38	7614	0.00		0.00	18.00%	1082113.63	1082113.63	8117481.67	INR Eighty One Lakh Seventeen Thousand Four Hundred & Eighty One and Paise Sixty Seven Only
5.00	Hardware as SPARE as per Technical Specification (5% of the actual requirement)													
5.01	Single Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	15.00	Set	56762.00	973444.00	7316 2011	0.00		0.00	18.00%	164487.10	164487.10	1075535.10	INR Ten Lakh Seventy Five Thousand Five Hundred & Five and Paise Ten Only
5.02	Double Tension Hardware Fittings complete for above Conductor (Compression Type) (5% of the actual requirement)	4.00	Set	66319.00	264076.00	7316 2011	0.00		0.00	18.00%	47533.68	47533.68	311609.68	INR Three Lakh Eleven Thousand Six Hundred & Nine and Paise Sixty Eight Only
5.03	Single Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	8.00	Set	14077.00	112616.00	7316 2011	0.00		0.00	18.00%	20270.88	20270.88	132886.88	INR One Lakh Thirty Two Thousand Eight Hundred & Eighty Six and Paise Eighty Eight Only
5.04	Double Suspension Hardware Fittings complete for above Conductor (5% of the actual requirement)	2.00	Set	17899.00	35798.00	7316 2011	0.00		0.00	18.00%	6443.64	6443.64	42241.64	INR Forty Two Thousand Two Hundred & Forty One and Paise Sixty Four Only
5.05	Pilot Insulator Hardware Fittings complete for above Conductor (5% of the actual requirement)	1.00	Set	8824.00	8824.00	7316 2011	0.00		0.00	18.00%	1588.32	1588.32	10412.32	INR Ten Thousand Four Hundred & Twelve and Paise Thirty Two Only
5.06	Vibration Damper for above Conductor (5% of the actual requirement)	38.00	Set	4916.00	186808.00	7316 2011	0.00		0.00	18.00%	33625.44	33625.44	220433.44	INR Two Lakh Twenty Thousand Four Hundred & Thirty Three and Paise Forty Four Only
6.00	Mid span compression Joints as per Technical Specification (01 Set in 1.5 Km)	25.00	Set	7896.00	197400.00	7316 2011	0.00		0.00	18.00%	35532.50	35532.50	232932.50	INR Two Lakh Thirty Two Thousand Nine Hundred & Thirty Two and Paise Fifty Only
7.00	Compression Repair sleeve as per Technical Specification (01 Set in 1.5 Km)	25.00	Set	2248.00	56200.00	7316 2011	0.00		0.00	18.00%	10116.00	10116.00	66316.00	INR Sixty Six Thousand Three Hundred & Sixteen Only
Total in Figures					159208862.13							21937595.18	181146457.31	INR Eighteen Crore Thirty One Lakh Forty Six Thousand Four Hundred & Fifty Seven and Paise Thirty One Only
Total Rate in Words					INR Eighteen Crore Thirty One Lakh Forty Six Thousand Four Hundred & Fifty Seven and Paise Thirty One Only									

INDICATIVE SCHEDULE OF WORKS FOR SUPPLY OF CONDUCTORS & LINE HARDWARE				
[illegible]				Dated: [illegible]
SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING ACSR [illegible] CONDUCTOR BY HTLS CONDUCTOR [illegible] DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH [illegible] km)				
SL No.	Item Description	Quantity	Unit	Mode of transaction (Direct or Bought Out)
0	1	2	3	4
1.00	HTLS Conductor [illegible] with hardware and accessories as per Technical Specification for 132kV New Haldia [illegible] D/C Double Circuit (D/C) Tr. Line (All head Drawings/[illegible] drawings are to be provided with Double Tension /Suspension fittings)	36.00	Ckt. Km	Direct
2.00	Conductor and hardware as SPARE as per Technical Specification (5% of the actual requirement)	1.80	Ckt. Km	Direct
3.00	Mid span compression joint as per Technical Specification [illegible]	24.00	Set	Bought Out
4.00	Compression Repair sleeve as per Technical Specification [illegible]	24.00	Set	Bought Out

Received & Accepted
dt. 02.04.18.

Sterlite Power Transmission Ltd

INDICATIVE SCHEDULE OF WORKS FOR SUPPLY OF CONDUCTORS & LINE HARDWARES				
[illegible]				Dated: [illegible]
SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING [illegible] CONDUCTOR BY HTLS CONDUCTOR [illegible] DOUBLE CIRCUIT TRANSMISSION LINE [illegible]				
S. No.	Item Description	Quantity	Unit	Mode of Transaction (Direct or Bought Out)
0	1	2	3	4
1.00	HTLS Conductor to carry minimum current of [illegible] with hardware and accessories as per Technical Specification for [illegible] Double Circuit (D/C) Tr. Line (all Road crossings/Building crossings are to be provided with Double Tension/Suspension Fittings)	[illegible]	Ckt. km	Direct
2.00	Conductor and Hardware as SPARE as per Technical Specification ([illegible] of the actual requirement)	[illegible]	Ckt. km	Direct
3.00	Mid span compression joint as per Technical Specification ([illegible])	[illegible]	Set	Bought Out
4.00	Compression Repair sleeves as per Technical Specification ([illegible])	[illegible]	Set	Bought Out

Received & accepted
[illegible]

Sterlite Power Transmission Ltd

INDICATIVE SCHEDULE OF RATES FOR SUPPLY OF CONDUCTORS & LINE HARDWARES				
[illegible]				Dated: [illegible]
SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING CONDUCTOR BY HTLS CONDUCTOR [illegible] TRANSMISSION LINE (ROUTE LENGTH [illegible])				
Sl. No.	Item Description	Quantity	Unit	Mode of Transaction (Direct or Bought Out)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1.00	HTLS Conductor [illegible] with hardware and accessories as per Technical Specification for [illegible] Circuit [illegible] (Hot Line Stringing) [illegible]	[illegible]	Ckt. Km	Direct
2.00	Conductor and Hardware as SPARE as per Technical Specification [illegible]	[illegible]	Ckt. Km	Direct
3.00	Mid span compression joint as per Technical Specification [illegible]	14.00	Set	Bought Out
4.00	Compression Repair sleeve as per Technical Specification [illegible]	14.00	Set	Bought Out

Sterlite Power Transmission Ltd

Received & accepted

INDICATIVE SCHEDULE OF WORKS FOR SUPPLY OF CONDUCTORS & LINE HARDWARE				
[illegible]			Dated: [illegible]	
SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING ACSR PANTHER CONDUCTOR BY HTLS CONDUCTOR [illegible] 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH-24 KM)				
Sl. No.	Item Description	Quantity	Unit	Mode of Transaction (Direct or Bought Out)
0	1	2	3	4
1.00	HTLS Conductor with hardware and accessories as per Technical Specification for [illegible] Double Circuit [illegible] Road Crossings/Building crossings are to be incorporated with Double Tension [illegible]	48.00	Ckt. Km	Direct
2.00	Conductor and Hardware as SPARE as per Technical Specification (5% of the actual requirement)	2.40	Ckt. Km	Direct
3.00	Mid span compression joint as per Technical specification [illegible]	[illegible]	Set	Bought Out
4.00	Compression Repair sleeve as per Technical specification [illegible]	12.00	Set	Bought Out

INDICATIVE SCHEDULE OF [illegible] FOR SUPPLY OF CONDUCTORS & LINE HARDWARE				
[illegible]			Dated: [illegible]	
[illegible] ... CONDUCTOR BY ACCC CONDUCTOR i.e. KADRA-SONARPUR 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH [illegible] km)				
Sl. No.	Item Description	Quantity	Unit	Mode of Production (Direct or Bought Out)
0	1	2	3	4
1.00	ACCC Conductor Hardware and accessories as per Technical Specification for 132KV Kadra-Sonarpur Double Circuit (D/C) Tr. Line (All Road Crossings/Building crossings are to be provided with Double Tension /Suspension Fittings)	34.00	Ckt. Km.	Direct
2.00	Conductor and Hardware as SPARE as per Technical Specification (1% of the actual requirement)	1.20	Ckt. Km.	Direct
3.00	Mid span compression Joints as per Technical Specification (01 set in 5.0 km)	10.00	Set	Bought Out
4.00	Compression Repair Sleeve as per Technical Specification (01 set in 5.0 km)	10.00	Set	Bought Out

Received & Accepted
dt. 02.04.18.

Sterlite Power Transmission Ltd

INDICATIVE SCHEDULE OF WORKS FOR SUPPLY OF CONDUCTORS & ITS HARDWARES				
W.o : T No: [illegible]			Dated: 27.11.2017	
SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING ZEBRA/PANTHER CONDUCTOR BY HTLS CONDUCTOR [illegible] NEW TOWN AND SALTLAKE [illegible] 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH ~ 1.5 Km)				
Sl. No.	Item Description	Quantity	Unit	Mode of Transaction (Direct or Bought Out)
0	1	2	3	4
1.00	AL-59 Conductor with hardware and accessories as per Technical Specification for [illegible] Part of SS New Town AA III Saltlake [illegible] Double Circuit (D/C) Tr. Line (All Road Crossings/Building crossings are to be provided with Double Tension Suspension Fittings)	3.80	Ckt. Km.	Direct
2.00	Conductor and Hardware as SPARE as per Technical Specification (5% of the actual requirement)	0.19	Ckt. Km.	Direct
3.00	Mid span compression joint as per Technical Specification [illegible]	2.00	Set	Bought Out
4.00	Compression Repair sleeve as per Technical Specification [illegible]	2.00	Set	Bought Out

INDICATIVE SCHEDULE OF WORKS FOR SUPPLY OF CONDUCTORS & LINE HARDWARES				
NIT / E No.: CE/[illegible]			Dated: 27.11.2017	
SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING ACSR ZEBRA CONDUCTOR BY ACCC DRAKE (HTLS) CONDUCTOR IN NEW CHAMBA-[illegible] 220 KV SINGLE CIRCUIT TRANSMISSION LINE [illegible] AND REPLACEMENT OF EXISTING ACSR MOOSE CONDUCTOR BY ACCC DRAKE (HTLS) CONDUCTOR IN 220 KV TRANSFER BUS AT NEW CHAMBA 400 KV SUB STATION				
Sl. No.	Item Description	Quantity	Unit	Mode of Transaction (Direct or Bought Out)
0	1	2	3	4
1.00	ACCC Drake (HTLS) Conductor with hardware and accessories as per Technical Specification for 220 KV New Chamba [illegible] Single Circuit (S/C) Tr. Line [illegible] ([illegible] are to be provided with Double Tension Suspension Fittings)	31.20	Ckt. Km	Direct
2.00	ACCC Drake (HTLS) Conductor with hardware and accessories as per technical Specification for 220 kV transfer bus at New Chamba 400 KV Sub Station.	0.75	Ckt. Km	Direct
3.00	Conductor and hardware as SPARE as per Technical Specification ([illegible] of the actual requirement)	1.58	Ckt. Km	Direct
4.00	Mid span compression Joints as per Technical specification (01 Set as 3 x [illegible])	15.00	Set	Bought Out
5.00	Compression Repair sleeve as per Technical specification (01 Set as 3 x [illegible])	15.00	Set	Bought Out

Received & Accepted
21.02.18

Sterlite Power Transmission Ltd

WEST BENGAL STATE ELECTRICITY TRANSMISSION COMPANY LTD.

(A Govt. of West Bengal Enterprise)
CIN: U40101WB2007SGC113474
OFFICE OF THE CHIEF ENGINEER (O& M) - II
VIDYUT BHAWAN: 10th FLOOR: D BLOCK,
SALT LAKE CITY, SECTOR-II, KOLKATA: - 700091,
TELE PHONE /FAX NO. (033) 2359-1901. Website: www.wbsetcl.in

MEMO NO: CE/ (O&M) - II/31/*ERECTION*/571 (8) DATED: 28.03.2018

To
M/S Sterlite Power Transmission Limited,
F - 1, The Mira Corporate Suites,
1 & 2, Iswar Nagar, Mathura Road,
New Delhi,
PIN - 110 065.

Sub: Letter of Award of Contract' for Erection work for the work of: "Replacement of existing conductor by HTLS/ AL59 conductor i.r.o. different 220 KV and 132 KV Transmission Line under WBSETCL and allied work on Turn Key basis".

Dear Sir(s),

1. This has reference to the following :

   a. Our Tender Notice No. NI e-T No. **CE/ (O&M) - II/HTLS & AL 59/2017-18/11, Dated 07/11/2017.**

   b. Bidding Documents for the subject NIT uploaded comprising the following:

Section I	:	Notice Inviting Tender.
Section II	:	Instruction to Bidders.
Section III	:	Bid data Sheet (BDS).
Section IV	:	General Conditions of Contract.
Section V	:	Special Conditions of Contract.
Section VIA	:	Technical Specification (Civil Part) (available in WBSETCL's Website).
Section VIB	:	Technical Specification (Electrical Part) (available in WBSETCL's Website).
Section VIC	:	Guaranteed Technical Particulars (available in WBSETCL's Website).
Section VIIA	:	Bid Form & Attachments.
Section VIIB	:	Annexure, Price Schedule (BOQ) & Bought Out in Excel Format.

Received & Accepted 31.03.18

c. Reply of Pre - Bid Quarries and revised BoQ uploaded vide memo no:
   - CE/ (O&M) - II/02/2017-18/NIT - 11/753, Dated 27.11.2017.
   - CE/ (O&M) - II/02/2017-18/NIT - 11/834, Dated 09.12.2017

d. Notice intimating opening of Price Bid uploaded vide memo no. CE/ (O&M) - II/02/2017-18/NIT-11/297, dated 12.02.2018.

e. Your Proposal for the subject NIT uploaded vide No. **764213, Dated 12.12.2017.**

2. We confirm having accepted your proposal uploaded vide no. **764213, Dated 12.12.2017** read in conjunction with all the specifications, terms & conditions of the Bidding Documents and your subsequent letters and award on you the Contract of **Erection Work** for: "Replacement of existing conductor by HTLS/ AL59 conductor i.r.o. different 220 KV and 132 KV Transmission Line under WBSETCL and allied work on Turn Key basis". (Hereinafter referred to as the 'Second Contract').

3. The following scope of work which shall be on the basis of single source responsibility, completely covering all the Equipment specified under the Technical Specifications:

   a. Detailed design of the Equipment/ Materials.
   b. Complete manufacture including shop testing.
   c. Providing engineering drawing, data, operational manual, etc for the Purchaser's approval.
   d. Packing, forwarding, transportation and insurance of Equipment/ Material from the manufacturer's Work to the Site.
   e. Receipt, storage, preservation, insurance and conservation of Equipment/ Material at the Site.

However, the total scope of work on turn-key basis as mentioned in the bid document (under first and second contract) shall include the following but not limited to:-

3.1 **The scope of work inter-alia includes:**

(i) Design, manufacturing, testing & supply of High Temperature Low Sag (HTLS) conductor Annealed aluminium solid core conductor" except GAP conductor and AL 59 Conductor as well as required associated hardware fittings and accessories viz. suspension clamps, dead end clamps, mid-span compression joints, repair sleeves, T-Connectors, vibration dampers, etc.

(ii) Survey & profiling of existing line route using Total stations, verification of availability of statutory electrical clearances using PLS-CADD software; de-stringing of existing Conductor including dismantling of associated fittings & accessories from the above lines and stringing of each circuit with HTLS conductor

along with associated fittings and accessories with the other circuit under live condition.

3.2 The material to be supplied on final destination at site basis as covered in the bidding documents shall be designed, manufactured, tested, supplied and installed as per the requirements specified in this Tender. The requirements, conditions, appendices etc. as specified in other Sections of bidding documents shall also apply to.

3.3 The standard type disc insulators (70 & 120 KN) along with hardware fittings (except suspension clamps at suspension tower and dead end clamps at tension tower) of the existing line shall be used for re-conductoring of line with HTLS/ AL 59 conductor. The existing insulators and hardware fittings shall be inspected by the contractor for any defects and those found defective shall be replaced after approval of engineer-in-charge with fresh items to be supplied by WBSETCL.

3.4 The ACSR PANTHER/ ZEBRA conductor removed from the existing line is envisaged for re-use/ utilization by the WBSETCL in other projects. Proper handling and safety of the conductor during de-stringing, storage at site, measurement of conductor lengths, rewinding on drums at site and safe transportation to WBSETCL's designated stores along the transmission line shall be included in the scope of work.

3.5 The WBSETCL shall arrange shut down of one circuit at a time and the other circuit shall be kept under charged condition. The contractor shall de-string the existing conductor and restring the circuit with the HTLS/ AL 59 conductor section by section and restore the line in original conditions as per program finalized in co-ordination with site. **Normally Shut down will be allowed form 6 AM to 3 PM on daily basis for the replacement work. Generally the contractor has to do the stringing within this interval so that line can be charged at 3 PM every day.** No idle labour is admissible for non-availability of shut down or Right of Way constraints during erection. Appropriate safety measures along with necessary safety tools and equipments to carry out de-stringing and stringing operations under the above conditions including mechanical/ structural safety of the towers shall be the responsibility of the contractor. Necessary calculations shall be carried out by the contractor to ensure that by replacing the existing ACSR

PANTHER/ ZEBRA conductor with the HTLS/ AL 59 conductor offered, the loadings on the towers due to conductor tensions as well as loads on account of the re-conductoring activities shall be within specified limits. These calculations shall be submitted by the bidder along with the drawing approval if required.

3.6 The materials covered in this tender shall be supplied complete in all respects, including all components, fittings and accessories which are necessary or are usual for their efficient performance and satisfactory maintenance under the various operating and atmospheric conditions. Such parts shall be deemed to be within the scope of the Contract, whether specifically included or not in the Specification or in the Contract Schedules. The Supplier shall not be eligible for any extra charges for such fittings, etc.

3.7 The entire stringing work of conductor shall be carried out by tension stringing technique except where geography/ topographical or other site constraints do not permit use of tension stringing equipment. In such cases manual stringing along with other appropriate tools and equipments may be employed with the approval of WBSETCL's site in charge. Contractor is to indicate the sets of Tension Stringing Equipment in his proposal and indicate no. of stringing equipments which the bidder plans to deploy so as to meet his schedule in their offer.

3.8 Uploading of complete technical details of the proposed HTLS conductor with relevant calculation along with the bid to adjudge the sufficiency of existing towers for carrying out the up-rating works. This shall be carried out in compliances / adherence to all safety and standard requirements as per Indian Electricity Rules 1956. Design parameters and submission of detailed drawings of conductor hardware and accessories and preparation of sag tension chart, stringing chart, of the conductor used showing, sag & tension at various temperatures are included in the scope of the Bidder.

3.9 The existing insulators shall be inspected by the contractor in advance for any defects and those found defective shall be replaced with good ones by WBSETCL. During stringing if any existing insulator found defective, it will be supplied by WBSETCL.

Sterlite Power

3.10 The entire stringing work of HTLS conductor shall be carried out by tension stringing technique except where geographical / topographical or other site constraints do not permit use of tension stringing equipment. In such cases manual stringing along with other appropriate tools and equipment may be employed with the approval of engineer in charge. The contractor shall indicate in their offer, the sets of tension stringing equipment he is having in his possession and the sets of stringing equipment he would deploy exclusively for this tender. The contractor shall also engage sufficient manpower so that stringing of the conductor in one stretch is complete within the allowed shut down period of one day. No mid span joint will be allowed & hence the length of the conductor shall be decided by referring the tower schedule.

3.11 Only important road & river crossings and lines passing over civil structures will have double insulator strings. Vibration dampers are to be provided in all suspension & tension locations.

3.12 The rollers, which will be used during stringing, should be so designed that the line can be charged with the roller.

3.13 Contractor should deploy stringing/ installation experts during erection of the offered type of conductor.

4. We have also notified you vide our Letter of Award No. CE/ (O&M) - II/ 31/SUPPLY/571 (A), DATED: 28.03.2018 for award of 'First Contract' on you for the Supply of Materials including Spares for "Replacement of existing conductor by HTLS/ AL59 conductor i.r.o. different 220 KV and 132 KV Transmission Line under WBSETCL and allied work on Turn Key basis" as per Specification and as per Bid Document No. CE/ (O&M) - II/HTLS & AL 59/2017-18/11, Dated 07/11/2017 (hereinafter referred to as the 'First Contract'). You shall also be fully responsible for the works to be executed under the 'First Contract' and it is expressly understood and agreed by you that any breach under the 'First Contract' shall automatically be deemed as a breach of this 'Second Contract' and vice-versa and any such breach or occurrence or default giving us a right to terminate the 'First Contract' and/or recover damages there under, shall give us an absolute right to terminate this Contract and/or recover damages under this 'Second Contract' as well and vice-versa. However, such breach or default or occurrence in the 'First Contract' shall not automatically relieve you of any of your responsibility/obligations under this 'Second Contract'. It is also expressly understood and agreed by you that the equipment/materials to be erected by you under this 'Second Contract' when supplied, installed and commissioned under the 'First Contract' shall give satisfactory performance in accordance with the provisions of the Contract.

5. The total Contract Price for the entire scope of work under the Contract shall be ₹ 27, 42, 71,415/- as per the following break up:

i.	Total Service Charge	₹ 23,24,33,403=00
ii.	Total Testing & Commissioning Charge	Included in above
iii.	Taxes (GST)	₹ 4,18,38,012=00
	TOTAL (i + ii + iii)	₹ 27,42,71,415=00
	(Rupees Twenty Seven Crore Forty Two Lakh Seventy One Thousand Four Hundred and Fifteen only)	

6. **Date of Commencement & Completion Period:**
The Contract shall be executed within the specified time given commencing from the date of LoA.

Sl.No	Particulars	Completion Time from the date of LOA
1	Supply of Materials including spares for the work of: Replacement of existing conductor by HTLS/ AL59 conductor i.r.o. different 220 KV and 132 KV Transmission Line under WBSETCL and allied work on Turn Key basis.	Time for Completion of the total Works shall be **365 (Three Hundred and Sixty Five) days** from the date of LoA.

The time and date of completion is the essence of this contract. You are required to organize your resources and perform your work.

7. You shall prepare and finalize the Contract Documents for signing of the formal Contract Agreement and shall enter into the Contract Agreement with ***The Chief Engineer, (O&M) - II,*** WBSETCL, Bidyut Bhavan, 10th Floor, "D" Block, Salt Lake City, Kolkata - 700 091, as per the proforma enclosed with the Bidding Documents, on non-judicial stamp paper of appropriate value within 10 (ten) days from the date of this Letter of Award.

8. **Terms of Payment:**
The installation services component of the Contract Price shall be paid as under:

7.1. Ninety percent (90%) of the taxable value of erection Contract Price will be paid upon successful completion of respective items as per BOQ.

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One hundred percent (100%) of charges associated with the taxes **and duties** - of the installation services of Equipment/ Materials as admissible will be released along with the ninety percent (90%) payment.

7.2. Balance Ten percent (10%) of the **taxable value of** erection contract price will be paid after successful testing and commissioning of the installation and issue of Taking over Certificate as per provisions under GCC 29.

7.3. The Payment Certificate will be issued on the basis of quantum of work completed. Another certificate certifying the successful completion of quality check points involved in erection to be issued by Controlling Officer will be enclosed along with Payment Certificate for getting these payments.

7.4. All progressive payments on account of installation services shall be made on submission of claim / production of three (3) copies of Tax Invoice and other documents. Minimum value of each claim should be at least ten percent (10%) of total **taxable value of** installation services - of scheduled item(s) of installation services. The bills shall not be placed more than once in a month.

8. **Contract Performance Guarantee(CPG):**

An unconditional Bank Guarantee(s) towards Performance Security (ies) in respect of all the Contracts valid up to ninety (90) days after the end of Defects Liability Period of all the equipment covered under the contract is to be submitted by the Main Contractor. The proforma of Bank Guarantee is enclosed in Annexure 3/3a of Section VIIB - Form of Performance Security.

9. **Taxes and Duties:**

Variations for adjustments in taxes and duties would be restricted to direct transactions between the Purchaser and the Contractor **within Scheduled Completion Time**. These adjustments shall not be applicable on procurement of raw materials, intermediary components etc. by the Contractor and also not applicable on the bought out items dispatched directly by Sub-Contractor(s) to Site. Income Tax and Labour Welfare Cess will be deducted at source from the bills as per prevailing rules. Necessary TDS Certificate will be issued to the Contractor after deduction.

10. **Goods and service Tax (GST):**

CGST and WBGST or IGST, as the case may be, will be paid at the rate prevailing on the schedule date of or the actual completion date whichever is lower.

GST is payable against documentary evidence on submission of Tax Invoice as per GST Invoice rule along with respective SAC/ HSN code. In no case the rate will not exceed your quoted rate in price bid **beyond Scheduled Completion Period.**

Tax Invoice needs to be raised showing separately the Tax charged in accordance with the provisions of GST Act, 2017.

All other provisions regarding Taxes and Duties will be guided by the Clause no. G.C.C. 14 of the Bid Document.

Any Input Tax credit if arisen on account of GST shall have to be passed on to WBSETCL.

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11. **Liquidated Damages:**

For delay in supply of materials/supply of spares/ completion of project, LD as per the approved schedule shall be imposed on the contractor, at the rate of 0.5% per week or part thereof of delay subject to maximum of 5% of the total contract price except for spares. **The maximum limit of penalty for spares shall be ten percent (10% of corresponding value).**

The provisions of Liquidated Damages for this contract will be guided by the Clause no. G.C.C. 30 (G.C.C. 30.1 to G.C.C. 30.11) of the Bid document.

12. **Guarantee:** The contractor shall warrant that the HTLS conductors, hardware and accessories are new, unused and in accordance with the contract documents and free from defects in material and workmanship. The contractor shall also guarantee for defect free operation of the materials supplied and workmanship towards erection for a period of **sixty (60) calendar months** commencing immediately upon the satisfactory commissioning.

13. **Type Test Certificate:**

The requisite Type Tests will be guided by the Technical Specifications.

14. **Labour Compliance:**

Labour Compliance for this contract will be guided by the Clause no. G.C.C. 7 (G.C.C. 7.2) of the Bid Document.

15. **Insurance:**

Insurance Coverage for this Contract will be guided by the Clause n. G.C.C. 37 and Appendix 3 of Annexure.

16. **Controlling Officer:** The Controlling Officer for different Lines will be as follows:-

Sl. No.	Name of the Line	Controlling Officer	Mobile No.
01.	New Haldia - Haldia - Haldia NIZ 132 KV	S.E. & Area Manager, Haldia Area Office	9434910061
02.	Gokarna - Kuli 132 KV	S.E. & Area Manager, Gokarna Area Office	9434910138
03.	KTPS - Tamluk 132 KV	S.E. & Area Manager, Tamluk Area Office	9434910061
04.	Kasba - KLC - Salt Lake 132 KV	S.E. & Area Manager, Kasba Area Office	9434910040
05.	Kasba - Sonarpur 132 KV		
06.	LILO part of New Town AAIII - Salt lake 132 KV	S.E. & Area Manager, Salt Lake Area Office	9434910048

07.	New Chanditala – Rishra 220 KV	S.E. & Area Manager, New Chanditala 400 KV Area Office	9434910256

17. **Consignee Officer:** To be nominated by the Controlling Officer.

18. **Paying Officer:** The Senior Manager (F&A), Corporate Finance Department, WBSETCL, VidyutBhawan, Salt Lake, Kolkata-91 will be the paying officer. The A.G.M. (F&A) attached to C.E. (O&M) – II will be responsible for necessary scrutiny of the bills and passing for payment.

This Letter of Award is being issued to you in original. We request you to return its photocopy duly signed and stamped on each page including all the enclosed Appendices, by the authorized signatory of your company as a proof of your acknowledgement and confirmation.

Please take the necessary action to commence the work and confirm action.

Enclo: As Stated above.

Yours faithfully,

For and on behalf of

West Bengal State Electricity Transmission Company Limited

28.3.2018

(Rafikul Islam)

Chief Engineer, (O&M) – II.

Received & Accepted dt. 02.04.18.

Sterlite Power Transmission Ltd

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Tender Inviting Authority : CHIEF ENGINEER : (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTITING ACSR PANTHER CONDUCTOR BY HTLS CONDUCTOR i.r.o NEW HALDIA-HALDIA NIZ 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH-18 Km)

Contract No: CE (O&M) – HHTLS & ALBS/2017-18/11 DATED 07.11.2017

Bidder Name : STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR ERECTION, TESTING, COMMISSIONING CHARGES

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only.)

Sl. No.	Item Description	Quantity	Units	Unit Service Charge	Total Service Charge	Unit Testing and Commissioning Charge	Total Testing and Commissioning Charge	SAC Code	CGST (in %)	CGST (Amount)	SGST (in %)	SGST (Amount)	IGST/UTGST (in %)	IGST/UTGST (Amount)	TOTAL GST Amount	Total Amount Including GST	TOTAL AMOUNT in Words
1.00	Dismantling of Existing ACSR Panther conductor with hardware fittings in 132KV New Haldia-Haldia-Haldia NIZ Double circuit Transmission Line and handing over the same at WBSETCL Store as per direction of E.I.C.	36.00	Ckt. Km	140686.00	5065016.00		0.00	998729		0.00		0.00	18.00%	911460.88	911460.88	5976005.88	INR. Fifty-Nine Lakh Seventy-Five Thousand Fifty Six and Paisa Eighty Eight Only
2.00	Erection of HTLS conductor with hardware and accessories in the above Line as per Technical Specification.	36.00	Ckt. Km.	994589.00	35848284.00		0.00	998729		0.00		0.00	18.00%	6380136.72	6380136.72	41825340.72	INR. Four Crore Eighteen Lakh Twenty Five Thousand Three Hundred & Forty and Paisa Seventy Two Only
Total in Figures					40913300.00		0.00								7291597.60	47800407.60	INR. Four Crore Seventy Eight Lakh Four Hundred & Seven and Paisa Sixty Only
Total Rate in Words	INR. Four Crore Seventy Eight Lakh Four Hundred & Seven and Paisa Sixty Only																

Received & Accepted
dt- 02.04.18

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Price BoQ

Tender Inviting Authority: CHIEF ENGINEER - (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING ACSR PANTHER CONDUCTOR BY HTLS CONDUCTOR f.o.o GOKARNA-KUDI 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH-24 KM)

Contract No: CE/ (O&M) – SHTLS & A/ES/017-18/11 Dated 07.11.2017

Bidder Name: STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR ERECTION, TESTING, COMMISSIONING CHARGES

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

Sl. No.	Item Description	Quantity	Units	Unit Service Charge	Total Service Charge	Unit Testing and Commissioning Charge	Total Testing and Commissioning Charge	SAC Code	CGST (In %)	CGST (Amount)	SGST (In %)	SGST (Amount)	IGST/UTGST (In %)	IGST/UTGST (Amount)	TOTAL GST Amount	Total Amount Including GST	TOTAL AMOUNT In Words
1.00	Dismantling of Existing ACSR Panther conductor with hardware fittings in 132KV Gokarna- Kudi Double Circuit Transmission Line and handing over the same at WBSETCL Store as per direction of E-i-C	48.00	Ckt. Km	147656.00	6781488.00		0.00	998729		0.00		0.00	18.00%	1218267.84	1218267.84	7999755.84	INR Seventy Nine Lakh Ninty Six Thousand Seven Hundred & Fifty Five and Paise Eighty Four Only
2.00	Erection of HTLS conductor with hardware and accessories in the above Line as per Technical Specification.	48.00	Ckt. Km.	954359.00	47230272.00		0.00	998729		0.00		0.00	18.00%	8506848.96	8506848.96	55737120.96	INR Five Crore Fifty Seven Lakh Only Seven Thousand One Hundred & Twenty and Paise Ninety Six Only
Total in Figures					54011760.00		0.00								9725116.80	63736876.80	INR Six Crore Thirty Seven Lakh Thirty Three Thousand Eight Hundred & Seventy Six and Paise Eighty Only
Total Rate in Words	INR Six Crore Thirty Seven Lakh Thirty Three Thousand Eight Hundred & Seventy Six and Paise Eighty Only																

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Sterlite Power Transmission Ltd

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Tender Inviting Authority: CHIEF ENGINEER (O&M)-I

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING CONDUCTOR BY HTLS CONDUCTOR i.r.o. KTPS-TAMLUK 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH-18 Km)

Contract No: CE (O&M) - I/HTLS & AL/16/2017-18/11 DATED 07.11.2017

Bidder Name	STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR ERECTION, TESTING, COMMISSIONING CHARGES

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only.)

Sl. No.	Item Description	Quantity	Units	Unit Service Charge	Total Service Charge	Unit Testing and Commissioning Charge	Total Testing and Commissioning Charge	SAC Code	CGST (in %)	CGST (Amount)	SGST (in %)	SGST (Amount)	IGST/UTGST (in %)	IGST/UTGST (Amount)	TOTAL GST Amount	Total Amount including GST	TOTAL AMOUNT In Words
1.00	Dismantling of Existing ACSR Panther conductor with hardware fittings in 132KV KTPS- Tamluk Double Circuit Transmission Line and handing over the same at WBSETCL Store as per direction of the E-I-C	36.00	Ckt. Km.	140656.00	5063616.00		0.00	995739		0.00		0.00	18.00%	911450.88	911450.88	5975066.88	INR Fifty Nine Lakh Seventy Five Thousand & Sixty Six and Paise Eighty Eight Only
2.00	Erection of HTLS conductor with hardware and accessories in the above Line as per Technical Specification.	36.00	Ckt. Km.	984589.00	35445204.00		0.00	995739		0.00		0.00	18.00%	6380136.72	6380136.72	41825340.72	INR Four Crore Eighteen Lakh Twenty Five Thousand Three Hundred & Forty and Paise Seventy Two Only
Total in Figures					40508820.00		0.00								7291587.60	47800407.60	INR Four Crore Seventy Eight Lakh Four Hundred & Seven and Paise Sixty Only
Total Rate in Words							INR Four Crore Seventy Eight Lakh Four Hundred & Seven and Paise Sixty Only										

Received & Accepted dt. 02.04.18.

Sterlite Power Transmission Ltd

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Tender Inviting Authority : CHIEF ENGINEER : (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING ACSR PANTHER CONDUCTOR BY AL-59 CONDUCTOR U/A: KASBA-KLC-SALTLAKE 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH~36 Km)

Contract No: CE/ (O&M) – SVTLS & AL59/2017-18/11 DATED 07.11.2017

Bidder Name : STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR ERECTION, TESTING, COMMISSIONING CHARGES

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the bidder Name and Values only)

Sl. No.	Item Description	Quantity	Units	Unit Service Charge	Total Service Charge	Unit Testing and Commissioning Charge	Total Testing and Commissioning Charge	SAC Code	CGST (in %)	CGST (Amount)	SGST (in %)	SGST (Amount)	IGST/UTGST (in %)	IGST/UTGST (Amount)	TOTAL GST Amount	Total Amount Including GST	TOTAL AMOUNT in Words
1.00	Dismantling of Existing ACSR Panther conductor with hardware fittings in 132KV Kasba-KLC-Saltlake Double circuit Transmission Line and handing over the same at WBSETCL Store as per direction of the E-I-C	48.00	Ckt. Km.	140650.00	6751200.00		0.00	998731		0.00		0.00	18.00%	1215267.84	1215267.84	7966767.84	INR Seventy Nine Lakh Sixty Six Thousand Seven Hundred & Fifty Five and Paise Eighty Four Only
2.00	Erection of AL-59 conductor with hardware and accessories in the above Line as per Technical Specification	48.00	Ckt. Km.	580632.00	27866736.00		0.00	998731		0.00		0.00	18.00%	4861064.08	4861064.08	31866910.08	INR Three Crore Eighteen Lakh Sixty Six Thousand Nine Hundred & Ten and Paise Eight Only
Total in Figures					33767344.00		0.00								6076331.92	39833665.92	INR Three Crore Ninety Eight Lakh Thirty Three Thousand Six Hundred & Sixty Five and Paise Ninety Two Only
Total Rate in Words	INR Three Crore Ninety Eight Lakh Thirty Three Thousand Six Hundred & Sixty Five and Paise Ninety Two Only																

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Sterlite Power Transmission Ltd

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Tender Inviting Authority: CHIEF ENGINEER (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTING ACSR PANTHER CONDUCTOR BY AL-59 CONDUCTOR i.r.o. S/C LILO Part of NEW TOWN AA/I-SALTLAKE GIS 132KV DOUBLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH~1.5 Km)

Contract No: CE (O&M) – WBTL& & AL59/017-18/11 DATED 07.11.2017

Bidder Name: STERLITE POWER TRANSMISSION LIMITED

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SCHEDULE OF WORKS FOR ERECTION, TESTING, COMMISSIONING CHARGES

Sl. No.	Item Description	Quantity	Units	Unit Service Charge	Total Service Charge	Unit Testing and Commissioning Charge	Total Testing and Commissioning Charge	SAC Code	CGST (in %)	CGST (Amount)	SGST (in %)	SGST (Amount)	IGST/UTGST (in %)	IGST/UTGST (Amount)	TOTAL GST Amount	Total Amount Including GST	TOTAL AMOUNT in Words
1.00	Dismantling of Existing ACSR Panther conductor with hardware fittings in S/C LILO Part of 132 KV New Town AA/I-Saltlake GIS 132 HV Double Circuit Transmission Line and handing over the same at WBSETCL Store as per direction of the E-i-C	3.00	Ckt. Km	140856.00	422568.00		0.00	995738		0.00		0.00	18.00%	75464.24	75464.24	497932.24	INR Four Lakh Ninety Seven Thousand Nine Hundred & Twenty Two and Paise Twenty Four Only
2.00	Erection of AL-59 conductor with hardware and accessories in the above Line as per Technical Specification.	3.00	Ckt. Km.	562622.00	1687866.00		0.00	995738		0.00		0.00	18.00%	303912.88	303912.88	1991901.88	INR Nineteen Lakh Ninety One Thousand Six Hundred & Eighty One and Paise Eighty Eight Only
Total in Figures					2109834.00		0.00								379977.12	2489604.12	INR Twenty Four Lakh Eighty Nine Thousand Six Hundred & Four and Paise Twelve Only
Total Rate in Words	INR Twenty Four Lakh Eighty Nine Thousand Six Hundred & Four and Paise Twelve Only																

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Tender Inviting Authority: CHIEF ENGINEER : (O&M)-II

Name of Work: SURVEY, DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING CHARGES FOR REPLACEMENT OF EXISTITING ACSR ZEBRA CONDUCTOR BY ACCC DRAKE (HTLS) CONDUCTOR i/c/o NEW CHANDITALA-RISHRA 220 KV SINGLE CIRCUIT TRANSMISSION LINE (ROUTE LENGTH-31 Km) AND REPLACEMENT OF EXISTITING ACSR MOOSE CONDUCTOR BY ACCC DRAKE (HTLS) CONDUCTOR i/c/o 220 KV TRANSFER BUS AT NEW CHANDITALA 400 KV SUB STATION

Contract No: CE (O&M) – BHTLS & ALIP/2017-18/11 DATED 01.11.2017

Bidder Name: STERLITE POWER TRANSMISSION LIMITED

SCHEDULE OF WORKS FOR ERECTION, TESTING, COMMISSIONING CHARGES

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only.)

Sl. No.	Item Description	Quantity	Units	Unit Service Charge	Total Service Charge	Unit Testing and Commissioning Charge	Total Testing and Commissioning Charge	SAC Code	COST (in %)	COST (Amount)	SGST (in %)	SGST (Amount)	IGST/UTGST (in %)	IGST/UTGST (Amount)	TOTAL GST Amount	Total Amount Including GST	TOTAL AMOUNT In Words
1.00	Dismantling of Existing ACSR Zebra conductor with hardware fittings in 220 KV New Chanditala-Rishra Single circuit Transmission Line and handing over the same at WBSETCL Store as per direction of the E-i-C	31.00	Ckt. Km.	140630.00	4360530.00		0.00	998729		0.00		0.00	18.00%	784895.40	784895.40	5145106.40	INR. Fifty One Lakh Forty Five Thousand One Hundred & Ninety Six and Paise Forty Eight Only
2.00	Erection of HTLS conductor with hardware and accessories in the above Line as per Technical Specification.	31.00	Ckt. Km.	1255000.00	38942500.00		0.00	998729		0.00		0.00	18.00%	7009725.00	7009725.00	45952225.00	INR. Four Crore Sixty Three Lakh Six Thousand Six Hundred & Twenty Two Only
3.00	Dismantling of Existing ACSR Moose conductor with hardware fittings i/c/o 220 KV Transfer Bus at New Chanditala 400 KV Sub Station and handing over the same at WBSETCL Store as per direction of the E-i-C	0.75	Ckt. Km.	140656.00	105492.00		0.00	998729		0.00		0.00	18.00%	18988.56	18988.56	124480.56	INR. One Lakh Twenty Four Thousand Four Hundred & Eighty and Paise Fifty Six Only
4.00	Erection of HTLS conductor with hardware i/c/o 220 KV Transfer Bus at new Chanditala 400 KV Sub Station as per Technical Specification	0.75	Ckt. Km.	1265900.00	949425.00		0.00	998729		0.00		0.00	18.00%	170896.50	170896.50	1120321.50	INR. Eleven Lakh Twenty Thousand Three Hundred & Twenty One and Paise Fifty Only
Total in Figures					44568153.00		0.00								8038467.54	52606620.54	INR. Five Crore Twenty Six Lakh Ninety Six Thousand Six Hundred & Twenty and Paise Fifty Four Only
Total Rate in Words	INR. Five Crore Twenty Six Lakh Ninety Six Thousand Six Hundred & Twenty and Paise Fifty Four Only																

Received & Accepted dt. 02.04.18.

Sterlite Power Transmission Ltd

28/3/18 28/3/2018 28/3/18

Annexure-B.8.1

सं. 22/22/2023- ओ एम [268631]
भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power

F-Wing, 2nd Floor, Nirman Bhawan,
New Delhi, dated 4th July, 2023

To,

1. Chairperson, Central Electricity Authority, New Delhi.
2. Principal Secretary/Secretary (Energy) of State Governments/UTs.
3. Secretary, Ministry of New and Renewable Energy, CGO Complex, Lodhi Road, New Delhi
4. Secretary, CERC New Delhi.
5. Secretary, State Electricity Regulatory Commissions.
6. Chairman, State Power Utilities/SEBs.
7. Chairman, CPSUs under Ministry of Power.
8. Chairman, CPSUs under Ministry of New and Renewable Energy.
9. Member Secretary, Regional Power Committees
10. CMD, Grid-India, New Delhi.
11. ED, NLDC, New Delhi

Subject: Continuation of Scheme for "Operationalization of the Power System Development Fund (PSDF) for the 15th Finance Commission cycle from FY 2021-22 to FY 2025-26"- reg.

Sir/Madam,

Sanction of the President is conveyed for continuation of scheme for 'Operationalization of the Power System Development Fund (PSDF) for the 15th Finance Commission Cycle from FY 2021-22 to FY 2025-26'. An outlay of Rs.11,000 crores (Rupees Eleven Thousand crores) has been approved to facilitate execution of Projects through PSDF from FY 2021-22 to FY 2025-26. In addition, Rs.2,000 crores (Rupees Two Thousand crores) have been kept for meeting contingent requirements.

2. The objective of the PSDF is to utilize the funds to bring improvement in the Security & Reliability of the Indian Power System. The funding from PSDF will be utilized for the projects which are primarily aimed for maintaining the reliable and secure operation of the grid and for the removal of congestion in the transmission corridors which will finally lead to overall development of the power sector in the country.

3. Following types of the projects will be funded from PSDF :

(a) Creating necessary support for integration of Renewable (RE) Energy like solar, wind, hybrid system and creation of adequate energy storage capacity;
(b) Installation of reactive energy generators for improvement of voltage profile in the Grid;
(c) Installation of standard and special protection schemes, pilot and demonstrative projects;
(d) Renovation and Modernization (R&M) of transmission and distribution systems for relieving congestion;
(e) Creating necessary transmission systems of strategic importance; and
(f) Any other scheme/project in furtherance of the above objectives, such as conducting technical studies and capacity building, etc.

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4. The illustrative list of new projects to be funded from PSDF is as under :

(a) Battery Energy storage system at least till the cost of storage is high.
(b) Supporting Renewable Energy project development through market mechanisms by national agencies like SECI.
(c) Offshore wind project – underwater sea cable transmission portion.
(d) SLDC cum REMC at Ladakh, REMCs at 3 more locations & Disaster Recovery Center at RLDC-3 nos& NLDC-1 nos to be funded through PSDF.
(e) Security Operation Centre at SLDCs for real-time cyber security monitoring.
(f) Pilot project for dynamic line rating in each region
(g) Communication scheme for AMR and real time telemetry for 100% grid visibility.
(h) Supporting new technology development needed for power sector.
(i) Supporting Grid/feeder monitoring

5. Following entities are eligible for availing support under PSDF :
(a) Generating Companies,
(b) Transmission Licensees,
(c) Distribution Licensees,
(d) Load Despatch Centers and
(e) Regional Power Committees.
(f) Public Sector Undertaking (PSUs) primarily working in power and Renewable Energy sector

6. Private Sector Entities are not eligible to avail of this fund.

7. The revised guidelines for implementation of the PSDF scheme will be issued shortly.

Yours faithfully,

(Hausuanthang Guite)
Under Secretary (OM)
Telefax: 23062492
Email : opmonitor-power@nic.in

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Contd/- from pre-page.

Copy to:

1.Secretary, Department of Economic Affairs, Ministry of Finance, North Block, New Delhi.
2. Secretary, Department of Expenditure, Ministry of Finance, North Block, New Delhi.
3.Chief Executive Officer (CEO), Niti Aayog, Sansad Marg, New Delhi.

Copy for information to: PPS to Secretary (Power)/PSO to SS&FA(AU)/Sr. PPS to AS(AT)/All Joint Secretaries/Economic Adviser/Directors/Dy. Secretaries of Ministry of Power.

Copy to: Incharge, NIC, Ministry of Power for uploading the letter on the website of Ministry of Power under 'New Notices' with heading "Continuation of scheme for Operationalization of the Power System Development Fund (PSDF) for the 15th Finance Commission cycle from FY2021-22 to FY2025-26".

(Hausuanthang Guite)
Under Secretary (OM)
Telefex: 23062492
Email : opmonitor-power@nic.in

Annexure B.8.2

DAMODAR VALLEY CORPORATION

Implementation of SAMAST in DAMODAR VALLEY CORPORATION (DVC)

DETAILED PROJECT

REPORT

BY

SLDC, DVC, KOLKATA

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Table of Contents

1. Summary of Proposal

In order to get aligned with the Regulatory norms, to ensure enhanced transparency & efficient decision making in real-time grid operations through optimal energy scheduling and despatch, credible and dispute-free deviation settlement mechanism to facilitate power market/ trading, improved & efficient process flow in a timely manner (workflow-based user-friendly processes), availability of real-time meter data with AMR facility and reliable system with high availability (through deployment of robust hardware and software), implementation of 'SAMAST' recommendations in the areas of Integrated Software Modules for Energy Scheduling, Accounting, Metering & Transaction records associated with Communication, Hardware infra is essential in respect of DVC / DVC State Load Despatch Centre.

2. Justification of the Project

2.1 Analysis of the Objective

A. The problem / constraint to be addressed:

1. The critical activities pertaining to various SLDC core functions viz. Scheduling, Energy Accounting, Open Access NOC Approval & Billing, Deviation Settlement, Control Room Activity Management, Outage Management etc. are being managed manually due to lack of necessary infrastructure.
2. With the introduction of 5-minute time-block wise Scheduling and Energy-Settlement, the challenges with regard to Scheduling, Accounting and preparation of Statements in line with relevant regulations and need to be addressed.
3. Implementation of SAMAST recommendations as per mandate of CERC / Forum of Regulators (FOR).

B. Objective of the project / scheme / activity

a. Efficient real-time operations through optimal scheduling and despatch including real-time revisions.

b. Uniform energy accounting and settlement of power for both Inter-State and Intra-State energy transactions.

c. Implementation of ABT for intra-state entities.

d. Facilitating non-discriminatory open access to eligible customers and related procedure of Approval, Billing and Settlement.

e. Implement credible and dispute-free Deviation Settlement Mechanism for intra-state entities and DVC State & to facilitate power market/trading.

f. Regulatory reporting / compliance

g. Reactive Energy Pricing

h. Archival and Utilization of Energy Meter Data

i. Accounting of Expenditure of SLDC & Necessary Governance Structure

j. Implementation of Despatch with Ancillary Services

C. How the Problem / constraint would be addressed through the project / scheme / activity

a. Demarcation of Interface boundary & identification of Pool Members

b. Timely availability of meter data to SLDC for preparation of various Accounts as per various regulatory provisions.

c. Compliance to new DSM regulation, IEGC (latest Regulation and subsequent amendments), WBERC, JSERC and other relevant regulations, as applicable.

d. Development of integrated software solutions covering different modules so that data exchange among these verticals/ functional departments becomes smooth.

e. Timely reporting and sharing of data with internal and external stakeholders.

f. Integration with ERLDC WBES/ LC Outage modules, NOAR/GOAR & Other relevant third-party software platforms for exchange of data as per requirement.

D. Financing and other commercial details

Grant from PSDF as per as per the benchmark price approved by the Appraisal Committee and the balance amount from DVC is required for successful implementation of SAMAST scheme.

E. Merits and limitations (if any) in the implementation of the project/ scheme/ activity.

Merits

a. Regulatory compliance and enhanced transparency.

b. Efficient real-time operations through optimal scheduling and despatch incl. real-time revisions.

c. Credible and dispute-free Deviation Settlement Mechanism to facilitate power market / trading.

d. Improved process flow (workflow-based user-friendly processes).

e. Availability of real-time meter data and with proper communication system through AMR.

f. Reliable system with high availability (through deployment of robust hardware and software)

2.2 Target Beneficiaries of the Project:

Various power sector entities which fall under the jurisdiction of DVC State:

1. SLDC
2. ALDC
3. The Transmission Wing of DVC
4. Generating Stations of DVC (Thermal, Hydel & RE)
5. State DISCOM
6. Open Access Customers & Captive Generators
7. Export Beneficiaries
8. ERLDC & ERPC

2.3 Identified Source of Funding

Grant from PSDF as per as per the benchmark price approved by Appraisal Committee and the balance amount from SLDC Development Fund is required for successful implementation of SAMAST scheme.

2.4 Details of Activities for Project/ Scheme:

Sl. No.	Activity
1	Identification of Intra State Entities
2	Demarcation of Interface boundary for each Intra State Entity
5	Assessment of IT infrastructure (Hardware and Software) requirement
6	Preparation of Bill of Quantities (considering logistics already in place)
7	Preparation of Detailed Project Report and completion of first stakeholder workshop
8	Approval of the State-specific SAMAST scheme by DVC Management Board
10	Commencement of Interchange Scheduling by SLDC for all the Intra State Entities
13	Application for funding from Central Government/PSDF
14	Inviting tenders
15	Placement of Award
17	Implementation of the recommended IT infrastructure-Hardware

Sl. No.	Activity
18	Implementation of the recommended IT applications- Software a. User Registration b. Short term Open Access Processing c. Scheduling d. E-Log Book e. Meter Data Processing and Validation f. Energy Accounting g. Deviation Settlement h. Billing and Clearing i. Data Archival and Retrieval j. Management Information System k. Outage Management Systems
19	Computation of transmission losses for each 15-min by SLDC
20	Preparation of Energy Accounts a. Deviation accounts for all intra State Entities b. State Energy Account (SEA) c. Implemented Schedule – DC, Entitlement, Injection Schedule, Withdrawal Schedule, STOA & PX Schedule, Scheduled Losses, Interchange with Regional Grid
21	Computation of T&D Loss
22	Stakeholder workshops by SLDC on SAMAST system
23	Annual 'Peer review' of SAMAST by SLDC/ERLDC

2.5 Executing Agency

The ERP (Enterprises Resource Planning) Department of DVC is responsible for tendering and awarding of the entire SAMAST Software applications including procurement of Cloud storage, necessary Hard-wire IT & Communication infrastructure & Integration with the ongoing ERP Module, Deployment & Commissioning of the project. Detailed breakup of respective department is provided below:

Task	Responsible Entities
Ensuring Availability of Energy Meter Data of all points with Data Validation & Checking [for meters covered under SEMA & RAMR projects]	System Group, DVC [SPM]
Development of SAMAST integrated software solution, Scope finalization	SLDC, ERP
Preparation of DPR & Application for fund approval under PSDF	SLDC
Tendering & Procurement Activities	ERP
Bidding Guidelines	As per DVC Works & Procurement Manual & Management Board Approval

Support required from External/Industry Experts/ Solution Providers in implementation of SAMAST

Head	Responsible Entities
Hardware for Data Centre, Backup and Disaster Recovery	Reputed Hardware Vendors
Integrated SAMAST Software Solutions	Power Sector Experts/ Vendors having experience in implementing SAMAST software solutions at State level/ National Level

2.6 Timeline for implementation of Project/ Scheme/ Activity

Timeline of the Project / Scheme / Activity	
Duration of Project (in Months)	**18 months**
Likely Start Date	**August 2023**
Likely Completion Date	**February 2025**

Timeline of Activities

S.No.	Description	Year	2023-24								2024-25									
		Month	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25
1	Project Approval	1																		
2	Bid Preparation	1																		
3	Bidding Period	4																		
4	Evaluation, Contract Award and Mobilization	1																		
5	1st Disbursement (90% of the Project cost)	1																		
6	Project Status Report	12																		
7	2nd & Final Disbursement (10% of the Project cost)	30/36																		

Note:	As per payment term of the Contract 10% payment will be withheld till completion of Guarantee/ warranty period. So 2nd and final disbursement will be after 12/18 months afetr project completion

3. Budgetary Cost Estimates to Implement SAMAST in DVC

The components required for SAMAST implementation can be categorized broadly in four heads as shown below:

Component #1	**Component #2**	**Component #3**	**Component #4**	**Component #5**
Communication & Integration with 3rd Party Software	SAMAST Integrated Software	Communication Facility & IT Infrastructure	Training, Support & Capacity Building	AMC or ARC Part

Component # 1: Communication & Integration with 3rd Party Software

- Integration with the existing Metering Software module (SEMA & RAMR)
- Establishment of Suitable communication mode for data fetching & processing
- Integration with ERP & Load Forecasting Software module of DVC
- Integration with various operational software of RLDC/ NLDC/ Power Exchange
- Integration with SCADA & URTDSM system through necessary firewall/ data diode

Component # 2: SAMAST Integrated Software Solution

- Operating Systems (Linux/ Windows/ AIX)
- License fee for OS and Database
- Integrated Solution covering software modules for following functions:
    - Scheduling
    - Meter Data Management
    - Energy Accounting
    - Deviation Settlement
    - Transmission Losses
    - Open Access Management (short-term)
    - E-Log Book & Control Room Management
    - Billing, Collection & Disbursal
    - Management Information System and Reporting solutions
    - Outage Management
    - Data archival and Data Analytics
    - Data security & Cyber Security

Component # 3: Communication Facility & IT Infrastructure

- Cloud Storage & Database
- Network and security related components
- Data back-up
- System software (Operating System, Database, Antivirus software, etc.)

Component # 4: Training, Support & Capacity Building

- Manpower Deployment for Implementation
- Training Sessions to In-house employees and Beneficiaries
- Capacity Building

Component # 5: AMC or ARC Part

- Annual Maintenance Contract/ Annual Rate Contract for 5-Years' tenure after 'Go-Live'
- AMC for Software Maintenance purpose & attending Troubleshooting.
- Periodic testing

Note: Detailed requirements under each of components for implementing the SAMAST scheme is provided in subsequent sections.

3.1. Component #1: Communication & Integration with 3rd Party Software

Cost Estimate for Integration with 3rd Party Software & Necessary Communication facilities:

A. Price Part for Communication & Interfacing with 3rd Party Software					
Item Sl. No.	**Item Description**	**No. of items**	**Rate (Rs.)**	**GST (Rs.)**	**Total Price (Rs.)**
A.13	Interfacing with RLDC/NLDC or other Third-party Application Software	01	₹ 42,00,000	₹ 7,56,000	**₹ 49,56,000**

3.2. Component #2: SAMAST Integrated Software Solutions

Software components comprises cost for design, development, implementation and testing of various software applications for Scheduling, Open Access, Energy Accounting, Billing and Settlement Financial Accounting, Outage Management, MIS Reporting, Website and Regulatory/Statutory compliance. The key functional requirements of each of the modules are mentioned below in detail:

- **Web Based Energy Scheduling Module**

This is a web-based energy scheduling software which enables Power System Operating companies to manage its daily activity of scheduling to different entity registered at SLDC. The intent of this system is to facilitate implementation of a uniform approach towards energy scheduling through a common software solution. It is a one-stop solution for an authorized user for all necessary details about energy scheduling in SLDC.

Module Coverage Areas

Availability Based Tariff (ABT) Scheduling Module will have the following modules:

- Scheduling and Dispatch
- Day ahead scheduling.
- Real Time Scheduling Revisions
- Processing of Implemented Schedules
- Compensation calculation for Generators for less Schedule (as per CERC IEGC Reg. & Amendments thereof)
- Sharing of Compensation Charges among beneficiaries
- Ramp rate assessment of Thermal Generators (as per NLDC Procedure)

Salient Features & Basic Objectives

- User Authentication and Authorization
- Instant display of all important updates in Notification Panel

- Add/edit/view declarations create/view entitlements and add/edit/view requisitions against declaration of Intra / Inter generators.
- Detailed information about Declaration, Entitlement, Requisition and Regulation considering PPAs, STU losses, PoC loss, Transaction in PX platform, WBES of ERLDC.
- Wheeling and Un requisitioned Surplus details.
- Surplus / Shortfall power management
- Merit Order Despatch (MOD) – Centralized & Decentralized
- Real-time Integration with GRID-India (Centre - ERLDC) for Final Schedule data
- Generator-wise injection schedule summary and DISCOM wise Drawl schedule summary.
- Calculation & Record of Curtailment based on various constraints.

- Calculation/approval/scheduling under GNA/ T-GNA
- Scheduling/ approval under URS/ SCED/ RRAS/ TRAS or any other type of scheduling as per IEGC/CERC guidelines.
- Grid operator friendly dashboards and user interfaces

Modules for Scheduling

- Log In - Home Page with Dashboard
- Configuration Modules
- Utility
- User
- Regional Loss / State Loss / DISCOM Loss
- Share Allocation (Centre & State) Generators
- Declaration (Station / Unit wise) /Ramp rate (Up & Down) /Technical Minimum or Turn Down Limit
- Demand / Requisition
- Surplus / Shortfall power management
- DVC Generator Schedule (SGS & CGS Schedule) of Thermal /Gas /Hydro /Nuclear /Renewable (Solar and Wind) / PSP (Pumped Storage Plant) /SHP (Small Hydro Plant) /Co-gen, LHP (Large Hydro Plant) and CGP /IPP along with share of DVC /other beneficiaries as per the PPA/PSA
- Share allocation management (Centre and State)
- Bilateral Scheduling Day Ahead/ Intra Day-
    - LTA
    - MTOA
    - STOA
    - GNA/ T-GNA (if applicable in future)

- Scheduling under any sort of Market avenues (DAM / RTM / G-DAM / G-TAM/ HP-DAM) of the 3(three) Power Exchanges (IEX, PXI & HPX)
- Transmission Constraints & associated Curtailments thereof
- Full Schedule of Thermal /Gas /Hydro /Nuclear and Renewable (Solar and Wind).
- Net Schedule
- Curtailment
- Process Management
- Internal Reports & Public Reports

- Integration with National Open Access Registry (NOAR) / Green Open Access Registry (GOAR)
- DC Revision and Acceptance- Intra-Day/ Day-Ahead
- Intra-State GNA/ T-GNA acceptance and scheduling
- Intra-state Scheduling under Power-swap / Power-Banking etc.
- Reserve Shut-Down (RSD) / Unit Shut-Down (USD) of Generators
- Computation of Compensation of Generators for Less Schedule & Share of Compensation amount among the beneficiaries
- Assessment of Ramp-rate achieved by the generator.

More detailing about the procedure of the above-mentioned module:

- Provision to capturing details of Station / Generators i.e. name, Total Station Installed Capacity, unit wise Installed Capacity and % Auxiliary Consumption, Normative DC, category of the generating station (Thermal, Hydro, RE-Solar, Non-Solar-wind/SHP/Co-gen, LHP)/ and CGP/IPP along with share of DVC/other beneficiaries as per the PPA/PSA.
- Currently scheduling is done in 15 mins (96 blocks), provision for 5 mins (288 blocks) scheduling shall be provided.
- Provision of entry for Time-block wise Ramp-up and Ramp-down values, Technical Minimum Limit (MTL) or Turn Down Level, remarks tab etc.
- Power plants will post their Declared Capacity (DC), Technical Minimum (MTL) or Turn Down Level and Ramp rate (Up/Down) in 15 / 5 mints time blocks (as applicable) on Day-Ahead and Real-time basis. SLDC will accept the same with time stamping & remarks.
- On acceptance of DC (Day-ahead/ Intra-day) by DVC SLDC, the entitlements will be generated and visible to the respective beneficiaries as per their share allocation. Maximum entitlement will be restricted up to 100% of Normative Station DC.
- On-Bar and Off-Bar DC & Entitlement as applicable.
- The power availability for DVC DISCOM will also get generated & published accordingly.
- ALDC and the beneficiaries will punch their requisitions from respective P/Hs through separate User ID & P/W for both Day-ahead/ Intra-day revisions within the timelines specified by IEGC & GNA Regulations.
- Provision of Open Access Entity-wise ATC /TTC & Curtailment in case of schedule above ATC limit.
- Provision of Intra-state DISCOM-wise segregated GNA and Curtailment in case of schedule exceeding the limit.
- As per the requisitions punched by respective beneficiaries, the schedules will be generated considering the Tech. Minimum Limit (MTL) and Ramp up / Ramp down limits of the generators.

  The computation of schedule will also take care the Reserve Shut Down (RSD) of units, Station-wise MT/ Advance or Day-ahead STOA schedule, Constraints due to outage of transmission element(s) and any other statutory issues (i.e., Power Supply Regulation / any instruction from Coml.).

- ALDC, each Intra-state entity and Interstate beneficiaries will be given access to view the Station DC, Entitlement/ Availability and Schedule for the respective Tied-up stations/units under separate portfolio having individual UID and P/W.
- Entitlement of ALDC will be generated considering unallocated DC of Export-oriented generators, total DC of the pool generators, Hydel generators MPL, & ISGS (Thermal /Hydro & RE) share after excluding export commitment of BPDB & STOA, if any, and any other commitment.
- There shall be provision of fetching and reporting the MPL, ISGS Share (Thermal /Hydro & RE), IEX sale / Purchase / STOA & BPDB schedule etc. from ERLDC WBES.
- After acceptance of Schedule of the intra-state entities, the net drawl / wheeling / injection schedule at their boundary will be generated incorporating the DVC STU loss and the same will be visible on their respective portfolio.
- Based on the requisition (Demand Forecast) placed by DVC DISCOM, Hydel generation forecast, RE forecast, schedule of intra-state beneficiaries; net DVC Internal Requirement (A) will be calculated block-wise on Day-ahead as well as on real-time.
- Block-wise Net DVC Schedule(B) data will be obtained from ERLDC WBES (inter-state beneficiaries/ share of DVC).
- Total Generation required will be calculated aggregating (A) and (B), as mentioned above.
- Total Required Generation quantum in MW (96 BLOCK) will be allocated first to the MUST-RUN (Solar/ Small Hydro) generators upto their full dispatchable capacity.
- Rest amount will be distributed among the on-bar units as SG on basis of Merit Order Despatch (MOD), MTL of the units, system constraints, ramp rate and DC limited upto 100% of Normative value with full Edit right to SLDC.
- Provision of SCED, URS, AS reserve while allocation of SG to the thermal generators.
- Provision for fetching data / entry (if not available in ERP) from ERP(OSU) such as Actual Generation (AG), monthly ECR, Station Heat-rate (SHR), Secondary Fuel Oil consumption (SFC), Landed Price of Primary Fuel (LPPF), Landed Price of Secondary Fuel (LPSF), % actual Auxiliary Consumption. Based on the SG & afore-mentioned data compensation amount will be calculated for each thermal station/ generator on weekly/ monthly basis.
- Provision of sharing of the Compensation amount among the Beneficiaries based on the Surrendered quantum as per IEGC.
- Provision of fetching SCADA data for Actual Generation of the Generators for assessment of Ramp-rate as per NLDC Procedure.
- The finalised SG of stations/units will be uploaded in site upon acceptance/ submission from SLDC, DVC. The same can be viewed at the portfolio of respective Stations.
    - Provision for number of Generating unit entity as 50.
    - Provision for number of inter-state /intra-state Open access customer as 300.
    - Provision of power swap/ power banking arrangements
    - Details of the scheduling described in IEGC is included in the scope which are not covered in the SLDC module,
- Provision of Bi-directional SCADA integration needs to be provided.

➢ **Open Access Module**

The functionality shall broadly cover open access customer registration, approval, and grant of permission for short term open access for use of intra- state transmission system and / or distribution

system, Concurrence / NOC for inter-state transactions, Congestion Message Generation, Web based scheduling integration.

The major functionalities of the software

- Online filling of applications by applicant for interstate / intra state short term open access
- Issuance of guidelines by SLDC
- Forwarding concurrence to RLDC/ Power exchange/ trader in case of interstate open access application.
- Day Ahead, Contingency Application approval checking real-time transmission corridor margin from SLDC scheduling software. For intra-state O/A, Push applications directly into SLDC Scheduling software on approval.
- Advance Application Approval considering margin from Available Transfer Capability.
- FCFS Application Approval considering revised margin after Advanced application Approval.
- Approval Bill Generation considering applicable charges depending upon master data, utility, applicant
- NOC Check for generators integrating with SLDC scheduling software
- The application should have the provision for admin to change the application approval & charges.
- Application revision by applicants and corresponding charges calculation
- Automatic application curtailment detection integrating with scheduling application & corresponding curtailed approval
- Renewable energy consideration
- Application and Utility registration as per National Open Access Registry Format
- Payment Entry by Applicants
- Payment Reconciliation
- TDS Entry & Reconciliation
- Calculate interest amount in case of delayed payment as per SERC / CERC regulations.
- Refund calculation
- Interest Entry by Applicants & reconciliation
- Excess payment Entry by Applicants & reconciliation
- TDS, Applicant Reconciliation Certificates Upload by applicants and reconciliation
- Dynamic reports as per State Regulatory Commission/SLDC requirements.

- Integrated MIS integrating with Scheduling
- Integration of Open Access system with an internal e-mailing system through SLDC email accounts for facilitating two-way communications between SLDC and the injecting/drawee entities.
- Site Mail Box: Provision to display e-mails in software itself pertaining to a particular user
- Email / SMS notifications to be sent to customers on submission of registration / application, approval status etc.
- Notifications: Notifications for important reminders, events, application punch, new revision publish etc. to be incorporated in the application
- Maker checker feature for applicants, utility registration, Charges change, RE utility mapping change etc.
- Sharing of data from Open Access module to Scheduling module for preparing schedules and to Energy Accounting module for preparing DSM accounts.
- Integration of Open Access system with the National Open access Registry (NOAR) platform and data from NOAR platform should be archived for report generation.

- The system and flow shall be user friendly and designed in a manner to accommodate future changes.
- The application is to be hosted at SLDC server since the submission and processing of applications is a continuous process. Some of the important aspects of the software are described in modules mentioned below.

Registration of New Customer

- The embedded applicant in Transmission System who wants to avail STOA for trading of power through Intra –State, collective transaction (power exchanges) and bilateral transaction can apply online for obtaining guidelines from SLDC in prescribed format.
- The unique reference number for acknowledgement of application at SLDC should be generated by the software after receipt of the application and applicant can be able to take out the printout of receipt.

- The guidelines for compliance of all regulatory requirements as per CERC/State Regulatory Commission/ CEA regulations should be sent through email to the applicant and other concerned authorities indicating the application number of the applicant and reference number of SLDC.
- After completing all regulatory requirements applicant again submits the application in the prescribed format in hardcopy along with all documents as defined in guidelines and demand drafts for application processing fees and connection charges.
- After receiving all the documents and payments through demand draft/online NEFT/RTGS, SLDC shall process / verify the application as per CERC/State Regulatory Commission/CEA regulations. If any deficiency is found, the same has to be intimated/returned to the applicant through software and email. If the application is completed in all respects, NOC/ Standing clearance.
- Consent shall be issued by SLDC as required by the applicant for the duration (maximum of one month at a time) & quantum based on availability of corridor/ contract demand of the applicant etc. and applicant should be able to download NOC/Standing Clearance / consent online.
- After issuing NOC/Standing clearance or consent, the software shall register the applicant to SLDC for which corporate name, user id/password for that applicant should be generated and intimated to the applicant through email.
- Once the applicant registered with SLDC and unique registration no. shall be generated for that customer, he can apply online application in future with login/password.

For Existing Customer

- All the traders / applicant other than already registered through the process(a) as defined above must apply for online registration with SLDC and software should provide its unique corporate name, user id and password.
- The software shall be able to display different portal for obtaining NOC/ standing clearance through collective transaction and for obtaining consent for bilateral transaction.
- The existing customer should be able to apply online for obtaining NOC/standing clearance / consent for the period as per CERC/State Regulatory Commission regulation. Applicant should submit their application indicating the details of payment.

- Applicant can apply and submit online for obtaining consent from SLDC for day-ahead/contingency and first-cum-first serve/ advance reservation for trading of power through bilateral mode as per open access regulation of State Regulatory Commission/CERC.

- After submission of the application a reference no. should be generated by the system and applicant can print the same. The reference no. should also be conveyed through email/ SMS to the applicant as well as SLDC. SLDC shall be able to upload the details of application received through email/ fax.
- Software should be able to check the quantum and duration of power sold / purchase by the seller / buyer through power exchange / bilateral mode. The Applicant cannot be able to apply the quantum of power more than its capacity / contract demand through power exchange/bilateral put together.
- After verification of the application by SLDC, NOC/consent/ rejection shall be uploaded in the system and information for the same should be conveyed to the applicant / SLDC through e-mail/SMS.
- If the applicant has not applied for NOC/Standing clearance for continuously for three months, a fresh application as a new customer must be made by the applicant.
- Applicant should be able to view/print the consent / rejection given by the SLDC through their login / password.
- Facility for online application should be provided in prescribed format or the scan copy of the application can be uploaded in the system. Application received through fax / email, SLDC should be able to enter the same into the system through excel or forms and convey the reference no. to the applicant as well as SLDC through email/SMS.

STOA Customer should be able to

- Submit applications online both for intra-state and inter-state open access transactions along with provision for surrender of application.
- View the status of the registrations / applications submitted, print NOC / consent / OA approval given by SLDC, enter the payment details, update / change status of inter-state concurrences.
- Any other details as required by SLDC / Customer.
- Can withdraw application before congestion check is done
- Can apply for revisions of Applications
- Submit payment details tagging application Numbers against NEFT/RTGS/Bank Draft
- View status of submitted payments, view comments for approved or rejected applications
- Can generate reports on payment based on date range
- Can submit Interest and Access payment and track status.

Similarly, SLDC should be able to

- View, acknowledge, approval / reject all the registration requests, applications. Revoke / curtail applications.
- Input necessary details for computing margin available for STOA, charges, losses etc.
- Track payment status.
- Upload Bank Statement and reconcile the payment against NEFT/RTGS/Bank Draft application wise all well as transaction wise.
- Submission of Application by Trader / Seller / Buyer for grant of open access:
- The registered customer shall be able to fill-up the details of desired information online as per SERC / CERC regulatory formats for grant of short-term open access.
- Open Access (Intra / Inter) state have various subcategories e.g., bilateral (Advance (3/2/1 month), FCFS, Day ahead, Contingency), PX etc. System shall be able to distinguish and categorize applications as per prevailing categories. The system shall have in-built validations and opening / cut-off dates for various types of applications.

- Auto detect the application type DA/C/AD/FCFS depending on date range entered.
- Allow the copy paste value from excel for time block entry.

- System shall provide provision to quick fill option like using drag feature in excel for various application tables
- Link application with registrations with necessary inbuilt validations.
- Ability to capture fee details along with applications and upload necessary supporting documents.
- Ability to capture transmission and SLDC charges separately.
- Renewable energy Tagging and applicability of charges per Renewable energy utility mapping
- The application should have provision to punch all type of applications on behalf of the applicant at any time in case of technical issue such as non-availability of software/ hardware.

Approval of applications by SLDC

- SLDC shall be able to acknowledge applications and process as per SERC / CERC regulatory guidelines.
- System shall validate and process the application as per the allotment priority as stipulated by the relevant SERC regulations and orders for granting permission for short term open access transaction as per availability of transmission Margin for STOA. Also, have the ability to modify ranking / priority by SLDC.
- System shall have in-built validation and escalation mechanism to be incorporated to ensure that applications are processed by the respective approving authority within the specified time limit in accordance to the relevant SERC regulations and orders.
- Approved transactions along with open access charges bill would be communicated to the customers through e-mail / SMS for implementation.
- The approved transactions details shall be incorporated in day-ahead scheduling in accordance with the provisions of the relevant SERC regulations and orders in respect of intrastate ABT.
- For Day ahead, Contingency Applications will be Automatically Pushed to Web based Scheduling Application
- Provision to push Advanced, FCFS applications selecting Date to Web based Scheduling Application

- Provision to push individual applications to WBES
- The application should be able to integrate Generator NOC check with SLDC, RLDC web-based Scheduling Software

Curtailment under STOA:

- Provision of Curtailment of STOA Schedule by generators for intra-state transactions. Provision of entry of Tripping time, reason, anticipated restoration time etc. by Generators.
- Provision of acceptance of the curtailment by SLDC
- Provision of incorporation of the curtailment in Scheduling through the scheduling software.

Margin for STOA

- Open Access approvals / concurrences depending upon ATC and Margin available for STOA

- Ability to capture details like TTC, ATC, LTOA, MTOA etc. for corridors, various Zones within State for calculating margin for various open access categories.
- Pro-rata calculations based on availability of transmission corridor as per TTC/ATC.
- The application should be able to calculate ATC margins and show allocation details block wise
- Process applications as per ranking subject to availability of margin.
- For Day Ahead, Contingency Applications check margin directly from live web based scheduling Application and in case of congestions, curtailed approval generation.
- For Advanced and FCFS applications, the application should detect congestion from ATC
- Check NOC violation from Scheduling Software for DA, C Applications. For Advanced and FCFS check violation from Master data for NOC Upload. System shall provide section for uploading NOC block wise
- Congestion Message Generation and send email to concerned parties
- If no margin available applications will be auto rejected on Check for Congestion

- SLDC can approve or reject revisions
- Systems shall calculate penalty and generate updated Approval, billing sheet.
- Provisions for admin to generate revision selecting revision type

Open Access Charges

The software shall be capable to maintain the details of various open charges paid by the customer. There are several charges to be paid by open access consumers to SLDC, distribution licensee, transmission licensees and other related entities, other than the power purchase cost paid to the generator or supplying entity.

These charges include

- Application Processing fees
- Connectivity Charges

- Transmission Charges of state as per CERC/State Regulatory Commission regulation
- Transmission Losses as per CERC/State Regulatory Commission regulation
- Wheeling Charges as applicable to distribution licensee in whose area the consumer is

  located at the rate fixed in the tariff order

- Cross Subsidy Surcharge, as applicable, as determined by the commission or the nodal agency to the distribution licensee in whose area the consumer is located
- Additional Surcharges as applicable to the distribution licensee in whose area the consumer is located
- Standby charges as applicable to the distribution licensee in whose area the consumer is located
- Scheduling and System Operating charges to SLDC.
- Reactive energy charges as applicable to the distribution licensee in whose area the consumer is located

- Regulatory Surcharge to the distribution licensee
- Metering charges to the Licensee
- SLDC Charges as per CERC/State Regulatory Commission regulation
- Registration fees for Long term open access as per State Regulatory Commission regulation
- Intrastate congestion charges calculation whenever applicable
- Energy charges to the seller of electricity as per the contract entered into
- Any other details not mentioned above but covered as per requirements of SLDC for operationalization of Open Access

These may vary as per connected voltage level, category of applicant, dates/period and system shall capture those details. Also, the category of charges may vary from state to state based on respective SERC regulation. So, the Open Access software should be able to customize to capture the different category of charges in line with SERC regulations.

Payment, Refund, Interest, Excess Payment & TDS Reconciliation

- Provision for applicants to fill up payment details application wise and verify details from bank for SLDC
- Payment Reconciliation

- Automatic Refund Calculation considering payment, revisions, curtailment etc.
- Automatic Interest Calculation considering holidays
- Provision for applicants to fill up TDS details application wise and TDS reconciliation
- Provision for applicants to fill up Interest Payment details application wise and interest reconciliation
- Partial Payment
- Monitoring of payments (STOA Charges) received.
- Calculation of interest in case of delayed payment as per CERC/State Regulatory Commission regulations.
- Preparation of defaulters list in case of non-payment / delayed payment.
- Provision for Excess Payment filled up by applicants
- Generation of Bank Statement mismatch report
- Integration of TDS certificate, Interest, Applicant Certificate Upload, and verification flow
- Reconciliation Status tracker
- Data Analytics on transactions, payments TDS

User, Roles and Rights Management Module

The system shall have role-based access to users so that data pertaining to specific users is accessible. SLDC shall be able to manage Users as per the Categories. It shall provide a dynamic customized role management module- SLDC admin can create different groups selecting different permission set and assign users to it.

Query Based Report

The software should provide provisions such that the operator has the Option to get application wise approved, scheduled, refused quantum and applied Vs approved quantum, margin available

(STOA margin-already approved) Vs applied quantum with filters such as between specific dates, applicants, Injecting State/Utility, Drawee State/ Utility, routes, inter-state links, application type (day ahead/ same day/FCFS/advance), nodal RLDC, source RLDC

Detailed reports / configuration of the STOA customer

The system shall provide a web-based reporting tool which can be used for creating custom reports as required by different types of users. Reports can be exported to various formats like .xls, .csv, .pdf and .xml. Standard report templates shall be provided along with the application package. Reports can be graphical or tabular with images and logos of customers. The authenticated users in the web shall be able to generate reports based on queries, say date range, utility ID etc. Reports shall be both in graphical and tabular formats.

Reports

Reports (week-wise, month-wise, quarterly & yearly)

- Financial Summary Report
- Date Wise Financial Report
- Applicant Wise Financial Report
- Interest Report
- MMC Report
- Refund Report considering Curtailment data from Scheduling software
- Bank Statement Report
- Disbursement Reports
- Advance Payment Report
- Accepted Transactions
- Rejected Transactions
- Accounting Statement
- Curtailment Report
- Payment Receipt Report
- Commercial Format
- Application Fee and Operating Charges report
- STOA Charges
- OS Format Report
- Margin computation details (block-wise tables) along with approved quantum

- Due and paid status of open access applications. Details of the payment received - account code wise / category of payment, or to be received from OA customers
- Pending registrations / applications
- Any other reports as per SLDC requirement

Other features

- The system and flow shall be user-friendly and designed to accommodate future changes.
- System shall have role-based access to user so that data pertaining to specific user only are accessible.
- System shall have well defined ownership of data.
- Data validation shall be provided on server and client (workstation) side.
- System shall have backup and recovery procedure/option for database.
- System shall have audit trail functionality. The system shall log database transactions (add, delete, modify) and maintain user, application related logs and error trapping.
- System shall prompt consequence and confirmation before any major changes like deleting, updating etc.
- Maker checker feature for applicants, utility registration, SLDC STU charges change, RE Utility Mapping change.
- Segregation of GNA quantum among the intra-state entities based on the NOC quantum of SLDC
- Provision of all IEGC & GNA Regulations related to open access are included in this module.

➢ **State Transmission Loss Module**

- Meter data archival from SEMA Ph-II project (upto 132 kV level) in raw file.
- Computation of element wise loss of DVC system.
- Computation of T&D loss as a whole for DVC system.

➢ **Meter Data Management (MDM)**

Meter Data Processing & Reporting is a web-based application, meant to provide automation Centers.

State Load Dispatch Centers (SLDCs) are responsible for scheduling and measuring electrical energy within and across the regions. Measurement of electric energy is being carried out by interface meters called Special Energy Meters (SEMs) installed at the peripheries of states and regions according to Metering regulation notified by CEA.

The meter data management system provides end to end solutions for meter data management.

- The system allows raw data loading of .cdf (common data format) files from SEMA ph -II and RAMR meters which are then parsed by the application and the structured data is stored in the database.
  - The software furnishes the user with important details like exact location, bay number, voltage levels and PTR of every SEM.
  - It empowers the DVC SLDC to see energy consumption of all meters at one go and enables them to find and replace any faulty meter instantly, thus saving valuable time and resource.
  - The software provides functionalities like data checking for Voltage problem, Frequency problem, Time problem and Watt hour problem.
  - It also allows pair checking. The software also includes features for DSM calculation and DSM Accounting. It provides various output reports like MWH (Mega Watt Hour), MVAR and Load curve.

- **User Management & Authentication**

The software is developed using Forms Authentication technology. The system can be accessed only if an end user logs in to the system with a valid username and password. Attempt to log in by un-authenticated users will be restricted by displaying appropriate messages.

The system provides for different role-based user types viz. Admin, SLDC, ALDC, DISCOMs, interstate and intra state beneficiaries who can perform their respective operations by logging in through their respective user credentials. Users will only have access to those sections and operations in the application, which fall under their jurisdiction.

- **Configuration Management**

The software has provision to configure location meter data, master frequency, and user details information. Admin users can register new users. The user can view & select both main and check meter for extracting data for Meter data management module

- **Raw Data File Upload**

The user can upload raw data from an .cdf file for a selected date range. If there is any error while uploading process it rolls back the entire process and shows the error log in the page and there is also option for downloading the error logs. There is provision for uploading data in 15min blocks (96 blocks/day) and 5min blocks (288 blocks/day).

- **Data Availability**

The software has provision for displaying the availability of data for selected location meters on each day within the selected date range. There are 3 types of Status (Yes, No, and Incomplete). No or Incomplete status of meter location can be replaced by using pair location or select a formula.

- **Problem Check in Data**

The software has provision for viewing detailed reports of data related problems recorded by a location meter for a selected date range.

- **Views Of Meter Output data**

The software has provision for viewing Mega Watt Hour (MWH) data for selected locations for a selected date range for 96 blocks or 288 blocks depending on the interval of input data. Same goes for selected fictitious locations.

- **Accounting level output of MWh and MVAR data**

MWH Output: The software has provision to view desired active MWH power output in a customized and more formatted way. This MWH output is calculated based on real meter MWH output and fictitious meter MWH output.

MVARH Output: The software has provision to view desired reactive MWH power output in a customized and more formatted way. This reactive MWH output is calculated based on real meter reactive MWH power output and fictitious meter reactive MWH power output.

- **Load Curve**

The software has provision for graphical reports based on meter output data. Whenever this menu option is clicked, a user interface produces following options to select:

- Master Meter List -> more than one can be selected
- Date Range Calendar -> date range needs to be selected

Once these inputs are provided, graphical reports will be shown to the user one after one.

Compute Fictitious Meters

The software has provision to calculate the fictitious meter power reading in Mega Watt Hour (MWH) for selected fictitious meters for a particular date range.

Whenever this menu option is clicked, a user interface produces following options to select:

- Fictitious Meters Master List -> more than one can be selected. (Location id – meter no format)
- Date Range Calendar -> date range needs to be selected.

Upgradation of Meter Data management module from existing 15 min time block to 5 Min /1 Min block as and when required.

- **Energy Accounting**

The energy accounting and Settlement module consists of units:

- State Energy Accounting (SEA) for intra-state entities & Generators
- Reactive Energy Accounting for intra-state entities & Generators
- Generator-wise Certification of DC (On-bar & Off-bar), SG
- Statement of Compensation for thermal generating stations
- Statement of ramp-rate assessment
- Beneficiary-wise Entitlements, Schedule & URS Statements
- Statement of Surrender by beneficiaries & Back-Down of Generators
- Statement of SCED Scheduling, AS Scheduling
- Bilateral LT/ MTOA/ STOA schedule statements to beneficiaries as per Regional Energy Accounting published by ERPC

- RE Generation Energy accounting

➢ **Deviation settlement Mechanism**

- Deviation charges of Intra-states entities / DVC Generators/ DVC state as whole in accordance with CERC (Deviation Settlement Mechanism and related matters) Regulations and subsequent amendments thereof or the respective SERC Regulations and subsequent amendments, as applicable.
- Facility of fetching Meter-Data from RAMR Project for incorporation in DSM Computation for intra-state entities.
- Facility of fetching SEM Data from ERLDC Website and Price data from NLDC site for incorporation in DSM calculation.

➢ **Renewable Energy Scheduling**

- **Scheduling**: Scheduling involves the allocation of available resources to meet the expected demand for electricity. In the case of renewable energy sources, scheduling involves determining the optimal use of available renewable energy sources to meet the expected demand for electricity while maintaining grid stability. This involves balancing the variable and intermittent output of renewable energy sources with the need for stable and reliable electricity supply.

- Provision of fetching 24 Hours forecasted generation data from Load Forecasting Software & Scheduling as per the procedure mentioned under IEGC.

- Scheduling involves the allocation of available resources to meet the expected demand for electricity.
- This module will allow the state entities to register themselves in the SLDC Module after submission of necessary documents and paying necessary fees.

➢ **Grid Connectivity**

- First Time Charging procedure along with approval of Power system elements. Issuance of Trial Operation certificate
- Provision of Submission of formats and relevant documents by the entity as per Grid code
- Provision of Verification of Documents and SCADA communication availability by SLDC and Subsequent Approval/ Clearance against specific Code.
- Provision of Generation of Successful Trial Operation Certificate.
- Provision of incorporation of NLDC/RLDC operating procedure related to First time charging of element.

- **Ancillary modules:**

- **State Entity Registration**

- This module will allow the state entities to register themselves in the SLDC module of DVC by entering required parameters/ data and submitting necessary fees.
- The scanned copy of forms/ required document shall be uploaded by the entities
- The verification of documents of State Entities shall be completed by DVC within a specific period from the date of receipt of complete documents & applications.

- **LC & Outage Management Application (Transmission elements and Generators)**

- This module will allow both planned and emergency shutdown provisions of Generators and Transmission elements.
- Ability to calculate Generator outage Hours and Transmission Availability as per the statutory norms.
- The LC and Outage application assists in the creation, process flow and approval cycle for Line Clearance and Outage for DVC SLDC, including Pre OCC, OCC and Consent Approval cycles (OCC of both DVC state and ERPC).
- OCC: An OCC Meeting along with Meeting Date and other relevant details can be created and/or modified including provision for multiple shutdown requests.
- Pre OCC: Additional outages can be created from the Pre OCC with the provision to synchronize them to the existing Approved OCC.
- Line Clearance: A Line Clearance can be created for the Generators as well as Transmission elements. The user is given the option to choose from the OCC approved items which the user is able to select. If not, then user can choose the emergency nature based on the type of S/D The various phases for the Line Clearance approval cycle are as follows:
- Requested: While creating the LC.
- Consent Pending: DVC SLDC, can ask for consent from one or more of its constituents.
- Approved/Rejected: Constituents can choose to approve or reject an LC. But the final approval is from DVC SLDC, is based upon the system generated code.
- Postponement/Cancel: DVC SLDC, can choose to Postpone an LC. The LC date in which case can be extended. An LC can right away be cancelled as well
- Generating Unit and Transmission element Outage details: Various categories of Outages for Generators can be created like Forced, Planned - (OCC/ RSD/ OH), Emergency, Constructional etc. This, along with all other relevant details can be saved while creating the Outage.
- Revival/Sync: From the list of all Generators in Outage state, elements can be revived/ synchronized again by providing the appropriate details. The same is applicable for outages of both Generator and Transmission Element.
- Provision must be there to generate system generated code to facilitate any element S/D.
- Provision must be there to generate system generated code to facilitate any element normalisation or put into service.
- Provision must be there to generate system generated code to facilitate any Anti-theft Charging of elements.

- **E-Logbook & Control Room Management Software**

- This tab should display Logbook Dashboard, interactive and updated with real-time data. There must be action buttons for View, edit and download. View, edit action button should redirect the user to another page which lists down the following sub-menus.
- Shifting users: It should show the details of shift users when clicked. Whenever a new user is added here, a numerical count should be indicated in the tab headers.
- Statistics: This should show detailed statistics related to Demand Profile and Frequency. Whenever a new record is added here, a numerical count should be indicated in the tab headers.
- Issues: This, when clicked, should take the user to a page where issues can be created depending upon the issue type. Whenever a new issue is added here, a numerical count should be indicated in the tab headers.
- Outage: This should show the detail for each element/Generators like Line, Unit, HVDC, ICT, Line Reactor, Bus Reactor, Bus and Bay, which had been put into Planned Outage. Whenever a new record is added here, a numerical count should be indicated in the tab headers.
- Tripping: This should show the detail for each element like Line, Unit, HVDC, ICT, Line Reactor, Bus Reactor, Bus and Bay had been put into Forced Outage. Whenever a new record is added here, a numerical count should be indicated in the tab headers.
- Scheduling: This should show the detail for each scheduling element by choosing a Scheduling Type, adding any remarks and saving it. Whenever a new record is added here, a numerical count should be indicated in the tab headers.
- FSC/TCSC/Reactor: This should show the details for the FSC/TCSC/Reactor status report. Few actions, like creating Opening/Anti-Theft code/third party opening codes could be performed here. Whenever a new record is added here, a numerical count should be indicated in the tab headers.
- Automatic Violation Message: This should show the details of FSC/TCSC status report. For a particular Constituent and a given Violation Type, the message typed is saved in this section. Whenever a new record is added here, a numerical count should be indicated in the tab headers. Deviation violation, Non-maintenance of SG message & reactive power support to different entities as applicable.
- Approved Shutdown: This section should display the elements which are approved and in Shutdown stage.
- Download: The generated logbook report can be downloaded from here in excel/pdf format. There should be options to Print, copy as well.
- Recording of Weather information/special event in the valley area
- Tripping Report: Flash report/ Preliminary report as per prescribed format
- Load restriction/ Shedding/ Regulation details.
- Information on Reservoir level, Hydel Discharge Amount etc.
- Status of Voice/Data communication
- Ability to upload shift-wise e-Log Book & e-Log sheet.

Duty Roster

- An Admin user should be able to create an allocation roster as per the daily controller room shift. It should consist of two menus as follows.
- Monthly roster: It should display a detailed roster for all groups. Edit right should be there for admin.

- Employees Shift Summary Report: This should display an editable roster based on Shift In charge details.

Historic Elements

All the elements which are restored from their Outages /Shutdown/Tripping should be displayed here. This should have the following sub menus:

- Shutdown Processing: This section should display the elements which are in Shutdown stage or restored.
- Outage: Any element e.g., Line, Unit, HVDC, ICT, Line Reactor, Bus Reactor, Bus and Bay which has been put into as Planned Outage, should be displayed here. The data should be editable.
- Tripping: Any element e.g., Line, Unit, HVDC, ICT, Line Reactor, Bus Reactor, Bus and Bay which has been put into as forced Outage should be displayed in this section.

- **SLDC Fees & Charges, Billing & Collection Module**

- Fees & Charges, Billing & Collection Module is a web-based application, meant to provide automation in Billing & Collection Module functionality in DVC SLDC. The system also allows entry\verification and approval of payments made towards the generated bills. The reporting module also allows SLDC to see various reports, export them in PDF, and excel.
- The module should have facility to fetch Budget Allocation data of SLDC part from the Finance module and segregate under different heads. The Budget heads and Expenditure may be customized. Monthly & Yearly detail Income-Expenditure reports, Budget Control Information Reports etc. should be generated as per the prescribed Formats (will be furnished later).
- Provision of managing User/Member/Beneficiary management records, share allocation data (ISGS/LTOA/MTOA/STOA), generating station install capacities, transmission licensee circuit KMs and other data for the calculation and verification of SLDC charges as per the CERC regulations.
- Monthly Bill calculation and generation as per BCD regulation of CERC/SERC
- Surcharge Bills and Revision bills
- Payment entry and approval
- Annual charges management
- TDS and Reconciliation
- User data Reports
- Billing Summary/Details and Payment reports
- Online Payment Gateway Integration
- Provision for accounting of PSDF fund and other statutory grant must be there.

- **Customized Reporting & MIS Dashboard**

MIS reporting platform for SLDC officials where the valuable information/ reports from various functional software modules This module shall comprise of standard as well as customized reports which are used by SLDC in day-to-day operations.

- Facilitate single window power dashboard & energy analytics
- Provision for interactive Data Visualization
- Provide analytics in graphical form and comparisons
- Facilitate Bird's eye view to Fish bone analysis, of System Operation and Market Operation of Power System.
- Facilitate Real time collaborations and Monitoring
- Provide current as well as historic information of: Share allocation, LTA, MTOA, STOA and PX transactions; Shutdown & Outage details; Energy Meter details & weekly data; DSM behavior, price, settlement and other related data; Performance of Utilities; Real-time Grid parameters
- Ability to generate standard MIS and Power Supply reports (SLDC shall share the formats)
- Create manual data entry forms for information which is not captured in existing software modules or available outside the system
- Ability to generate reports for all departments Scheduling, System Study, Market Operation, Open Access, SCADA, Grid Performance
- The Reporting module shall need to host the overall reporting requirements of SLDC integrating with all the software. Some of the reports are listed below.
- Ability to generate report on Generation data which contains unit wise gross generation, Ex-bus generation, peak generation, time of peak generation, MVAR generation at 19:00 and 24:00 hrs., bus voltage at 19:00Hrs based upon data from power house and substation.
- Ability to generate report on Reservoir data which contains reservoir level, inflow, outflow, schedule discharge.
- Ability to generate report on Tie line data which contains 132,220 and 400 KV tie line energy data, net-drawl, net-schedule, maximum thermal generation with time, maximum and minimum demand with time, maximum and minimum frequency with time, running hours of thermal and hydel units.
- Ability to generate report on Generation which contains station wise Ex-bus MU generation from thermal and hydel stations, net-drawl
- Ability to generate report on Generation which contains station wise gross, Ex bus generation, peak generation with time, maximum demand with time, net injection, drawl
- Ability to generate Commercial report which contains daily average ex-bus generation, energy buy/sale through power exchanges, maximum surplus, shortfall of generation, UI export/import
- Ability to generate RLDS Report which contains unit wise gross generation, Ex bus generation, peak generation, time of peak generation, MVAR generation at 19:00 and 24:00 hrs., bus voltage at 19:00 hrs.
- Ability to generate Generation Report which contains unit wise maximum generation during the day, Ex bus generation, monthly cumulative generation, Date & time of unit outage and reasons of unit outage
- Ability to generate Load shedding Report which contains hourly MW shed, total MWH during the day, reasons of load shed or curtailment.
- Ability to generate DC & Plant Availability Factor (PAF) report; Plant wise Peak, Off-peak Availability, asking availability rate to achieve 85% (daily, weekly, monthly) in both High and Low demand seasons. Display of Demand season, Peak-off peak Hours for different regions (Dashboard provision)
- Ability to generate SG & Plant Load Factor (PLF) report Plant wise Peak, Off-peak Scheduled Generation, actual PLF (daily, weekly, monthly) in both High and Low demand seasons (Dash Board provision)
- Ability to generate Final Schedule of 400kV TSL, DVC Rail

- Ability to generate Final Schedule of 132kV TISCO
- Ability to generate KTPS DC(Pk-Off-Pk), JBVNL Ent. & Sch. Report
- Ability to generate DSM Report of JBVNL
- Ability to generate DSM Report of TSL
- Ability to generate Entitlement/schedule of all intra and inter-state Beneficiaries
- Ability to generate report on Allocation of ALDC
- Ability to generate Bilat. LT/ MT Schedule
- Ability to generate Bilat. ST Schedule
- Ability to generate Drawl/Injection Schedule for Intra-state entities
- Ability to generate Surrender of Power by Beneficiaries
- Ability to generate Real-time Surrender Calculation report (to ALDC)
- Ability to generate Real-time Surrender Calculation report (for shift)
- Ability to generate Unit Outage Details report
- Ability to generate Transmission element Outage Details & Monthly Trans. Availability Fig.
- Ability to generate MIS Report from Shift
- Ability to generate 09:00Hrs MW Surrender Fig.
- Ability to generate and maintain e-Logbook
- Ability to generate DVC State Over-all DSM report
- Ability to generate DVC Generator DSM(Station-wise) report
- Ability to generate Grid Disturbance Report
- Ability to generate AS-4 Format (ERLDC) report
- Ability to generate Anticipated Power Position & LGBR report
- Provision for upload of First Time Charging (FTC) Documents from Transmission/Power-House /System/TSC Dept. and Certificate to be Issued by SLDC.
- ALL Modules should have provisions to modify/change/revise from time to time as per amendments in relevant CERC/SERC or any other regulatory norms applicable to DVC.
- Ability to upload monthly ECR (Energy Charge Rate) status of each generating station.

➢ **Cyber Security & Application Security**

- The integrated solution must comply CERT-IN cyber security guidelines / CEA provision for cyber security various MOP guidelines.
- As per the Govt of India rule, the applications need to be Certified by a Cert-In auditor every 6 months.

➢ The existing software will be fully integrated with the third-party software as mentioned below:

  - NOAR (National Open Access Registry) /GOAR/PSM portal of NLDC
  - WBES (Web based Energy Scheduling) portal of ERLDC.
  - REMC (Renewable Energy Management Centre) at SLDC (if already present)
  - IEX / PXI / HPX Markets
  - LC Outage module of ERLDC
  - SCADA and URTDSM system at SLDC
  - MDAS (Meter Data Acquisition System) at SLDC
  - PUSh-P
  - Payment Gateway Integration at SLDC

- PSP portal
- Load forecasting module of DVC
- Any Other portal which may be relevant in future.

- **Database Management, Data Archival and Retrieval**

The Database Management service will have the following functionalities for maintaining all the applications round the clock (24 x 7 x 365)

- Provisioning / Installation / Updates of Relational Database Management System
- DBA activities such as
  - Backup and recovery of database files.
  - Database Health Checkup
  - Performance Checkup
  - Security Checkup
  - Support Database Design & Testing Activities for the Above-Mentioned Software Modules

❖ **Breakup of Cost for Integrated Software Solution:**

B. Software Application Component				
Item Sl. No.	**Item Description**	**Rate (Rs.)**	**GST (Rs.)**	**Total Price (Rs.)**
B.1	Web-based Energy Scheduling (WBES) module	₹ 45,00,000	₹ 8,10,000	₹ 53,10,000
B.2	Open Access Software Module	₹ 60,00,000	₹ 10,80,000	₹ 70,80,000
B.3	Meter Data Management Module	₹ 40,00,000	₹ 7,20,000	₹ 47,20,000
B.4	DSM module	₹ 50,00,000	₹ 9,00,000	₹ 59,00,000
B.5	Unit/ Transmission Element Outage Recording Module and LC module	₹ 40,00,000	₹ 7,20,000	₹ 47,20,000
B.6	Energy Accounting Software Module	₹ 80,00,000	₹ 14,40,000	₹ 94,40,000
B.7	Demand and RE Power Forecasting, Scheduling Software Module	₹ 40,00,000	₹ 7,20,000	₹ 47,20,000
B.8	Financial Accounting, SLDC Fees, Billing and Collection Module & Statutory Compliance Module	₹ 30,00,000	₹ 5,40,000	₹ 35,40,000
B.9	Online e-log book module	₹ 20,00,000	₹ 3,60,000	₹ 23,60,000
B.11	Customized Report generation module with Dashboard facility	₹ 30,00,000	₹ 5,40,000	₹ 35,40,000
B.12	Database Management, Data archival & Retrieval facility	₹ 8,00,000	₹ 1,44,000	₹ 9,44,000
B.13	Cyber Security aspects and Third-party Audit	₹ 5,00,000	₹ 90,000	₹ 5,90,000
B 14	Change Management- DSM Regulation Amendment Workflow	₹ 60,00,000	₹ 10,80,000	₹ 70,80,000
B	**Sub-total Software / Application Part**			**₹ 5,99,44,000**

3.3. Component # 3: Communication Facility and IT Infrastructure

It has been decided that, Cloud Infrastructure will be adopted for implementation of SAMAST in DVC and accordingly the estimated budgetary price for that part is given below:

C. Communication and IT Infrastructure Component				
Item Sl. No.	**Description**	**Rate (Rs.)**	**GST(Rs.)**	**Total Price (Rs.)**
C.1	Cloud based Model including Engineering, Installation, Testing and Commissioning of the Software modules and the IT hardware	₹ 7,00,00,000	₹ 1,26,00,000	₹ 8,26,00,000
C	**Sub-total IT Infrastructure Price Part**			**₹ 8,26,00,000**

3.4. Component # 4: Training, Support & Capacity Building

The demonstration of Software and various Training Sessions to be provided by the successful Bidder to various utilities both in-house as well as beneficiaries. The price part for the same is given below:

D. Training, Support & Capacity Building Component				
Item	**Description**	**Rate (Rs.)**	**GST(Rs.)**	**Total Price (Rs.)**
D.1	Imparting Training Sessions to SLDC Personnel & other beneficiaries, Capacity Building	₹ 12,00,000	₹ 2,16,000	₹ 14,16,000
D	**Sub-total Training, Support & Capacity Building Part**			**₹ 14,16,000**

3.5 Component # 5: AMC or ARC Part

Price Offer has been invited for Annual Maintenance of Software applications and perioding testing for a period of 05(five) Years. The estimated price for the same if given below:

E. AMC or ARC Component				
Item	**Description**	**Rate (Rs.)**	**GST (Rs.)**	**Total Price (Rs.)**
C.2	AMC Charges for 5(five) Yrs. for Software Maintenance only	₹ 3,45,00,000	₹ 62,10,000	₹ 4,07,10,000
C	**Sub-total AMC or ARC Part**			**₹ 4,07,10,000**

3.6 Total Price Estimate of All components:

Sl. No	Item	Description	Total estimated Price (INR Lakhs) including GST
1	Component # 1	Cost of Communication & Interfacing with Third Party Software	₹ 49.56
2	Component # 2	SAMAST Integrated Software Applications	₹ 599.44
3	Component # 3	Cloud Storage & Necessary IT Infrastructure	₹ 826.00
4	Component # 4	Training, Support Services & Capacity Building	₹ 14.16
5	Component # 5	Annual Maintenance Contract/ Annual Rate Contract for 5-Year	₹ 407.10
Total Estimated Price			**₹ 1,896.26**

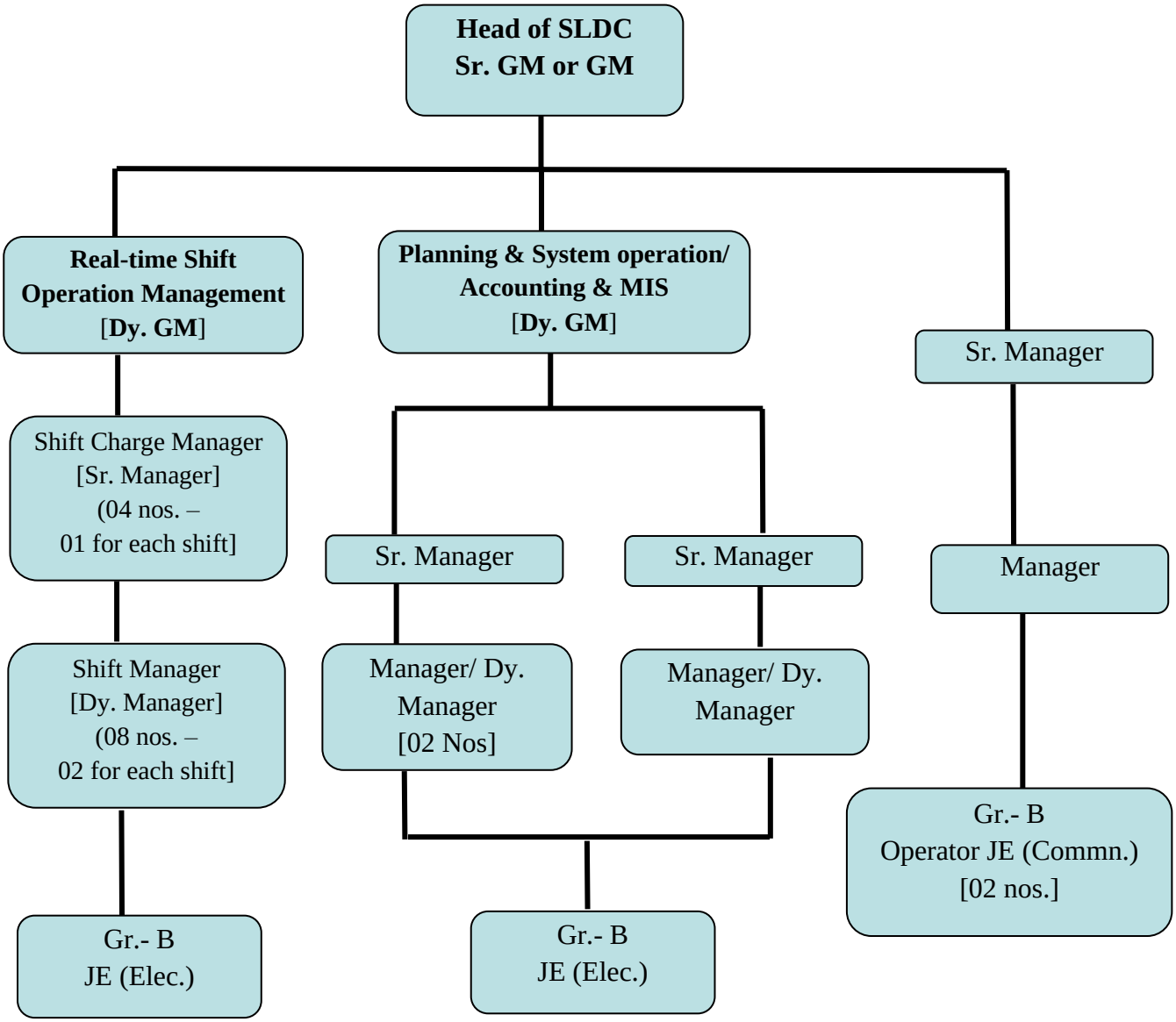
- **The total Estimated Price for SAMAST Implementation in DVC comes as Rs. 18.96 Cr. (Rupees Eighteen Crore and Ninety-Six Lacs only).**

4. Organisation Structure of SLDC, DVC

All the activities of SLDCs are being carried out under four major divisions namely - **System Operation**, **Market Operation**, **Communication & IT Systems (system data acquisition, Energy Management, communication, IT systems)** and **Establishment Services**.

The system size and the scale of operations has significantly increased over the last 5 years mainly increase in Contract Demand, Generation profile, Intra-sate Open Access entities etc.. It is likely to become more complex in the coming days with more stringent norms and further growth in system.

The Sanctioned Organisational Chart of SLDC, DVC, is furnished below:



4.1 Brief activities of SLDC Personnel

Sl. No.	Name	Work Responsibilities
01.	The Sr. General Manager / General Manager	• Keep track of all the issued Report, Invoice from SLDC. • Responsible for proper training of SLDC personnel as well as for other stakeholders. • Monitoring all AMC/ARC contract in respect of IT/OT / Establishment. • Ensure timely payment of all the vendors of AMC/ARC. • Future planning of SLDC. • Represent DVC in various forum like ERLDC/ERPC etc.
02.	The Dy. General Manager (Electrical)	• Issuance of duty roaster of SLDC and look after the Leave Payroll integrated Biometric Attendance System. • Issuance of Deviation charge Report/Invoice in respect of Generators and other intra state beneficiaries. • Issuance of Energy Accounting Report.
03.	The Dy. General Manager (Electrical)	• Single point contact of SLDC vertical for implementation of SAMAST module of SLDC through ERP in DVC.
04.	The Dy. General Manager (Communication)	• Maintenance of SCADA, EMS and URTDSM system. • Maintenance of OPGW and Communication system in DVC along with associated power constituent. • Ensure the payment of AMC service. • Co-ordination with field formation and SLDC during failure of data and communication availability. • Participation in upgradation and augmentation planning of SCADA and Communication system. • Manage duty of shift personnel at SLDC Howrah.
05	The Sr. Manager (Electrical)	• Office establishment • Processing bills of various vendors • Timely award and execution of all the running AMC/ARC
06.	The Sr. Manager (Communication)	• Maintenance of SCADA, EMS and URTDSM system. • Maintenance of OPGW and Communication system in DVC along with associated power constituent. • Compliance of Cyber security guidelines. • Prepare DSM and other required module for SLDC operation in Excel VBA. • Co-ordination with field formation and SLDC during failure of data and communication availability. • Participation in upgradation and augmentation planning of SCADA and Communication system.

07.	The Shift Charge Manager (Electrical) [One in each of the 4 (four) shifts]	• Scheduling of Power to beneficiaries on Day-ahead (LTOA, STOA, Wheeling etc.) & Intra-Day basis and implementation of the same in coordination with ERLDC in real time. • Imposition and withdrawal of Backing down as per Merit Order basis. • Planning of real time Shut down/Break down restoration with proper procedure & co-ordination with ERLDC and Keep record of same. • Restoration of Power in case of TPF/Emergency B/D at P/H, S/s. • Review of SCADA facilities/ Comparison of data between SCADA/RTU and Review of overall Communication facilities for better monitoring of system. • Generation and submission of daily MIS report based on real time data.
08.	The Shift Manager [One in each of the 4 (four) shifts]	• Allocation of power to beneficiaries from DVC generators. • Despatch schedule to Generators. • Keep track of Transmission element loading and correction if needed in consultation with ALDC. • Implementation of Shut down as per planning. • Logging of real time data/validating the system generated real time Logging data in soft form. • Review of Communication facilities of each S/s & PH with SLDC. • Keep track of Load shedding details and power purchase in real time. • Optimization of net deviation of DVC system by load generation balancing.
09.	The General Shift Manager	• Planning of planned shutdown with proper procedure & co-ordination with ERLDC and Keep record of same. • Calculation of ATC/TTC of DVC system. • FRC calculation of DVC's Generator. • Procurement/ Indenting procedure. • Training imparted to SLDC personnel as well as other stakeholders. • Calculation /generation of Deviation charge in respect of DVC's Generators. • Calculation /generation of Deviation charge in respect of intra state beneficiaries.
10.	The Shift Operator (Electrical) [One in each of the 4 (four) shifts]	• Logistic support to Shift Engineers to effectively discharging the duties/functioning of SLDC.

11.	The Shift Personnel (Communication)	• Basic maintenance of SCADA, EMS and URTDSM system and reporting to the concern officer in odd situation. System Administrator • Basic maintenance of OPGW and Communication system in DVC along with associated power constituent reporting to the concern officer in exceptional situation. • Physical checking of each equipment with proper ambient condition in daily basis.
12.	The Office Staffs	• Bill diary Preparation • Discharging the duties of the office of the GM, SLDC

5. Benefits of SAMAST implementation in DVC

The implementation of SAMAST will automatize these activities of SLDC:

1. Setting up integrated and single platform for SLDC/DVC stakeholders for managing various core functions of SLDCs as per relevant regulations

2. Hassle free sharing of information with internal and external agency on demand, generation, outages, margin etc.

3. Adequate validations to ensure that energy accounts are prepared with maximum level of accuracy

4. Automation of various process like open access approvals, bill generation, reporting etc. to minimize the time delay and improve overall efficiency

5. Timely availability of meter data to ensure that billing and energy accounting of all intra-state entities can be done on time.

6. Efficient real-time operations through optimal scheduling and despatch incl. real-time revisions

8. Significant saving in human efforts (specifically in preparing various MIS reports) by use of IT enabled solutions.

9. Regulatory reporting/compliance

10. Easy data storage and retrieval for future planning

xxxxxxxx

भारत सरकार / Government of India
विद्युत मंत्रालय / Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/ Central Electricity Authority
ई.टी. एवं आई.डी. प्रभाग / ET & ID Division
****

No. CEA/PCE-II/ET&ID/2023/ दिनांक/Dated: 01.01.2024

To

MS, ERPC

Kolkata

mserpc-power@nic.in

विषय: भुवनेश्वर में सीपीआरआई की क्षेत्रीय अनुसंधान एवं परीक्षण इकाई की स्थापना के संबंध में।

Subject: Establishment of Regional Research & Testing unit of CPRI at Bhubaneswar - regarding.

महोदय/Sir,

This is in reference to the proposal of the Department of Energy, Government of Odisha regarding establishment of a regional research & testing facility unit of CPRI at Bhubaneswar, Odisha (copy enclosed). Electricity consumer base, demand growth, fast developing industrial clusters, expansion of manufacturing facilities, upcoming new OEMs are some of the reasons mentioned in support of their proposal. It is further stated that other eastern States of India will also be benefited in testing of Electrical equipment and other Installations at the proposed CPRI Unit.

2. In this connection, assessment regarding the necessity as well as economic viability/sustainability of the proposed Regional test lab at Bhubaneswar of CPRI is required. It is therefore requested to provide following information in respect of the Eastern Region:

- Number of existing manufacturers of product/equipment/component pertinent to power sector based in the Region.
- Type of items being manufactured along with their specifications in brief.
- The details of testing requirements presently being handled/catered to in the Region.
- Details of the testing laboratory (along with their names) available in the Region with information about the type of test facilities for different equipment/ items, and test specification available with them.
- Year-wise details of number of tests carried out in the last 3 years in the Region. The name and location of testing laboratory, waiting time, type of

tests, delays, bottlenecks, demand-supply gaps, if any, etc. may be specifically furnished.

- Number and type of upcoming OEMs, and expansion/upgradation plans of existing manufacturers pertinent to power sector in the Region.

It is also requested that the matter may be taken up in the forthcoming Eastern Region OCC meeting. The comments/views of the constituent States/concerned stakeholders along with opinion of ERPC on the above queries may be communicated to us at CE-RNDCEA@gov.in at the earliest so as to enable us to arrive at considered opinion in the matter.

संलग्नक: यथोपरि

भवदीय/Yours faithfully,

(सुनित कुमार गुप्ता)
निदेशक (ET&ID)

प्रतिलिपि सूचनार्थ: अध्यक्ष, के.वि.प्रा. के विशेष सहायक

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ଗ୍ରିଡ୍‌କୋ ଲିମିଟେଡ୍
GRIDCO Limited
(A Govt. of Odisha Undertaking)
CIN : U40109OR1995SGC003960
Regd. Office : Janpath, Bhubaneswar - 751022, Odisha
Phone: 0674 - 2540098/2540877/2543452/2541127
Phone : 0674-2542318 / 2542743 (EPABX), Website : www.gridco.co.in

Letter No: 341(3) Date: 17-07-2023

To

The Chairman,
Central Electricity Authority,
Sewa Bhawan, Rama Krishna Puram, Sector-1,
New Delhi-110066 New Delhi- 110 001

Sub: Establishment of a Regional Research & Testing Laboratory unit of CPRI at Bhubaneswar, Odisha.

Sir,

This has reference to the request from Department of Energy, Government of Odisha with the Director General, CPRI (Bengaluru) regarding establishment of a regional research & testing facility unit at Bhubaneswar, Odisha vide Letter No. 12189 dated 13th December 2022 (copy enclosed as Annexure–I). CPRI sought for details of the proposal, which were submitted on 18-05-2023. Letters sent to CPRI are enclosed (Annexure-II) herewith for your kind reference. Recently, CPRI vide its letter dated 20-06-2023 (Annexure-III) has intimated that the establishment of new unit of CPRI being a policy decision, the same would be initiated after getting consent from Ministry of Power, Government of India as CPRI being an organization under the administrative control of Ministry of Power, Government of India.

In the said context, following points are placed hereunder in support of our request;

i. ~1 crore electricity consumers with peak power demand of 5,500 MW.
ii. Demand is assessed to grow at a CAGR of 5-6% in next 10-15 years.
iii. Industrial clusters, e.g. Paradeep (Jagatsinghpur), Kalingnagar (Jajpur), Dhamra (Bhadrak), Angul and Badbil (Keonjhar) are rapidly developing.
iv. There are opportunities for further downstream & ancillary industries.
v. Apart from Mining and Metal sectors, industry interests in the State range from Chemicals, Petrochemicals & Plastics to Biotech, IT, Food processing, Textile & Apparel etc.

vi. Glimpse of the electrical infrastructure of the State;

a.	*Generation:*	*~13,000 MW installed capacity (IPP)* *~11,000 MW CGP capacity.*
b.	*Transmission network:*	*192 EHV Grids & ~16,000 Ckm line*
c.	*Distribution network:*	*1164 nos. 33/11 kV primary S/s, 2572 PTRs* *~2.8 lakh DTRs, ~4.1 lakh Ckm line*

vii. The four Power Distribution utilities in the State have plans for investment of more than Rs.5,600 crore by FY 2025-26.

viii. The four Discoms have collectively assessed procurement value of around Rs.1000 crore in the categories of PTR, DTR, Cable & Conductor, Switchgears, Poles, Meters, Battery and SCADA & Automation equipment.

ix. Network expansion & up-gradation are planned to meet the demand growth.

In order to address the huge supply requirement of the above electrical equipment, many MSMEs & other equipment manufacturers are expanding their manufacturing facility in the State. New OEMs are also coming up in the recent to meet the above requirements. Equipment being procured or supplied are required to meet global quality standards to avoid any premature failure; therefore, all such equipment are to be tested at laboratories of good repute like CPRI before their acceptance for field deployment.

The State Government will also facilitate allotment of land and necessary logistic and ancillary support like power, water & clearances etc. during the establishment process.

It may also kindly be noted that the intake strength of 500+ ITI institutes in the state is more than 48,000 candidates per annum and there is need for training & skilling of students in equipment testing aspects. Collaborative research avenues can be undertaken through institutes like IIT, IIIT, NIT, NISER and Institute of Physics etc. which are operating in the state. It is also pertinent to mention that establishment of new CPRI unit at Bhubaneswar, Odisha will benefit the other eastern States of India in testing of Electrical equipment and other installations.

In view of above, we request your kind intervention allowing setting up a new Regional Testing Lab at Bhubaneswar along with Research and Training facility for the interest of the Odisha State and Eastern region of India.

Thanking you,

Encl: As above

Warm Regards,

17/7/2023

Director (F&CA)

Cc to:

1. Addl. Secretary, Energy Department, Govt. of Odisha for kind information.
2. Managing Director, GRIDCO for kind information.

GOVERNMENT OF ODISHA
ENERGY DEPARTMENT
****

No. 12189 /En., Bhubaneswar, dt. 13th December, 2022
ENG-RR-GOI-0005-2018

From

Sri Nikunja B. Dhal, IAS
Principal Secretary to Government

To

The Director General,
Central Power Research Institute (CPRI),
Post Box No. 8066, Bengaluru–560080

Sub: Establishment of a Regional Research & Testing Laboratory unit of CPRI at Bhubaneswar, Odisha – Regarding.

Sir,

The State of Odisha has ~1 crore electricity consumers and our Grid demand hovers around 4800 - 5100 MW. The installed CGP capacity exceeds 10 GW. The future electricity demand is likely to grow at a CAGR of 5-6% over the next 10-15 years, as per conservative assessments. Some industrial clusters, e.g. Paradeep (Jagatsinghpur), Kalingnagar (Jajpur), Dhamra (Bhadrak), Angul and Barbil (Keonjhar) are developing rapidly, which provide opportunities for further downstream & ancillary industries. More than 10 lakh Cr of investment intents in diverse sectors such as Mining and Metals, Chemicals and Petrochemicals, Food processing and Biotech, IT and ESDM , Textiles & Apparel , Green Hydrogen and Green Ammonia were received in the just concluded Make in Odisha Conclave, 2022.

A glimpse of the electrical infrastructure available & operating in the State is given below;

i. Generation	:	~13,000 MW installed capacity (IPP) ~11,000 MW CGP capacity.
ii. Transmission network	:	178 EHV Grids & ~16,000 Ckm line
iii. Distribution network	:	1136 primary S/s, 2500 PTRs ~2.7 lakh DTRs, ~4.1 lakh Ckm line

The network expansion & up-gradation are planned to meet the demand growth. The plans for investment in Distribution Sector is more than Rs.5,600 crore by FY 2025-26. The four Discoms have collectively assessed annual procurement value of around Rs.1000 crore in the categories of PTR, DTR, Cable & Conductor, Switchgears, Poles, Meters, Battery and SCADA & Automation equipment.

To meet the huge supply requirement of the above electrical equipment and many MSMEs & other equipment manufacturers are expanding their manufacturing facility & new OEMs are also coming up. These equipment are required to meet global quality standards to avoid any premature failure; therefore all such equipment are needed to be tested at reputed lab like CPRI before being accepted.

P.T.O.

The scope of electrical equipment testing including electricity meter is going to be huge. At present, the State doesn't have a National level Testing Lab, which is affecting project implementation across multiple sectors. CPRI may consider setting up a Regional Testing Lab at Bhubaneswar along with Research and Training facility. The intake strength of 500+ ITI institutes in the State is more than 48,000 per annum; there is a need for training & skilling of students in equipment testing aspects. Collaborative research avenues can be undertaken through institutes like IIT, IIIT, NIT, NISER and Institute of Physics etc., which are existing in the State. While projecting the testing facility capacity at the proposed lab at Bhubaneswar, requirement of neighbouring States / NE region may also be considered.

Your early response on the matter will be highly appreciated.

Yours faithfully,

13/12/2022

✓Principal Secretary to Government

Memo No. 12190 /En, Dated. 13/12/2022

Copy forwarded to CMD, OPTCL / CEO, TPCODL / EIC-cum-PCEI, Odisha, Bhubaneswar / Managing Director, GRIDCO for information and necessary action.

13.12.22

✓Additional Secretary to Government

GOVERNMENT OF ODISHA
ENERGY DEPARTMENT
***

No. 5369 /En., Bhubaneswar, dt. 18/05/2023
ENG-TDER-RR-0006-2022

From
S B K Pradhan
Additional Secretary to Govt.

To
Sri G R Viswanath,
Additional Director,
Central Power Research Institute,
Post Box No-8066, Bengaluru-560080,
Email-grv@cpri.in

Sub: **Compliances on the requirement of CPRI for establishment of a Regional Research & Testing Laboratory in Bhubaneswar.**

Sir,

In inviting reference to your letter dt. 21.12.2022 on the above mentioned subject, I am directed to enclose herewith the compliances from Govt. of Odisha on the requirement of CPRI for establishment of a Regional Testing & Research Laboratory in Bhubaneswar for consideration and necessary action at your end.

Sri Gagan Bihari Swain, Director (Finance), GRIDCO has been authorised to visit CPRI HQ Office at Bengaluru for a detailed discussion on further modalities to be followed on the above proposal.

Yours faithfully,
18.5.2023
Additional Secretary to Govt.

Memo No. 5370 /En, Dated. 18/05/2023

Copy along with copy of enclosure forwarded to Director (F&CA), GRIDCO for information and necessary action.

18.5.2023
Additional Secretary to Govt.

Sl No	Requirements of CPRI	Compliance of Govt. of Odisha
1	**Request from the State Govt.**	Energy Department, Govt. of Odisha has already requested CPRI to set up a Regional Research & Testing Laboratory at Bhubaneswar vide letter No-12189 dt. 13.12.2022 (Annexure-I)
2	**Analysis of demand and suitability**	• The present peak power demand of Odisha for the DISCOMs is around 5,100 MW which is likely to be around 10,000 MW by 2031-32. • Further, the T&D network of the State consists of 191 EHT grids, 16,000 circuit km EHT transmission line, 1150 sub-transmission primary sub-stations, 2.8 lakh distribution sub-stations and 4 lakh circuit km distribution line. • Construction of 99 nos. of 33/11 KV primary sub-stations & associated lines and 64 nos. of independent 33 kV lines is under progress with financial assistance to the tune of Rs. 1800 crs from the State Govt. In addition to this, Govt. is also planning to invest around Rs. 1125 crs. for strengthening of the distribution sector through up-gradation of DTRs, 11 kV, LT lines, conversion of single phase network to 3 phase etc. • The DISCOMs are taking up household electrification with financial support from the State Govt. • Further, various projects for strengthening of transmission &

		distribution sector of the State are being taken up through financial assistance from GoI under Special Assistance to States for Capital Investment (SACI). Moreover, the proposal of modernisation of distribution sector and creation of disaster resilient infrastructure in the State under Revamped Distribution Sector Scheme (RDSS) has been placed for consideration of MoP. • The private DISCOMs are committed to invest over Rs. 5500 crs. under their CAPEX for expansion and strengthening of distribution network. • Moreover, the State Transmission Utility OPTCL is taking up various transmission projects across the State with financial assistance from the State Govt. in shape of equity under various Govt. funded schemes. • OPTCL is also taking up various transmission projects for evacuation of RE power to be generated from prospective industries coming up in the State under Green Energy Evacuation Transmission Corridor. Besides this, necessary transmission infrastructure including two nos. of 765 kV systems under ISTS at Paradeep & Gopalpur and several 400 kV systems under In-STS are also in pipeline to cater to the demand of upcoming power intensive industries coming up in industrial hubs in the State such as Paradeep, Gopalpur, Barbil, Dhamra. • Execution of the above projects will require large scale procurement of electrical equipment which will augment the need of testing facility in the State. • Coastal Odisha is well connected with

		other parts of the country through air, sea ports and rail link. The State Govt. is focusing on growth of industries through conducive policy framework and incentivisation. In the recently concluded Make in Odisha conclave, the State has been able to attract investment commitments worth more than Rs. 10 lakh crores.
3	**Quantum of Electrical Industries in the State and their demand for equipment testing**	• Odisha has huge power intensive industries / units which account for almost 70% of the total power demand of the State (excluding CGP & IPPs). Further, investments worth Rs. 1.52 lakh cr. in Renewable Energy generation, Green Hydrogen/ Ammonia are also coming up in the State. • Around 50 lakhs of Smart meters are proposed to be installed under RDSS. Further, several projects for disaster resilience, loss reduction and modernisation of distribution sector are coming up in the succeeding years. • This will lead to huge pressure on the State Testing Laboratory for the routine / annual inspection & testing. The types of tests required by the DISCOMs frequently is annexed.
4	**Identification of location and land by the State Govt.**	It is proposed to set up the CPRI unit in the vicinity of the State capital Bhubaneswar. IDCO, the nodal agency for allotment of land has been requested to identify suitable patch of land measuring 15-20 acres for this purpose.
5	**Joint site visit by**	The joint site visit can be conducted as per

	CPRI & State Govt. officials	convenience of CPRI team after identification of the land by IDCO.
6	**Lease rent for the land**	The land will be allotted as per Industrial Policy Resolution, 2022.
7	**Proposal to MoP for Grant-in-Aid**	After receipt of in-principle approval from CPRI, MoP shall be requested for Grant-in-Aid.
8	**Signing of MoU between CPRI & Govt. of Odisha**	After receipt of in-principle approval from CPRI, the MoU may be executed after obtaining Govt. approval. CPRI may share a sample MoU format for necessary reference.
9	**Land Registration**	Land will be taken from IDCO on lease basis and agreement will be executed with IDCO. Necessary support from other Departments shall be ensured for land registration.
10	**Other**	Other issues like construction work, placement of PO for equipment and completion of project can be taken up after preparatory works and execution of MoU. If decided, the project can be executed either through any of the State PSU, as decided by State Govt. or by CPRI or jointly through an SPV.

Annexure - A

GOVERNMENT OF ODISHA
ENERGY DEPARTMENT
****

No. 12189 /En., Bhubaneswar, dt. 13th December, 2022
ENG-RR-GOI-0005-2018

From
Sri Nikunja B. Dhal, IAS
Principal Secretary to Government

To
The Director General,
Central Power Research Institute (CPRI),
Post Box No. 8066, Bengaluru–560080

Sub: Establishment of a Regional Research & Testing Laboratory unit of CPRI at Bhubaneswar, Odisha – Regarding.

Sir,

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ii. Transmission network	:	178 EHV Grids & ~16,000 Ckm line
iii. Distribution network	:	1136 primary S/s, 2500 PTRs ~2.7 lakh DTRs, ~4.1 lakh Ckm line

The network expansion & up-gradation are planned to meet the demand growth. The plans for investment in Distribution Sector is more than Rs.5,600 crore by FY 2025-26. The four Discoms have collectively assessed annual procurement value of around Rs.1000 crore in the categories of PTR, DTR, Cable & Conductor, Switchgears, Poles, Meters, Battery and SCADA & Automation equipment.

To meet the huge supply requirement of the above electrical equipment and many MSMEs & other equipment manufacturers are expanding their manufacturing facility & new OEMs are also coming up. These equipment are required to meet global quality standards to avoid any premature failure; therefore all such equipment are needed to be tested at reputed lab like CPRI before being accepted.

P.T.O.

The scope of electrical equipment testing including electricity meter is going to be huge. At present, the State doesn't have a National level Testing Lab, which is affecting project implementation across multiple sectors. CPRI may consider setting up a Regional Testing Lab at Bhubaneswar along with Research and Training facility. The intake strength of 500+ ITI institutes in the State is more than 48,000 per annum; there is a need for training & skilling of students in equipment testing aspects. Collaborative research avenues can be undertaken through institutes like IIT, IIIT, NIT, NISER and Institute of Physics etc., which are existing in the State. While projecting the testing facility capacity at the proposed lab at Bhubaneswar, requirement of neighbouring States / NE region may also be considered.

Your early response on the matter will be highly appreciated.

Yours faithfully,

13/12/2022

✓Principal Secretary to Government

Memo No. 12190 /En, Dated. 13/12/2022

Copy forwarded to CMD, OPTCL / CEO, TPCODL / EIC-cum-PCEI, Odisha, Bhubaneswar / Managing Director, GRIDCO for information and necessary action.

ADAS 13.12.22

✓Additional Secretary to Government

List of Type/Special Tests:

A. **DTR/PTR:**

1.Lightning Impulse Test
2.Short Circuit Withstand test
3.Temperature Rise Test
4.Pressure Test
5.Determination of sound levels
6.Test to verify Degree of protection IP 55/66
7.Measurement of impedance voltage / short-circuit impedance and load loss.
8.Measurement of no load loss and current.
9..Dielectric Test.
10.Tests on on-load tap-changer.

Special Tests

1. Measurement of the harmonics of the No-Load Current
2. Determination of transient voltage transformer characteristics
3. Measurement of insulation resistance to earth of the windings, and / or measurement of Dissipation factor (tan δ) of the insulation system capacitances. (These are reference values for comparison with later measurement in the field. No limitation for the values are given here.)
4. Lightning impulse test on Neutral terminals
5.Magnetic circuit (isolation) test
6.SFRA Test.

B. **CABLES:**

a. Tests on Conductor

1. Conductor resistance test
2. Conductor water penetration test

b. Tests on Insulation

1. Tensile strength & Elongation at break (before ageing)
2. Ageing in air oven
3. Tensile strength & Elongation at break
4. Tests for thickness of insulation
5. Eccentricity and Ovality of insulation
6. Hot set test
7. Shrinkage test
8. Gravimetric test (Water absorption)
9. Volume resistivity/ Insulation Resistance

c. Tests on Inner Sheath

1. PVC thickness

d. Tests on Extruded semi-conducting screen

1. Volume resistivity test of conductor screen
2. Volume resistivity test of core screen

e. Tests on Outer Sheath (PVC)

1. Flammability test for outer sheath
2. Thickness
3. Tensile strength and Elongation at break (before ageing)
4. Tensile strength and Elongation at break (after ageing)
5. Variation due to ageing
6. Loss of mass test
7. Shrinkage test
8. Hot deformation test
9. Heat shock test
10. Thermal stability test
11. Flammability test
12. Oxygen index
13. Temperature index
14. Acid gas generation
15. Smoke density

f. Tests on Armour for 3 Core Cable

1. Tensile test
2. Torsion test
3. Wrapping test
4. Resistance test
5. Mass of zinc coating
6. Uniformity of zinc coating
7. Adhesion test

g. Tests on Armour for 1 Core Cable

1. Tensile test
2. Wrapping test
3. Resistance test

h. Tests on complete cable

1. Partial discharge test
2. Thermal ageing test
3. Bending test
4. Dielectric power factor test
5. High voltage test
6. Heat cycle test
7. Impulse withstand test

C. **TERMINATION:**

a. **Terminations & Straight Through Joints**

1. Conductor resistance with Ferrule/Lugs/Mechanical

b. **connectors**

1. AC Voltage withstand Test (Air)
2. AC Voltage withstand test (under wet conditions) (for outdoor termination only)
3. Partial Discharge
4. Impulse voltage test
5. Heat Cycle test in air and water
6. Thermal Short Circuit Test for Screen
7. Thermal Short Circuit Test for Conductor
8. DC Voltage Withstand
9. Dynamic short circuit test
10. Thermal Endurance test
11. Salt fog test (Only for Outdoor terminations only)

c. **For Tubing and Moulded Components**

1. Corrosion Resistance
2. Density
3. Water Absorption
4. Electric strength
5. Flame Retardance
6. Heat Shock
7. Low temperature flexibility
8. Relative Permittivity
9. Tensile strength and Ultimate elongation
10. Thermal Ageing
11. Tracking Resistance
12. **Volume Resistivity**

D. **CONDUCTOR:**

1. UTS test on stranded conductor Mechanical Properties
2. DC resistance test on stranded conductor

E. **SWITCHGEAR/RMU:**

1. Measurement of the resistance of the main circuits
2. Short time withstand current and peak withstand current tests
3. Short circuit making and breaking tests
4. Verification of the degree of protection
5. Mechanical Endurance tests
6. Short line fault tests
7. Out of phase making and breaking tests
8. Electrical endurance tests
9. Double earth fault tests
10. Capacitive Current switching tests
11. Temperature Rise test.

12. Internal Arc withstand test,
13. Degree of Protection test.
14. Test to check the capability of main and earthing circuits subjected to rated peak and short
15. Salt Spray Test

F. Isolator:

a. TYPE TEST:

1. Lightning impulse voltage test(Dry)
2. Power frequency voltage withstand test(Dry)
3. Power-frequency voltage withstand test(Wet)
4. Short time withstand current test
5. Peak withstand current test
6. Temperature rise test
7. Measurement of contact resistance
8. Short time withstand current test for Earth Switch
9. Peak withstand current for Earth Switch
10. Satisfactory Operation & Mechanical endurance test

b. Types Tests for Insulator:

1. Visible discharge test
2. 50% lightning impulse voltage flashover test
3. Lightning impulse voltage withstand test
4. Power frequency voltage flashover test(dry)
5. Power frequency voltage withstand test(dry)
6. Power frequency voltage flashover test(wet)
7. RIN test at 4 MHz
8. Temperature cycle test
9. Mechanical strength test
10. Porosity test

केन्द्रीय विद्युत अनुसंधान संस्थान
(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)
प्रो.सर.सी.वी. रामन रोड, सदाशिवनगर डाक घर, पो.बा.सं. 8066, बेंगलूरु - 560 080, भारत
CENTRAL POWER RESEARCH INSTITUTE
(A Government of India Society, Ministry of Power)
Prof. Sir C.V. Raman Road, Sadashivanagar Post Office, P.B. No. 8066, Bengaluru - 560 080, India.
website : http://cpri.res.in/

PLANNING & CO-ORDINATION DIVISION

No. CPRI/P&C/5/1/Odisha/2023 June 20, 2023

Director (F&CA)
GRIDCO Limited
Janpath, Bhubaneswar – 751022
Odisha

Sub: Establishment of New Unit of CPRI at Bhubaneswar - regarding

Ref: Letter No. CPRI/PART-1/254 dated 09.06.2023

Sir,

CPRI places its gratitude to GRIDCO & Government of Odisha for the courtesy extended in the referred letter in connection with site visit for Establishment of New Unit at Bhubaneswar, Odisha.

CPRI being an organization under the administrative control of Ministry of Power, Government of India and Establishment of new Unit is considered as a policy decision, the same needs to be approved from Ministry of Power.

The further course of actions in this regard from CPRI side will be initiated after getting due consent from Ministry of Power.

This issues with the approval of Director General.

Yours faithfully,

20/6/23

(G.R. Viswanath)
Additional Director (P&C)

Mob. No. 9449057350
Email: grv@cpri.in

अपर निदेशक (योजना तथा समन्वयन प्रभाग)
Additional Director (Planning & Co-Ordination Division)
केन्द्रीय विद्युत अनुसंधान संस्थान
Central Power Research Institute
पो. बा. सं. 8066, बेंगलूर - 560 080
P.B. No. 8066, Bangalore - 560 080

Annexure B.20

Report Name	Raghu_26092023-26-Sep-202	Interval	15 Minutes
From Date	04-09-2023 00:00	Data Source	OpenHRS
To Date	10-09-2023 23:59		
Generate Date	26-09-2023 00:00		

Date	RAGHU_DV - 400_Main_Bus2_Voltage (AVERAGE)	RAGHU_DV - 400_RANCH_PG_2_P (AVERAGE)	RAGHU_DV - 400_RANCH_PG_2_Q (AVERAGE)	RAGHU_DV - 400_RANCH_PG_3_P (AVERAGE)	RAGHU_DV - 400_RANCH_PG_3_Q (AVERAGE)
04-09-2023 00:00:00	406.0	182.3	-34.5	180.5	-36.9
04-09-2023 00:15:00	405.1	192.6	-34.7	190.6	-37.3
04-09-2023 00:30:00	405.4	200.2	-36.7	198.0	-39.3
04-09-2023 00:45:00	405.6	203.4	-38.0	201.4	-40.6
04-09-2023 01:00:00	406.0	201.8	-39.3	199.8	-41.8
04-09-2023 01:15:00	406.0	205.0	-40.7	203.0	-43.3
04-09-2023 01:30:00	406.5	205.3	-42.6	202.8	-45.4
04-09-2023 01:45:00	406.8	201.6	-44.3	199.3	-47.0
04-09-2023 02:00:00	407.1	203.3	-46.0	201.1	-48.8
04-09-2023 02:15:00	407.1	209.5	-45.6	207.4	-48.3
04-09-2023 02:30:00	407.0	213.3	-46.0	211.0	-48.9
04-09-2023 02:45:00	407.0	209.9	-47.7	207.7	-50.4
04-09-2023 03:00:00	407.4	207.1	-48.7	204.8	-51.3
04-09-2023 03:15:00	407.7	204.2	-51.0	202.0	-53.6
04-09-2023 03:30:00	408.0	202.2	-52.4	200.1	-54.9
04-09-2023 03:45:00	408.0	203.7	-52.7	201.5	-55.3
04-09-2023 04:00:00	408.1	203.7	-52.9	201.3	-55.4
04-09-2023 04:15:00	408.5	204.9	-53.3	202.7	-56.0
04-09-2023 04:30:00	408.3	206.9	-53.2	204.3	-55.8
04-09-2023 04:45:00	408.5	209.0	-53.3	204.3	-56.9
04-09-2023 05:00:00	408.2	212.7	-53.6	202.6	-59.8
04-09-2023 05:15:00	408.7	220.2	-54.5	209.4	-61.0
04-09-2023 05:30:00	409.0	235.8	-55.7	224.0	-62.7
04-09-2023 05:45:00	408.2	257.0	-54.7	244.2	-62.7
04-09-2023 06:00:00	408.2	268.8	-52.4	256.1	-60.6
04-09-2023 06:15:00	408.3	278.4	-52.0	265.0	-60.8
04-09-2023 06:30:00	407.8	283.5	-48.2	268.1	-58.4
04-09-2023 06:45:00	408.0	283.5	-46.7	268.2	-57.1
04-09-2023 07:00:00	408.0	284.8	-46.2	269.5	-56.8
04-09-2023 07:15:00	408.2	274.3	-48.5	266.6	-54.9
04-09-2023 07:30:00	408.0	268.7	-48.3	261.6	-54.4
04-09-2023 07:45:00	408.0	262.5	-49.3	256.6	-54.6
04-09-2023 08:00:00	408.0	258.1	-49.3	247.5	-56.8
04-09-2023 08:15:00	407.6	256.3	-49.9	242.2	-59.1
04-09-2023 08:30:00	407.2	257.9	-50.9	244.1	-59.7
04-09-2023 08:45:00	407.4	256.0	-51.1	242.0	-60.2
04-09-2023 09:00:00	407.4	249.5	-50.8	238.7	-58.1
04-09-2023 09:15:00	407.4	244.9	-49.6	242.8	-52.4
04-09-2023 09:30:00	407.1	245.2	-48.4	243.2	-51.3
04-09-2023 09:45:00	407.0	236.9	-47.6	235.0	-50.3
04-09-2023 10:00:00	407.0	221.8	-47.6	218.4	-50.7
04-09-2023 10:15:00	407.1	206.3	-49.3	202.4	-52.7
04-09-2023 10:30:00	407.3	201.6	-48.7	197.3	-52.1
04-09-2023 10:45:00	407.0	191.1	-47.4	185.4	-51.4
04-09-2023 11:00:00	407.0	186.9	-45.6	181.5	-49.4
04-09-2023 11:15:00	407.0	188.3	-45.8	182.3	-49.9
04-09-2023 11:30:00	407.0	187.9	-43.8	179.1	-49.2
04-09-2023 11:45:00	406.3	212.2	-46.5	199.0	-54.3
04-09-2023 12:00:00	406.0	215.0	-41.9	204.5	-49.0
04-09-2023 12:15:00	405.6	223.5	-40.2	211.5	-48.0
04-09-2023 12:30:00	405.5	234.5	-38.6	222.3	-47.0
04-09-2023 12:45:00	405.3	235.1	-38.9	222.9	-47.3
04-09-2023 13:00:00	404.9	238.3	-37.6	225.7	-46.4
04-09-2023 13:15:00	405.5	245.8	-41.6	232.6	-50.4
04-09-2023 13:30:00	405.7	253.9	-43.1	240.3	-52.3
04-09-2023 13:45:00	405.1	260.4	-42.1	246.2	-51.8
04-09-2023 14:00:00	405.6	267.3	-44.6	252.3	-54.8
04-09-2023 14:15:00	405.5	271.5	-44.1	256.6	-54.3
04-09-2023 14:30:00	405.0	267.8	-40.6	253.0	-50.9
04-09-2023 14:45:00	404.9	268.6	-41.2	253.5	-51.6
04-09-2023 15:00:00	405.0	271.2	-42.1	256.4	-52.3
04-09-2023 15:15:00	405.1	276.9	-45.8	261.5	-56.2
04-09-2023 15:30:00	405.2	276.6	-46.8	261.8	-56.7
04-09-2023 15:45:00	405.0	278.4	-49.2	262.9	-59.2
04-09-2023 16:00:00	405.0	274.0	-48.6	258.6	-58.5
04-09-2023 16:15:00	405.8	264.5	-49.1	249.6	-58.9
04-09-2023 16:30:00	405.8	270.3	-48.0	254.6	-58.3
04-09-2023 16:45:00	405.2	281.0	-48.6	265.4	-59.1
04-09-2023 17:00:00	405.1	287.8	-49.2	274.9	-58.2
04-09-2023 17:15:00	405.8	275.6	-52.5	274.2	-55.6
04-09-2023 17:30:00	406.0	276.2	-50.5	274.8	-53.4
04-09-2023 17:45:00	405.3	273.1	-49.4	271.9	-52.2
04-09-2023 18:00:00	405.6	258.4	-48.3	257.0	-51.0
04-09-2023 18:15:00	405.4	242.5	-49.3	241.2	-51.7
04-09-2023 18:30:00	405.0	247.8	-47.0	246.8	-49.7
04-09-2023 18:45:00	405.0	251.4	-45.9	250.3	-48.5
04-09-2023 19:00:00	404.8	249.7	-44.9	248.5	-47.5
04-09-2023 19:15:00	404.7	241.0	-43.6	240.0	-46.3
04-09-2023 19:30:00	405.0	235.3	-41.9	234.2	-44.4
04-09-2023 19:45:00	405.0	223.7	-41.1	222.8	-43.6
04-09-2023 20:00:00	405.2	198.0	-41.4	196.4	-43.8
04-09-2023 20:15:00	405.3	203.6	-43.4	202.6	-45.7
04-09-2023 20:30:00	405.0	204.8	-42.5	203.7	-44.8
04-09-2023 20:45:00	405.3	200.1	-41.4	198.7	-43.7
04-09-2023 21:00:00	405.1	194.9	-39.6	193.6	-41.8
04-09-2023 21:15:00	405.0	190.1	-39.6	188.7	-41.8
04-09-2023 21:30:00	405.0	192.1	-40.8	190.8	-43.0
04-09-2023 21:45:00	405.0	197.3	-41.5	195.8	-43.8
04-09-2023 22:00:00	405.4	200.3	-41.7	198.9	-44.1
04-09-2023 22:15:00	405.9	196.0	-41.2	194.5	-43.5
04-09-2023 22:30:00	405.3	194.0	-40.1	192.7	-42.3
04-09-2023 22:45:00	405.2	193.8	-40.9	192.5	-43.2
04-09-2023 23:00:00	405.0	193.5	-39.5	192.0	-41.9
04-09-2023 23:15:00	405.0	196.8	-38.5	195.5	-40.8
04-09-2023 23:30:00	405.0	195.6	-38.9	194.2	-41.3
04-09-2023 23:45:00	405.0	199.4	-40.0	198.1	-42.3
05-09-2023 00:00:00	405.0	198.2	-40.5	196.7	-42.9
05-09-2023 00:15:00	405.0	192.3	-40.0	190.9	-42.3
05-09-2023 00:30:00	405.0	194.8	-40.6	193.4	-43.0
05-09-2023 00:45:00	405.0	197.4	-40.6	195.8	-43.1
05-09-2023 01:00:00	405.0	198.8	-42.1	197.4	-44.5
05-09-2023 01:15:00	406.0	197.0	-43.1	195.6	-45.5
05-09-2023 01:30:00	406.0	192.1	-42.4	190.6	-44.8
05-09-2023 01:45:00	406.0	194.8	-43.1	193.3	-45.4
05-09-2023 02:00:00	406.0	197.4	-44.0	195.9	-46.4
05-09-2023 02:15:00	406.0	195.9	-44.7	194.4	-47.0
05-09-2023 02:30:00	406.0	200.0	-45.8	198.5	-48.2
05-09-2023 02:45:00	406.0	203.7	-45.9	202.1	-48.5
05-09-2023 03:00:00	406.0	207.9	-47.4	206.4	-49.9
05-09-2023 03:15:00	406.0	211.7	-48.6	210.0	-51.1
05-09-2023 03:30:00	406.0	210.1	-48.6	208.6	-51.0
05-09-2023 03:45:00	406.8	209.0	-49.7	207.4	-52.1
05-09-2023 04:00:00	407.0	210.9	-51.5	209.2	-53.9
05-09-2023 04:15:00	407.0	211.1	-53.3	209.5	-55.8
05-09-2023 04:30:00	407.0	217.3	-53.4	215.7	-55.9
05-09-2023 04:45:00	407.0	219.8	-53.8	218.1	-56.4
05-09-2023 05:00:00	406.7	221.1	-52.0	219.5	-54.5
05-09-2023 05:15:00	407.0	234.1	-52.9	232.4	-55.6
05-09-2023 05:30:00	406.8	238.3	-52.1	236.6	-55.0
05-09-2023 05:45:00	406.8	249.5	-50.4	247.8	-53.2
05-09-2023 06:00:00	407.0	258.5	-50.4	256.9	-53.4
05-09-2023 06:15:00	407.0	259.4	-50.2	257.8	-53.1
05-09-2023 06:30:00	406.4	264.9	-47.1	263.2	-50.2
05-09-2023 06:45:00	406.0	271.0	-45.7	269.3	-48.8
05-09-2023 07:00:00	405.9	277.8	-44.4	276.0	-47.5
05-09-2023 07:15:00	406.0	282.5	-43.0	281.0	-46.2
05-09-2023 07:30:00	406.0	286.4	-43.7	284.5	-46.9
05-09-2023 07:45:00	406.0	283.1	-45.1	281.4	-48.1
05-09-2023 08:00:00	406.0	275.7	-46.5	273.8	-49.6
05-09-2023 08:15:00	406.0	275.7	-45.8	273.9	-48.8
05-09-2023 08:30:00	406.0	276.8	-44.1	275.0	-47.2
05-09-2023 08:45:00	405.9	268.7	-42.4	267.0	-45.4
05-09-2023 09:00:00	405.8	265.9	-43.4	264.1	-46.3
05-09-2023 09:15:00	405.7	268.7	-41.4	267.2	-44.4
05-09-2023 09:30:00	406.0	272.2	-43.0	270.3	-46.1
05-09-2023 09:45:00	405.7	273.4	-44.0	271.4	-47.2
05-09-2023 10:00:00	405.5	268.4	-44.7	266.5	-47.6
05-09-2023 10:15:00	405.0	282.7	-47.7	281.0	-51.0
05-09-2023 10:30:00	405.0	286.1	-48.2	283.9	-51.3
05-09-2023 10:45:00	405.0	286.3	-47.7	284.0	-51.0
05-09-2023 11:00:00	405.0	281.4	-46.6	279.7	-49.7
05-09-2023 11:15:00	405.0	274.5	-44.9	273.0	-47.8
05-09-2023 11:30:00	405.0	279.4	-44.1	277.9	-46.9
05-09-2023 11:45:00	404.9	283.1	-43.4	281.9	-46.3
05-09-2023 12:00:00	404.9	276.8	-43.7	275.4	-46.5
05-09-2023 12:15:00	405.0	270.8	-43.3	269.5	-46.3
05-09-2023 12:30:00	405.0	263.2	-42.9	261.9	-45.8
05-09-2023 12:45:00	405.0	252.2	-43.0	251.0	-45.6
05-09-2023 13:00:00	405.2	240.7	-42.1	239.4	-44.7
05-09-2023 13:15:00	406.0	238.6	-46.5	237.6	-49.0
05-09-2023 13:30:00	406.0	241.1	-47.8	239.8	-50.5
05-09-2023 13:45:00	406.0	251.7	-49.6	250.3	-52.3
05-09-2023 14:00:00	405.9	258.1	-50.6	256.8	-53.4
05-09-2023 14:15:00	406.0	258.1	-50.4	256.6	-53.3
05-09-2023 14:30:00	406.0	263.9	-47.9	262.3	-50.8
05-09-2023 14:45:00	405.8	258.4	-46.1	257.0	-48.8
05-09-2023 15:00:00	405.9	255.0	-46.0	253.7	-48.7
05-09-2023 15:15:00	405.4	253.0	-45.7	252.0	-48.4
05-09-2023 15:30:00	405.4	258.9	-44.9	257.5	-47.6
05-09-2023 15:45:00	405.3	259.1	-44.4	257.8	-47.2
05-09-2023 16:00:00	405.0	260.9	-44.3	259.7	-47.0
05-09-2023 16:15:00	405.2	257.7	-45.1	256.5	-47.9
05-09-2023 16:30:00	405.0	267.7	-41.4	266.6	-44.2
05-09-2023 16:45:00	405.0	273.4	-41.1	272.1	-44.0
05-09-2023 17:00:00	405.2	275.2	-42.3	273.3	-45.2
05-09-2023 17:15:00	405.3	282.7	-45.1	279.8	-48.6
05-09-2023 17:30:00	405.0	274.2	-42.5	271.7	-45.9
05-09-2023 17:45:00	405.0	279.8	-40.2	277.7	-43.3
05-09-2023 18:00:00	405.2	266.4	-40.4	264.5	-43.4
05-09-2023 18:15:00	406.0	232.3	-41.9	230.6	-44.5
05-09-2023 18:30:00	405.1	222.2	-39.2	220.2	-41.9
05-09-2023 18:45:00	405.0	217.8	-39.6	216.3	-42.1
05-09-2023 19:00:00	405.0	222.3	-38.4	220.9	-41.0

05-09-2023 19:15:00	405.1	219.9	-38.4	218.7	-41.0
05-09-2023 19:30:00	404.7	214.2	-35.3	213.0	-37.7
05-09-2023 19:45:00	404.3	207.7	-34.9	206.5	-37.2
05-09-2023 20:00:00	405.0	203.9	-35.1	202.7	-37.4
05-09-2023 20:15:00	404.9	209.1	-35.8	207.9	-38.1
05-09-2023 20:30:00	405.0	214.9	-35.6	213.1	-38.2
05-09-2023 20:45:00	405.0	211.8	-34.4	210.3	-36.9
05-09-2023 21:00:00	405.0	204.8	-33.6	203.6	-35.9
05-09-2023 21:15:00	405.0	207.2	-36.5	205.9	-38.9
05-09-2023 21:30:00	405.0	205.7	-35.3	204.1	-37.7
05-09-2023 21:45:00	405.0	200.4	-34.3	199.1	-36.5
05-09-2023 22:00:00	405.9	198.5	-36.2	197.2	-38.4
05-09-2023 22:15:00	405.0	193.3	-32.7	191.7	-35.1
05-09-2023 22:30:00	405.0	194.0	-32.5	192.3	-35.1
05-09-2023 22:45:00	405.0	193.5	-33.4	191.8	-35.9
05-09-2023 23:00:00	405.0	193.4	-34.1	192.0	-36.5
05-09-2023 23:15:00	405.0	186.3	-30.1	184.9	-32.4
05-09-2023 23:30:00	405.0	187.0	-29.6	185.4	-31.9
05-09-2023 23:45:00	405.0	192.6	-31.4	190.1	-34.0
06-09-2023 00:00:00	405.0	187.3	-31.4	185.4	-33.9
06-09-2023 00:15:00	405.0	188.7	-30.2	187.1	-32.7
06-09-2023 00:30:00	405.0	189.9	-33.2	188.6	-35.6
06-09-2023 00:45:00	405.2	194.6	-34.5	193.0	-36.9
06-09-2023 01:00:00	405.0	196.6	-36.5	195.1	-38.8
06-09-2023 01:15:00	405.5	200.7	-39.5	199.4	-41.9
06-09-2023 01:30:00	405.9	206.4	-39.7	205.0	-42.1
06-09-2023 01:45:00	405.9	213.1	-40.6	211.6	-43.1
06-09-2023 02:00:00	406.0	214.5	-41.8	213.0	-44.2
06-09-2023 02:15:00	406.0	213.8	-42.4	212.4	-44.9
06-09-2023 02:30:00	406.0	217.4	-42.4	216.3	-45.1
06-09-2023 02:45:00	406.0	217.5	-43.0	216.1	-45.4
06-09-2023 03:00:00	406.0	217.8	-44.7	216.3	-47.2
06-09-2023 03:15:00	406.0	219.8	-46.7	218.3	-49.1
06-09-2023 03:30:00	406.0	215.9	-46.1	214.5	-48.7
06-09-2023 03:45:00	406.6	219.8	-47.7	218.4	-50.2
06-09-2023 04:00:00	407.0	228.6	-49.1	227.1	-51.8
06-09-2023 04:15:00	407.0	232.1	-49.7	230.4	-52.4
06-09-2023 04:30:00	407.0	235.9	-51.3	234.4	-54.1
06-09-2023 04:45:00	407.0	236.1	-50.7	234.6	-53.5
06-09-2023 05:00:00	407.0	237.8	-51.8	236.1	-54.5
06-09-2023 05:15:00	407.0	242.4	-53.1	240.2	-55.9
06-09-2023 05:30:00	407.0	253.8	-50.8	251.4	-54.1
06-09-2023 05:45:00	406.8	267.5	-48.4	264.9	-51.8
06-09-2023 06:00:00	406.7	272.3	-47.6	269.4	-51.2
06-09-2023 06:15:00	406.5	278.6	-47.0	276.1	-50.3
06-09-2023 06:30:00	406.0	279.4	-44.8	277.2	-48.1
06-09-2023 06:45:00	406.3	280.4	-44.1	278.4	-47.3
06-09-2023 07:00:00	406.0	280.5	-43.2	278.8	-46.3
06-09-2023 07:15:00	406.0	282.4	-43.0	280.7	-46.2
06-09-2023 07:30:00	406.0	278.0	-43.0	276.2	-46.1
06-09-2023 07:45:00	406.0	275.0	-42.6	273.2	-45.7
06-09-2023 08:00:00	406.0	274.7	-44.7	272.8	-47.9
06-09-2023 08:15:00	406.0	282.7	-42.1	280.5	-45.4
06-09-2023 08:30:00	406.0	278.5	-39.0	275.8	-42.6
06-09-2023 08:45:00	405.3	267.6	-36.8	265.6	-40.0
06-09-2023 09:00:00	405.7	265.8	-37.9	263.7	-40.9
06-09-2023 09:15:00	405.8	260.3	-38.2	258.4	-41.3
06-09-2023 09:30:00	406.0	254.4	-37.7	252.6	-40.6
06-09-2023 09:45:00	405.5	255.3	-36.5	253.3	-39.5
06-09-2023 10:00:00	405.5	248.6	-37.0	246.9	-39.8
06-09-2023 10:15:00	405.2	248.9	-36.2	247.4	-39.0
06-09-2023 10:30:00	405.2	246.0	-35.3	244.2	-38.3
06-09-2023 10:45:00	405.7	238.2	-35.1	236.5	-37.8
06-09-2023 11:00:00	405.0	233.1	-33.9	230.9	-36.9
06-09-2023 11:15:00	405.0	232.0	-33.6	221.0	-41.6
06-09-2023 11:30:00	405.1	230.8	-34.2	217.2	-43.7
06-09-2023 11:45:00	405.0	222.1	-33.6	207.7	-43.3
06-09-2023 12:00:00	405.0	228.1	-34.4	219.3	-41.0
06-09-2023 12:15:00	405.2	224.8	-35.5	223.0	-38.3
06-09-2023 12:30:00	405.0	224.3	-35.4	222.8	-38.1
06-09-2023 12:45:00	405.0	216.1	-33.7	214.3	-36.3
06-09-2023 13:00:00	405.0	218.6	-35.2	216.9	-37.8
06-09-2023 13:15:00	405.9	213.1	-42.1	211.5	-44.7
06-09-2023 13:30:00	406.0	209.9	-41.7	208.0	-44.3
06-09-2023 13:45:00	406.0	212.1	-42.3	208.6	-45.6
06-09-2023 14:00:00	405.8	219.2	-43.0	217.1	-45.5
06-09-2023 14:15:00	406.0	222.2	-41.9	220.0	-44.7
06-09-2023 14:30:00	406.0	221.9	-40.7	219.7	-43.4
06-09-2023 14:45:00	405.2	221.2	-38.7	219.1	-41.4
06-09-2023 15:00:00	405.5	225.5	-40.4	222.8	-43.5
06-09-2023 15:15:00	405.8	221.0	-40.1	219.3	-42.7
06-09-2023 15:30:00	405.0	222.3	-38.5	220.3	-41.2
06-09-2023 15:45:00	405.4	222.7	-38.7	221.0	-41.4
06-09-2023 16:00:00	405.0	227.9	-39.4	226.3	-42.1
06-09-2023 16:15:00	405.2	232.1	-42.0	229.9	-44.8
06-09-2023 16:30:00	405.9	236.9	-43.1	235.0	-45.8
06-09-2023 16:45:00	406.0	230.8	-44.1	229.3	-46.8
06-09-2023 17:00:00	406.0	231.5	-43.5	229.6	-46.2
06-09-2023 17:15:00	405.7	246.1	-45.5	244.3	-48.6
06-09-2023 17:30:00	405.3	253.8	-43.4	252.0	-46.3
06-09-2023 17:45:00	405.9	253.7	-43.7	251.9	-46.6
06-09-2023 18:00:00	405.5	250.2	-44.1	248.7	-47.0
06-09-2023 18:15:00	406.1	236.4	-44.6	234.6	-47.2
06-09-2023 18:30:00	404.9	224.5	-40.5	222.9	-43.1
06-09-2023 18:45:00	404.8	219.9	-38.6	217.0	-42.0
06-09-2023 19:00:00	404.6	222.5	-40.4	216.8	-45.1
06-09-2023 19:15:00	404.8	217.3	-40.3	215.2	-42.8
06-09-2023 19:30:00	404.9	206.4	-40.4	204.6	-42.9
06-09-2023 19:45:00	405.0	203.6	-41.5	201.6	-44.0
06-09-2023 20:00:00	405.0	204.7	-41.6	202.7	-44.1
06-09-2023 20:15:00	405.0	202.8	-42.3	200.7	-44.6
06-09-2023 20:30:00	405.0	197.9	-41.1	196.0	-43.6
06-09-2023 20:45:00	405.0	191.9	-40.2	186.0	-44.4
06-09-2023 21:00:00	404.6	191.5	-39.1	187.4	-42.3
06-09-2023 21:15:00	405.0	198.2	-40.5	191.4	-45.2
06-09-2023 21:30:00	405.0	198.6	-40.2	196.0	-43.1
06-09-2023 21:45:00	405.0	204.1	-40.7	199.6	-44.5
06-09-2023 22:00:00	405.0	195.6	-41.0	188.9	-47.9
06-09-2023 22:15:00	405.8	195.1	-42.8	193.2	-47.1
06-09-2023 22:30:00	405.3	189.4	-41.2	187.5	-43.8
06-09-2023 22:45:00	405.0	187.8	-40.3	185.8	-42.7
06-09-2023 23:00:00	405.0	186.8	-38.5	185.2	-40.9
06-09-2023 23:15:00	405.0	176.5	-35.0	174.7	-37.2
06-09-2023 23:30:00	405.0	176.2	-36.2	174.9	-38.4
06-09-2023 23:45:00	405.0	179.3	-36.8	177.9	-38.9
07-09-2023 00:00:00	405.4	182.0	-36.4	180.8	-38.6
07-09-2023 00:15:00	405.0	187.2	-37.5	186.0	-39.6
07-09-2023 00:30:00	405.0	190.1	-37.7	188.9	-40.0
07-09-2023 00:45:00	405.6	191.8	-37.9	190.6	-40.1
07-09-2023 01:00:00	405.9	194.0	-38.3	192.8	-40.6
07-09-2023 01:15:00	406.0	198.4	-40.7	197.2	-43.1
07-09-2023 01:30:00	406.0	198.2	-42.1	195.9	-44.9
07-09-2023 01:45:00	406.0	203.6	-43.1	198.6	-46.9
07-09-2023 02:00:00	406.5	206.9	-44.6	200.1	-49.3
07-09-2023 02:15:00	407.0	200.5	-45.1	193.4	-49.8
07-09-2023 02:30:00	407.0	200.2	-45.8	193.1	-50.5
07-09-2023 02:45:00	407.0	206.0	-45.1	198.9	-50.0
07-09-2023 03:00:00	407.0	209.9	-45.7	202.2	-50.9
07-09-2023 03:15:00	407.0	203.4	-47.0	194.9	-52.4
07-09-2023 03:30:00	407.0	199.9	-47.8	190.0	-53.9
07-09-2023 03:45:00	407.0	199.1	-47.8	195.0	-51.1
07-09-2023 04:00:00	407.5	202.1	-49.6	193.7	-55.0
07-09-2023 04:15:00	407.4	204.9	-48.8	196.1	-54.5
07-09-2023 04:30:00	407.4	202.4	-48.9	193.3	-54.7
07-09-2023 04:45:00	407.8	200.6	-48.5	191.3	-54.4
07-09-2023 05:00:00	408.0	199.6	-49.4	190.0	-55.3
07-09-2023 05:15:00	407.4	211.3	-48.2	201.0	-54.6
07-09-2023 05:30:00	408.0	218.2	-49.3	207.5	-56.1
07-09-2023 05:45:00	408.0	223.6	-48.9	212.6	-56.0
07-09-2023 06:00:00	408.0	233.7	-50.1	222.3	-57.7
07-09-2023 06:15:00	408.2	239.1	-50.2	227.2	-58.2
07-09-2023 06:30:00	407.4	238.3	-46.5	226.3	-54.5
07-09-2023 06:45:00	407.3	241.5	-45.7	229.4	-54.1
07-09-2023 07:00:00	407.0	241.5	-45.4	229.3	-53.5
07-09-2023 07:15:00	407.0	249.1	-45.1	236.5	-53.8
07-09-2023 07:30:00	407.0	245.7	-42.5	233.2	-51.3
07-09-2023 07:45:00	407.0	251.0	-43.3	238.3	-52.3
07-09-2023 08:00:00	407.0	249.0	-43.1	236.7	-51.8
07-09-2023 08:15:00	407.0	247.3	-42.7	234.5	-51.4
07-09-2023 08:30:00	407.0	234.9	-41.9	222.4	-50.3
07-09-2023 08:45:00	406.9	218.0	-43.8	206.2	-51.3
07-09-2023 09:00:00	406.9	206.7	-42.7	195.4	-49.7
07-09-2023 09:15:00	406.1	194.5	-38.0	184.0	-44.9
07-09-2023 09:30:00	406.0	194.3	-37.9	183.4	-45.1
07-09-2023 09:45:00	406.1	186.0	-42.7	175.1	-49.2
07-09-2023 10:00:00	406.0	175.5	-43.0	165.2	-49.0
07-09-2023 10:15:00	406.0	164.1	-41.9	154.1	-47.5
07-09-2023 10:30:00	406.0	153.7	-37.9	144.4	-43.2
07-09-2023 10:45:00	405.9	150.8	-37.2	141.8	-42.4
07-09-2023 11:00:00	405.9	148.7	-36.8	139.4	-42.1
07-09-2023 11:15:00	406.0	151.8	-36.6	142.8	-41.8
07-09-2023 11:30:00	406.0	140.4	-34.0	131.5	-39.0
07-09-2023 11:45:00	405.8	128.3	-32.6	120.1	-37.1
07-09-2023 12:00:00	405.6	127.3	-31.3	119.2	-35.9
07-09-2023 12:15:00	405.0	120.9	-30.0	113.4	-34.3
07-09-2023 12:30:00	405.8	116.9	-29.7	110.1	-33.8
07-09-2023 12:45:00	405.4	118.3	-30.5	111.0	-34.6
07-09-2023 13:00:00	405.3	119.9	-31.1	112.1	-35.5
07-09-2023 13:15:00	406.0	118.6	-33.1	110.9	-37.3
07-09-2023 13:30:00	406.0	127.4	-34.8	119.4	-39.3
07-09-2023 13:45:00	406.0	133.4	-34.2	125.4	-39.0
07-09-2023 14:00:00	406.0	147.9	-35.4	140.4	-40.1
07-09-2023 14:15:00	406.7	159.1	-36.0	150.7	-41.4
07-09-2023 14:30:00	406.0	160.7	-34.0	151.7	-39.8
07-09-2023 14:45:00	406.0	162.2	-37.0	152.6	-42.9
07-09-2023 15:00:00	406.0	160.3	-38.0	150.6	-43.9
07-09-2023 15:15:00	406.2	174.0	-43.3	163.5	-49.3
07-09-2023 15:30:00	406.7	184.8	-43.9	173.8	-50.4
07-09-2023 15:45:00	406.0	181.9	-42.3	170.6	-49.0

07-09-2023 16:00:00	406.4	184.3	-42.5	172.7	-49.5
07-09-2023 16:15:00	406.9	187.5	-43.0	175.8	-50.0
07-09-2023 16:30:00	406.0	188.9	-41.2	177.4	-48.3
07-09-2023 16:45:00	406.0	192.0	-42.1	180.2	-49.4
07-09-2023 17:00:00	406.1	192.2	-45.3	180.3	-52.4
07-09-2023 17:15:00	407.0	184.9	-48.9	173.2	-55.4
07-09-2023 17:30:00	406.3	184.8	-47.4	172.9	-54.1
07-09-2023 17:45:00	407.0	180.8	-47.2	169.1	-53.7
07-09-2023 18:00:00	406.2	182.0	-45.5	170.2	-52.2
07-09-2023 18:15:00	406.0	170.8	-42.6	160.0	-48.7
07-09-2023 18:30:00	405.0	163.2	-38.6	154.4	-44.0
07-09-2023 18:45:00	405.0	163.9	-36.5	154.1	-42.6
07-09-2023 19:00:00	405.0	161.2	-35.8	151.1	-42.0
07-09-2023 19:15:00	405.9	140.7	-38.0	151.0	-44.0
07-09-2023 19:30:00	406.0	131.5	-37.9	151.0	-43.9
07-09-2023 19:45:00	405.0	156.9	-39.1	146.8	-45.0
07-09-2023 20:00:00	405.0	156.4	-41.4	146.0	-47.2
07-09-2023 20:15:00	405.4	158.3	-41.4	147.9	-47.2
07-09-2023 20:30:00	405.0	161.1	-40.9	150.5	-46.8
07-09-2023 20:45:00	405.0	163.1	-38.5	152.5	-44.7
07-09-2023 21:00:00	405.0	162.4	-37.2	151.8	-43.4
07-09-2023 21:15:00	405.1	167.6	-38.4	156.8	-44.9
07-09-2023 21:30:00	405.7	168.5	-41.3	157.3	-47.6
07-09-2023 21:45:00	405.5	166.8	-41.7	155.6	-47.9
07-09-2023 22:00:00	406.0	174.6	-43.5	163.0	-50.0
07-09-2023 22:15:00	406.0	172.1	-43.8	160.4	-50.2
07-09-2023 22:30:00	406.0	165.9	-41.1	154.7	-47.2
07-09-2023 22:45:00	406.0	155.5	-40.2	144.7	-46.0
07-09-2023 23:00:00	406.0	152.5	-40.2	142.0	-46.0
07-09-2023 23:15:00	405.9	155.1	-39.5	144.5	-45.4
07-09-2023 23:30:00	405.0	160.3	-40.2	149.1	-46.5
07-09-2023 23:45:00	405.9	164.3	-42.0	153.0	-48.2
08-09-2023 00:00:00	405.8	166.3	-44.3	154.8	-50.5
08-09-2023 00:15:00	406.0	170.3	-45.0	158.3	-51.4
08-09-2023 00:30:00	406.0	174.2	-44.9	162.1	-51.4
08-09-2023 00:45:00	406.0	174.3	-44.0	162.3	-50.7
08-09-2023 01:00:00	406.0	172.1	-43.4	160.3	-49.9
08-09-2023 01:15:00	406.0	172.0	-44.5	160.1	-51.1
08-09-2023 01:30:00	406.2	175.0	-46.1	162.7	-52.7
08-09-2023 01:45:00	407.0	183.3	-48.2	170.4	-55.1
08-09-2023 02:00:00	407.0	180.2	-49.3	167.5	-56.0
08-09-2023 02:15:00	407.0	182.3	-49.5	169.3	-56.1
08-09-2023 02:30:00	407.0	185.1	-51.3	171.9	-58.3
08-09-2023 02:45:00	407.0	190.8	-53.6	177.2	-60.8
08-09-2023 03:00:00	407.0	195.2	-54.1	181.3	-61.4
08-09-2023 03:15:00	407.3	196.3	-54.0	182.4	-61.3
08-09-2023 03:30:00	407.5	195.1	-53.7	181.2	-61.0
08-09-2023 03:45:00	407.2	191.8	-54.4	178.0	-61.4
08-09-2023 04:00:00	407.8	188.4	-55.1	174.5	-62.0
08-09-2023 04:15:00	407.6	192.6	-55.4	178.6	-62.5
08-09-2023 04:30:00	408.0	197.2	-56.3	183.0	-63.6
08-09-2023 04:45:00	408.0	199.0	-57.1	184.6	-64.5
08-09-2023 05:00:00	408.0	205.3	-56.8	190.7	-64.5
08-09-2023 05:15:00	408.0	209.5	-55.2	194.4	-63.4
08-09-2023 05:30:00	408.0	212.7	-54.3	197.8	-62.7
08-09-2023 05:45:00	407.9	225.4	-53.7	209.7	-62.7
08-09-2023 06:00:00	407.8	230.9	-51.4	214.8	-60.8
08-09-2023 06:15:00	407.7	235.7	-50.9	219.4	-60.6
08-09-2023 06:30:00	406.9	237.2	-48.1	221.1	-58.0
08-09-2023 06:45:00	407.0	243.8	-48.2	227.3	-58.6
08-09-2023 07:00:00	407.0	244.8	-48.0	228.2	-58.4
08-09-2023 07:15:00	407.0	249.5	-47.2	232.7	-57.9
08-09-2023 07:30:00	407.0	249.8	-46.2	233.0	-57.0
08-09-2023 07:45:00	407.0	248.2	-47.7	231.5	-58.4
08-09-2023 08:00:00	407.0	245.8	-47.5	229.1	-58.0
08-09-2023 08:15:00	406.8	242.5	-47.0	225.9	-57.3
08-09-2023 08:30:00	407.0	247.9	-46.4	231.0	-57.1
08-09-2023 08:45:00	407.0	250.3	-45.9	233.3	-56.7
08-09-2023 09:00:00	406.7	242.9	-45.6	226.3	-56.2
08-09-2023 09:15:00	407.0	234.9	-47.6	218.9	-57.7
08-09-2023 09:30:00	407.0	229.6	-46.9	213.8	-56.6
08-09-2023 09:45:00	406.7	221.7	-44.4	206.6	-53.8
08-09-2023 10:00:00	406.8	212.2	-44.9	197.6	-53.8
08-09-2023 10:15:00	406.6	204.6	-43.5	190.6	-51.9
08-09-2023 10:30:00	407.0	192.7	-42.4	179.3	-50.3
08-09-2023 10:45:00	407.0	179.2	-40.0	166.7	-47.4
08-09-2023 11:00:00	407.0	160.7	-39.7	149.3	-46.1
08-09-2023 11:15:00	407.0	152.8	-40.2	141.8	-46.2
08-09-2023 11:30:00	407.0	148.0	-39.5	137.0	-45.3
08-09-2023 11:45:00	407.0	142.9	-38.9	132.4	-44.4
08-09-2023 12:00:00	407.1	145.8	-39.1	135.1	-45.0
08-09-2023 12:15:00	407.2	151.7	-41.8	140.6	-47.8
08-09-2023 12:30:00	407.0	160.7	-42.4	148.8	-48.8
08-09-2023 12:45:00	407.7	157.7	-44.5	145.7	-50.7
08-09-2023 13:00:00	407.1	158.6	-43.6	146.6	-50.0
08-09-2023 13:15:00	407.7	154.3	-46.6	142.4	-52.6
08-09-2023 13:30:00	408.3	153.6	-48.3	141.5	-54.1
08-09-2023 13:45:00	408.3	152.4	-47.7	140.4	-53.5
08-09-2023 14:00:00	408.0	153.3	-47.6	141.4	-53.5
08-09-2023 14:15:00	408.0	163.2	-48.6	150.4	-55.0
08-09-2023 14:30:00	407.3	172.6	-46.9	159.3	-53.8
08-09-2023 14:45:00	407.8	178.5	-48.1	164.9	-55.4
08-09-2023 15:00:00	407.4	186.2	-48.1	172.1	-55.8
08-09-2023 15:15:00	407.0	188.6	-47.1	174.3	-55.1
08-09-2023 15:30:00	407.2	187.5	-47.8	173.0	-55.5
08-09-2023 15:45:00	407.5	189.6	-50.1	175.1	-57.8
08-09-2023 16:00:00	407.1	198.6	-48.5	183.6	-56.7
08-09-2023 16:15:00	407.0	206.3	-49.0	190.7	-57.8
08-09-2023 16:30:00	407.0	217.9	-49.3	201.9	-58.6
08-09-2023 16:45:00	407.0	239.6	-48.7	222.4	-59.2
08-09-2023 17:00:00	407.0	245.1	-48.6	227.5	-59.4
08-09-2023 17:15:00	407.0	240.2	-49.2	222.8	-59.5
08-09-2023 17:30:00	406.7	245.6	-48.6	228.0	-59.2
08-09-2023 17:45:00	406.7	245.6	-47.5	228.0	-58.3
08-09-2023 18:00:00	406.2	238.0	-46.2	220.9	-56.7
08-09-2023 18:15:00	405.7	225.5	-42.4	209.2	-52.3
08-09-2023 18:30:00	405.2	212.6	-38.6	197.1	-48.1
08-09-2023 18:45:00	405.0	204.1	-37.0	189.3	-46.1
08-09-2023 19:00:00	405.0	203.1	-36.4	188.4	-45.4
08-09-2023 19:15:00	405.0	199.7	-35.7	185.1	-44.7
08-09-2023 19:30:00	405.0	195.6	-34.9	181.2	-43.8
08-09-2023 19:45:00	405.0	191.6	-35.6	177.5	-44.3
08-09-2023 20:00:00	405.0	182.9	-36.3	169.3	-44.5
08-09-2023 20:15:00	405.0	176.2	-36.6	163.1	-44.3
08-09-2023 20:30:00	405.3	181.4	-37.3	168.7	-44.9
08-09-2023 20:45:00	405.0	189.8	-37.5	176.4	-45.7
08-09-2023 21:00:00	405.0	189.8	-37.3	176.3	-45.6
08-09-2023 21:15:00	405.0	190.3	-39.1	176.0	-47.2
08-09-2023 21:30:00	405.3	185.0	-39.4	170.9	-47.6
08-09-2023 21:45:00	405.3	183.5	-41.2	172.2	-47.8
08-09-2023 22:00:00	405.7	185.9	-43.3	176.0	-49.3
08-09-2023 22:15:00	406.0	186.1	-42.3	175.0	-49.0
08-09-2023 22:30:00	405.7	187.7	-41.2	175.8	-48.2
08-09-2023 22:45:00	406.0	187.5	-41.8	175.1	-49.1
08-09-2023 23:00:00	406.0	187.3	-42.7	175.2	-49.6
08-09-2023 23:15:00	405.7	183.8	-41.8	171.5	-48.8
08-09-2023 23:30:00	406.0	188.1	-43.6	175.3	-50.9
08-09-2023 23:45:00	406.0	193.2	-45.1	180.8	-52.2
09-09-2023 00:00:00	406.0	191.8	-46.7	179.2	-54.0
09-09-2023 00:15:00	406.0	192.4	-46.7	181.0	-53.3
09-09-2023 00:30:00	406.0	194.5	-47.5	181.6	-55.1
09-09-2023 00:45:00	406.0	193.9	-48.4	180.5	-56.0
09-09-2023 01:00:00	406.0	192.2	-49.2	178.8	-56.5
09-09-2023 01:15:00	406.2	194.7	-50.2	182.9	-57.0
09-09-2023 01:30:00	406.0	195.3	-51.2	181.0	-59.1
09-09-2023 01:45:00	406.4	198.0	-52.3	183.3	-60.1
09-09-2023 02:00:00	407.0	197.4	-53.2	182.8	-61.1
09-09-2023 02:15:00	407.0	197.5	-54.1	182.4	-61.8
09-09-2023 02:30:00	407.0	201.3	-55.0	185.8	-63.0
09-09-2023 02:45:00	407.0	197.9	-55.4	182.8	-63.1
09-09-2023 03:00:00	406.9	198.6	-56.0	182.7	-63.9
09-09-2023 03:15:00	407.0	201.2	-55.5	185.4	-63.5
09-09-2023 03:30:00	407.3	204.1	-56.4	188.2	-64.5
09-09-2023 03:45:00	407.0	203.9	-57.3	187.4	-65.6
09-09-2023 04:00:00	407.0	203.3	-57.8	186.8	-66.0
09-09-2023 04:15:00	407.5	206.5	-57.9	189.6	-66.2
09-09-2023 04:30:00	407.1	213.5	-57.6	196.8	-66.2
09-09-2023 04:45:00	407.0	214.6	-56.3	197.5	-65.2
09-09-2023 05:00:00	407.0	213.5	-54.8	197.9	-63.3

09-09-2023 05:15:00	407.3	224.1	-57.2	206.6	-66.4
09-09-2023 05:30:00	407.3	238.3	-56.5	219.8	-66.6
09-09-2023 05:45:00	407.2	247.5	-56.3	231.0	-66.1
09-09-2023 06:00:00	407.3	255.0	-54.0	236.4	-64.9
09-09-2023 06:15:00	407.2	262.0	-50.5	243.0	-62.0
09-09-2023 06:30:00	407.0	263.9	-48.8	247.7	-59.4
09-09-2023 06:45:00	407.0	259.9	-47.2	243.6	-58.0
09-09-2023 07:00:00	407.0	260.8	-46.6	244.1	-57.8
09-09-2023 07:15:00	406.7	266.9	-44.9	250.6	-56.3
09-09-2023 07:30:00	406.5	268.2	-45.4	250.8	-57.2
09-09-2023 07:45:00	407.0	267.9	-46.3	249.9	-58.3
09-09-2023 08:00:00	407.0	265.9	-46.8	246.5	-59.2
09-09-2023 08:15:00	407.0	264.2	-46.5	246.1	-58.4
09-09-2023 08:30:00	406.2	260.4	-44.3	243.0	-55.7
09-09-2023 08:45:00	406.3	263.2	-44.6	245.1	-56.6
09-09-2023 09:00:00	406.2	250.6	-45.1	234.7	-55.4
09-09-2023 09:15:00	406.3	234.4	-45.7	225.4	-52.2
09-09-2023 09:30:00	407.0	227.9	-47.3	218.0	-54.1
09-09-2023 09:45:00	407.0	204.1	-45.9	195.8	-51.5
09-09-2023 10:00:00	407.0	142.6	-44.1	133.0	-49.3
09-09-2023 10:15:00	407.4	128.5	-44.4	118.9	-49.0
09-09-2023 10:30:00	407.2	126.2	-44.2	115.8	-48.9
09-09-2023 10:45:00	407.7	117.5	-42.8	107.4	-47.2
09-09-2023 11:00:00	407.2	100.1	-40.4	91.3	-43.9
09-09-2023 11:15:00	407.3	97.7	-38.8	88.9	-42.4
09-09-2023 11:30:00	407.0	99.6	-37.2	91.7	-40.8
09-09-2023 11:45:00	406.8	96.9	-38.1	89.0	-41.5
09-09-2023 12:00:00	407.2	97.2	-39.8	89.3	-43.2
09-09-2023 12:15:00	407.5	91.0	-39.1	83.3	-42.1
09-09-2023 12:30:00	407.0	97.2	-39.1	88.6	-42.6
09-09-2023 12:45:00	407.7	91.4	-41.6	84.0	-44.4
09-09-2023 13:00:00	407.6	92.3	-42.5	84.6	-45.5
09-09-2023 13:15:00	408.1	92.7	-45.8	85.3	-48.5
09-09-2023 13:30:00	408.0	89.9	-44.7	82.3	-47.5
09-09-2023 13:45:00	407.8	87.8	-43.7	80.3	-46.4
09-09-2023 14:00:00	407.9	91.5	-44.0	84.0	-46.9
09-09-2023 14:15:00	408.0	98.3	-44.8	89.9	-48.1
09-09-2023 14:30:00	407.9	102.7	-45.0	94.4	-48.4
09-09-2023 14:45:00	407.3	108.9	-44.2	100.0	-48.1
09-09-2023 15:00:00	407.0	126.4	-44.8	116.5	-49.6
09-09-2023 15:15:00	407.0	139.6	-46.5	128.6	-51.8
09-09-2023 15:30:00	406.4	152.5	-46.0	140.1	-52.3
09-09-2023 15:45:00	406.0	162.0	-45.9	149.0	-52.7
09-09-2023 16:00:00	406.0	164.8	-46.3	152.0	-53.2
09-09-2023 16:15:00	406.8	166.9	-48.5	154.1	-55.3
09-09-2023 16:30:00	407.0	182.5	-41.9	169.1	-50.0
09-09-2023 16:45:00	407.0	211.4	-41.9	196.7	-51.2
09-09-2023 17:00:00	407.3	216.2	-41.0	201.7	-50.5
09-09-2023 17:15:00	407.6	226.6	-43.7	211.5	-53.5
09-09-2023 17:30:00	407.1	232.3	-40.6	216.8	-51.0
09-09-2023 17:45:00	407.0	234.9	-37.8	218.9	-48.7
09-09-2023 18:00:00	407.0	225.7	-37.2	209.6	-47.8
09-09-2023 18:15:00	406.3	212.1	-33.4	197.6	-43.3
09-09-2023 18:30:00	405.6	211.8	-29.5	198.2	-39.2
09-09-2023 18:45:00	405.2	205.5	-28.9	190.9	-38.9
09-09-2023 19:00:00	405.2	208.4	-29.2	193.5	-39.3
09-09-2023 19:15:00	405.0	203.0	-28.2	189.1	-38.0
09-09-2023 19:30:00	405.0	200.8	-28.5	186.5	-38.0
09-09-2023 19:45:00	405.0	209.7	-29.6	195.3	-39.4
09-09-2023 20:00:00	405.0	207.0	-30.4	192.0	-40.4
09-09-2023 20:15:00	405.0	208.0	-30.7	192.2	-40.9
09-09-2023 20:30:00	405.0	212.8	-31.3	196.3	-41.9
09-09-2023 20:45:00	405.0	209.7	-28.5	193.6	-39.1
09-09-2023 21:00:00	404.8	208.3	-27.8	193.9	-37.9
09-09-2023 21:15:00	405.0	212.8	-29.0	197.3	-39.6
09-09-2023 21:30:00	405.0	209.9	-28.9	195.4	-39.2
09-09-2023 21:45:00	405.1	210.2	-30.4	196.1	-40.3
09-09-2023 22:00:00	405.4	213.0	-32.5	198.2	-42.6
09-09-2023 22:15:00	405.4	213.5	-33.0	200.7	-42.1
09-09-2023 22:30:00	405.0	212.0	-31.2	209.0	-34.6
09-09-2023 22:45:00	405.0	213.6	-30.9	210.6	-34.2
09-09-2023 23:00:00	405.0	203.4	-29.3	197.2	-34.5
09-09-2023 23:15:00	405.0	198.9	-28.4	192.7	-33.5
09-09-2023 23:30:00	405.0	198.5	-28.4	194.6	-32.3
09-09-2023 23:45:00	405.0	199.9	-30.2	191.3	-36.8
10-09-2023 00:00:00	405.0	205.1	-31.8	195.4	-39.1
10-09-2023 00:15:00	405.8	209.1	-32.9	199.1	-40.3
10-09-2023 00:30:00	405.6	213.2	-34.3	202.7	-42.1
10-09-2023 00:45:00	405.6	218.9	-36.4	207.9	-44.4
10-09-2023 01:00:00	405.8	221.7	-37.6	209.5	-46.2
10-09-2023 01:15:00	405.9	225.2	-39.2	213.0	-47.6
10-09-2023 01:30:00	406.0	219.7	-38.7	207.6	-47.0
10-09-2023 01:45:00	406.0	222.6	-39.9	210.2	-48.3
10-09-2023 02:00:00	406.0	215.2	-40.5	202.9	-48.8
10-09-2023 02:15:00	407.0	214.6	-41.1	201.8	-49.6
10-09-2023 02:30:00	407.0	214.7	-42.3	200.9	-51.2
10-09-2023 02:45:00	406.8	217.9	-43.4	203.5	-52.4
10-09-2023 03:00:00	407.0	215.6	-44.3	202.4	-52.8
10-09-2023 03:15:00	407.0	212.1	-44.7	199.8	-52.6
10-09-2023 03:30:00	407.0	199.6	-43.7	188.3	-51.0
10-09-2023 03:45:00	407.0	189.0	-44.4	177.5	-51.4
10-09-2023 04:00:00	407.8	182.1	-44.7	170.7	-51.5
10-09-2023 04:15:00	408.0	189.6	-44.9	177.6	-52.3
10-09-2023 04:30:00	407.5	200.5	-45.9	187.4	-54.0
10-09-2023 04:45:00	408.0	214.5	-46.9	200.6	-55.6
10-09-2023 05:00:00	407.6	218.2	-46.7	204.5	-55.3
10-09-2023 05:15:00	407.6	225.4	-46.8	211.3	-55.9
10-09-2023 05:30:00	407.5	232.5	-45.2	218.1	-54.6
10-09-2023 05:45:00	407.7	242.4	-45.8	227.2	-55.9
10-09-2023 06:00:00	408.0	253.0	-44.5	237.2	-55.4
10-09-2023 06:15:00	407.6	254.2	-44.1	238.5	-54.9
10-09-2023 06:30:00	407.0	268.4	-41.1	252.7	-52.3
10-09-2023 06:45:00	406.8	286.5	-41.1	270.1	-53.1
10-09-2023 07:00:00	407.0	297.5	-40.7	280.4	-53.5
10-09-2023 07:15:00	407.0	293.5	-40.6	277.2	-52.9
10-09-2023 07:30:00	407.0	279.5	-37.4	263.7	-49.4
10-09-2023 07:45:00	406.7	272.6	-36.1	257.0	-47.8
10-09-2023 08:00:00	407.0	273.2	-36.5	257.0	-48.6
10-09-2023 08:15:00	407.0	270.4	-36.9	254.2	-48.8
10-09-2023 08:30:00	407.0	251.9	-36.9	236.5	-48.0
10-09-2023 08:45:00	407.0	228.1	-35.9	214.1	-45.8
10-09-2023 09:00:00	407.4	204.5	-37.2	191.7	-45.8
10-09-2023 09:15:00	408.0	177.8	-36.4	166.7	-43.6
10-09-2023 09:30:00	407.9	163.1	-37.9	153.2	-44.2
10-09-2023 09:45:00	408.0	154.2	-35.4	144.4	-41.4
10-09-2023 10:00:00	407.4	152.7	-32.6	142.6	-38.9
10-09-2023 10:15:00	407.9	144.5	-32.7	134.1	-39.1
10-09-2023 10:30:00	407.4	137.9	-31.6	131.8	-35.8
10-09-2023 10:45:00	407.3	138.3	-33.4	136.7	-35.5
10-09-2023 11:00:00	407.2	139.4	-33.9	137.4	-36.0
10-09-2023 11:15:00	407.5	140.7	-34.4	138.7	-36.6
10-09-2023 11:30:00	407.0	138.6	-32.1	136.9	-34.3
10-09-2023 11:45:00	407.3	135.8	-33.0	134.0	-35.0
10-09-2023 12:00:00	407.4	134.0	-33.2	132.3	-35.3
10-09-2023 12:15:00	407.6	127.1	-34.5	125.6	-36.4
10-09-2023 12:30:00	407.6	121.1	-36.8	119.5	-38.7
10-09-2023 12:45:00	407.7	117.1	-33.2	115.7	-35.1
10-09-2023 13:00:00	407.6	114.3	-34.0	113.0	-35.7
10-09-2023 13:15:00	407.8	108.2	-35.5	106.8	-37.4
10-09-2023 13:30:00	407.6	115.1	-35.8	113.1	-37.7
10-09-2023 13:45:00	408.0	108.2	-39.2	106.4	-41.0
10-09-2023 14:00:00	407.9	110.2	-38.5	108.4	-40.4
10-09-2023 14:15:00	408.0	115.1	-40.1	113.0	-42.2
10-09-2023 14:30:00	408.0	117.9	-37.7	114.3	-40.3
10-09-2023 14:45:00	407.5	118.7	-36.7	112.1	-40.6
10-09-2023 15:00:00	407.3	114.2	-34.8	107.3	-38.7
10-09-2023 15:15:00	407.3	106.6	-33.9	100.1	-37.6
10-09-2023 15:30:00	407.4	100.9	-33.4	94.0	-36.9
10-09-2023 15:45:00	407.1	100.6	-33.7	94.0	-37.1
10-09-2023 16:00:00	408.0	102.0	-36.1	94.3	-39.8
10-09-2023 16:15:00	407.8	103.6	-37.8	95.4	-41.6
10-09-2023 16:30:00	408.0	111.1	-39.3	102.2	-43.5
10-09-2023 16:45:00	408.0	120.6	-41.8	111.8	-46.2
10-09-2023 17:00:00	408.0	123.9	-42.3	114.7	-46.7
10-09-2023 17:15:00	408.4	125.3	-43.8	115.8	-48.3
10-09-2023 17:30:00	408.0	137.4	-44.0	127.0	-49.3
10-09-2023 17:45:00	408.0	146.2	-43.3	134.7	-49.2
10-09-2023 18:00:00	407.2	146.7	-39.4	135.7	-45.5
10-09-2023 18:15:00	406.2	137.3	-35.6	127.7	-41.1
10-09-2023 18:30:00	405.0	153.2	-34.1	142.8	-40.4
10-09-2023 18:45:00	404.5	185.0	-32.5	176.1	-38.9
10-09-2023 19:00:00	404.0	202.3	-31.5	193.6	-38.0
10-09-2023 19:15:00	404.0	214.9	-31.0	205.7	-38.1
10-09-2023 19:30:00	403.6	218.6	-32.5	207.8	-40.4
10-09-2023 19:45:00	404.0	218.9	-32.1	207.6	-40.4
10-09-2023 20:00:00	403.6	217.6	-32.3	204.9	-41.4
10-09-2023 20:15:00	404.0	211.2	-31.3	199.3	-39.8
10-09-2023 20:30:00	403.8	206.7	-30.6	194.7	-39.2
10-09-2023 20:45:00	403.2	202.9	-28.0	190.7	-37.0
10-09-2023 21:00:00	403.1	208.8	-27.6	195.7	-37.3
10-09-2023 21:15:00	403.4	217.6	-28.4	204.1	-38.3
10-09-2023 21:30:00	403.2	218.2	-29.3	204.5	-39.3
10-09-2023 21:45:00	403.4	218.6	-30.5	204.3	-40.6
10-09-2023 22:00:00	403.9	218.0	-32.7	204.6	-42.2
10-09-2023 22:15:00	404.0	219.6	-31.1	206.5	-40.7
10-09-2023 22:30:00	404.0	216.2	-29.3	202.9	-38.9
10-09-2023 22:45:00	403.8	214.0	-32.1	200.7	-41.5
10-09-2023 23:00:00	404.0	205.8	-33.2	192.6	-42.3
10-09-2023 23:15:00	404.0	201.0	-32.0	187.8	-41.2
10-09-2023 23:30:00	404.0	199.0	-31.1	185.6	-40.3
10-09-2023 23:45:00	404.0	201.0	-32.1	187.6	-41.3

MAX	409.0
MIN	403.1
AVG	406.2

Annexure-I

SUMMARY OF DEVIATION CHARGE RECEIPT AND PAYMENT STATUS

BILL UPTO 17-12-2023 (W-38 of FY 2023-24)
AS on 04-01-24

Figures in ₹ Lakhs

CONSTITUENTS	Net outstanding for 2022-23	Receivable by Pool	Received by Pool	Payable From Pool	Paid From Pool	Outstanding for 2023-24	Total Outstanding
BSPTCL	2,547.54813	12,809.41878	0.00000	12,867.47986	452.65296	394.59188	2,942.14001
JUVNL	0.00000	8,043.27582	1,648.26700	941.36446	0.00000	5,453.64436	5,453.64436
DVC	0.00000	9,608.88026	9,012.86946	2,594.32994	2,235.21112	236.89198	236.89198
GRIDCO	0.00000	2,658.76497	2,634.97373	14,516.57181	13,496.31624	-996.46433	-996.46433
WBSETCL	0.00000	2,049.43888	2,350.10270	23,985.64043	22,654.10917	-1,632.19508	-1,632.19508
Sikkim	686.22267	2,184.96729	0.00000	576.63110	0.00000	1,608.33619	2,294.55886
NTPC	0.00000	32,206.80605	29,539.09921	2.57267	2.57267	2,667.70684	2,667.70684
NHPC	0.00000	3.09535	1.37824	652.72566	650.88953	-0.11902	-0.11902
MPL	0.00000	174.64275	45.93437	1,599.75705	1,171.27708	-299.77159	-299.77159
APNRL	0.00000	301.72179	225.66132	314.53112	256.15844	17.68779	17.68779
CHUZACHEN	0.00000	185.58206	179.92317	95.51565	90.66747	0.81071	0.81071
NVVN-BD	0.00000	952.06172	926.13392	1,977.20402	1,955.98030	4.70408	4.70408
GMR	0.00000	298.69872	210.66919	127.26576	83.73027	44.49404	44.49404
JITPL	0.00000	983.75778	704.73330	509.13235	367.90999	0.00000	0.00000
TPTCL (Dagachu)	0.00000	280.45026	276.22641	853.78493	826.88566	-22.67542	-22.67542
JLHEP	0.00000	172.23723	147.90945	420.32719	386.79111	-9.20830	-9.20830
NVVN-NEPAL	0.00000	5,452.46995	5,283.52588	1,560.69187	1,535.57136	143.82356	143.82356
BRBCL	0.00000	750.76718	750.56963	91.77676	91.57921	0.00000	0.00000
PGCIL SASARAM	0.00000	46.60435	46.60435	6.02753	6.02753	0.00000	0.00000
TUL (Teesta-III)	0.00000	2,604.40881	2,520.38392	610.85731	526.83242	0.00000	0.00000
Dikchu	0.00000	356.14275	354.27064	637.27191	635.39982	0.00002	0.00002
PGCIL-Alipurduar	0.00000	42.38497	40.18180	6.19342	5.82084	1.83059	1.83059
Tashiding(THEP)	0.00000	40.70943	20.27364	746.45867	715.95686	-10.06602	-10.06602
RONGNICHU	0.00000	28.79760	14.32655	416.69036	394.72962	-7.48969	-7.48969
NVVN Bhutan	0.00000	344.85483	342.04881	284.25622	240.13680	-41.31340	-41.31340
ECR	0.00000	200.96288	200.73579	303.05416	302.82707	0.00000	0.00000
Total	**3,233.77080**	**82,781.90246**	**57,476.80248**	**66,698.11221**	**49,086.03354**	**7,555.21919**	**10,788.98999**

IND Bharat

Receivable: Receivable by ER Payable: Payable by ER POOL
Received: Received by ER P Paid: Paid by ER POOL
'- ve' Payable by ER pool '+ ve' Receivable by ER pool

Annexure - II

STATUS OF REACTIVE CHARGES

AS ON 04.01.23

Figures in ₹ Lakhs

Name of Parties	Receivable Amount by pool	Received Amount by pool	Payable Amount by pool	Paid Amount by pool	Outstanding Amount Receivable(+Ve) / Payable by pool(-Ve)
Bhutan	24.59	24.59	3.28	3.28	0.00
Bangladesh	5.53	5.53	1.93	1.93	0.01
Nepal	29.20	29.20	4.00	4.00	0.00
BSPHCL	173.04	50.97	114.52	69.24	76.79
JUVNL	325.40	310.35	3.54	0.00	11.51
DVC	19.18	18.66	51.24	42.24	-8.47
GRIDCO	202.78	202.78	76.22	62.43	-13.79
SIKKIM	0.36	0.00	10.61	9.89	-0.35
WBSETCL	101.32	60.68	90.50	72.12	22.27
JITPL	0.00	0.00	1.90	1.90	0.00
Alipurduar	0.13	0.12	0.00	0.00	0.01
Sasaram	0.12	0.00	0.00	0.00	0.12
MPL	0.00	0.00	0.00	0.00	0.00
APNRL	0.00	0.00	4.25	4.13	-0.12
BRBCL	0.00	0.00	5.80	2.51	-3.29
JLHEP	0.00	0.00	0.23	0.23	0.00
Chuzachen	0.12	0.00	0.11	0.11	0.12
TUL	0.00	0.00	0.00	0.00	0.00
RHEP	0.13	0.12	0.02	0.02	0.01
THEP	0.16	0.10	0.01	0.01	0.05
Dikchu	0.00	0.00	0.00	0.00	0.00
ECR	1.60	1.60	1.10	1.10	0.00
GMR	0.70	0.65	0.05	0.05	0.05
NHPC	0.00	0.00	2.81	2.56	-0.25
NTPC	0.89	0.00	315.79	232.47	-82.43

Receivable: Receivable by ER POOI Payable: Payable by ER POOL
Received: Received by ER POOL Paid: Paid by ER POOL
'- ve' Payable by ER pool '+ ve' Receivable by ER pool

Annexure-B.25.3

Annexure -IV

Current Status of Letter of Credit (LC) amount against DSM charges for ER constituents

Figures in Lacs of Rupees

Sl No	ER Constituents	No. of weeks in which Deviation Charge payable	No of times payment was delayed during 2022-23	Total Deviation charges payable to pool during 2022-23	Average weekly Deviation Charge liability	LC Amount	Defaulting Weeks	Due date of expiry	Remarks
					(C)/52 weeks	110% of (B)			
		(A)	(B)	(C)	(D)	(E)	(G)	(F)	(G)
1	Bihar State Power Holding Corporation Limited/ बिहार	37	37	19124.44	367.78	404.55551	ALL Weeks	12-11-2023	LC opened for ₹ 213,53,049 /-
2	Jharkhand State Electricity Board / झारखंड	36	36	16432.86	316.02	347.61817	ALL Weeks	13-03-2024	LC opened for ₹139,64,455 /-
3	Damodar Valley Corporation / डीवीसी	39	2	12559.02	241.52	265.67154	25, 38	No Valid LC	
4	Power Deptt, Govt. of Sikkim /सिक्किम	28	28	2176.42	41.85	46.03970	ALL Weeks	No Valid LC	
5	APNRL	39	39	1226.93	23.59	25.95437	ALL Weeks	11-12-2024	LC opened for ₹ 25,95,437 /-
6	Gati Chuzachen / चुजाचेन	18	13	116.69	2.24	2.46842	All weeks Except 25, 32, 41, 49, 50	No Valid LC	
7	GMR / जीएमआर	45	37	948.14	18.23	20.05681	All week except 9, 10, 11, 12, 14, 15, 17, 18	No Valid LC	
8	Jindal India Thermal Power Ltd.	33	6	1422.66	27.36	30.09467	2, 3, 38, 50	No Valid LC	
9	TPTCL Dagachu/ डागाचु	45	6	3812.86	73.32	80.65675	36, 38, 39, 40, 44, 45	31-03-2024	LC opened for ₹ 80,65,675 /-
10	JLHEP	35	31	1192.36	22.93	25.22302	All weeks Except 2, 6, 19, 27	No Valid LC	
11	BRBCL /बीआर बीसीएल	42	2	1738.40	33.43	36.77389	29, 46	No Valid LC	
12	PGCIL-Sasaram / सासाराम	30	3	38.17	0.73	0.80735	43, 52	31-03-2024	LC opened for ₹ 80,735 /-
13	Dikchu	18	8	185.40	3.57	3.92202	30, 37, 38, 41, 43, 45, 46, 50	03-05-2024	LC opened for ₹ 392,202 /-
14	PGCIL-Alipurduar / अलीपुरदुआर	15	8	23.14	0.44	0.48940	1, 2, 3, 4, 7, 8	31-12-2024	LC opened for ₹ 48,940/-
15	Tashiding	23	17	396.09	7.62	8.37890	All weeks Except 1, 2, 4, 6, 19, 27	No Valid LC	

Annexure-B.25.4

Deviation Interest Bill due to delay payment

Annexure-III

All figs in ₹

Sl No.	Constituent Name	Interest outstanding till Q4_2020-21	Interest Received by Pool against outstanding	Interest Paid by pool against Outstanding	Net Interest outstanding till Q4_2020-21
1	BSPTCL	91,05,608	91,05,608		0
2	DVC	23,718		23,718	0
3	GRIDCO	-2,79,466		2,79,466	0
4	JUVNL	4,34,61,973	4,34,61,973		0
5	Sikkim	11,76,865	11,76,865		0
6	WBSETCL	21,415	21,415		0
7	NHPC	-54,745		54,745	0
8	NTPC	0			0
9	APNRL	11,33,748	11,33,748		0
10	BRBCL	-1,316		1,316	0
11	JLHEP	1,28,853	1,15,968	12,885	0
12	CHUZACHEN	-3,119		3,119	0
13	GMR	1,73,96,828	1,73,96,828		0
14	JITPL	8,589	8,589		0
15	KBUNL	40	40		0
16	MPL	-33,428		33,428	0
17	NPGC-Infirm	0			0
18	NPGC	-10,953		10,953	0
19	NVVN-BD	24,603		24,603	0
20	NVVN-NEPAL	0			0
21	OPGC	24,209			24,209
22	PGCIL-Alipurduar	1,72,257	1,72,258		0
23	PGCIL SASARAM	1,686	1,686		0
24	Tashiding(THEP)	1,57,661	1,57,661		0
25	Dikchu	28,701	28,701		0
26	TPTCL (Dagachu)	0			0
27	TUL (Teesta-III)	-1,134		1,134	0

'- ve' Payable by ER pool

'+ ve' Receivable by ER pool

Note: Ind-bharath interest is calculated till 29.05.2019

Annexure –C.1

Annexure - V

DETAILS OF DISBURSEMENT TO POWER SYSTEM DEVELOPMENT FUND

Sl No	Nature of Amount	Amount transferred to PSDF (Rs in Lac)	Date of Disbursement		Remarks
	Opening Balance (upto 31.03.2019)	**95896.17**			
1	Reactive Energy Charge	105.79202	04.04.19		Reactive Charges_18-19
2	Reactive Energy Charge	287.48448	03.05.19		Reactive Charges_18-19 & 19-20
3	Reactive Energy Charge	129.69559	03.06.19		Reactive Charges_19-20
4	Reactive Energy Charge	207.83840	04.07.19		Reactive Charges_19-20
5	Reactive Energy Charge	94.91703	02.08.19		Reactive Charges_19-20
6	Reactive Energy Charge	188.53681	02.09.19		Reactive Charges_19-20
7	Surplus DSM amount transferred	32210.51998	24.09.19		DSM Charges_19-20
8	Reactive Energy Charge	173.06004	01.10.19		Reactive Charges_19-20
9	Reactive Energy Charge	273.15002	01.11.19		Reactive Charges_19-20
10	Reactive Energy Charge	401.09564	04.12.19		Reactive Charges_19-20
11	Reactive Energy Charge	252.53573	02.01.20		Reactive Charges_19-20
12	Reactive Energy Charge	148.65520	07.02.20		Reactive Charges_19-20
13	Reactive Energy Charge	205.22437	04.03.20		Reactive Charges_19-20
14	Bank interest from Reactive acct	0.21706	03.04.20		Bank interest from Reactive acct
15	Reactive Energy Charge	843.03166	03.06.20		Reactive Charges_19-20 & 20-21
16	Reactive Energy Charge	507.80481	07.07.20		Reactive Charges_17-18,18-19 & 20-21
17	Reactive Energy Charge	309.41068	06.08.20		Reactive Charges_17-18,18-19 & 20-21
18	Reactive Energy Charge	83.23955	02.09.20		Reactive Charges_19-20 & 20-21
19	Bank interest of DSM A/C-TDS portion	251.65235	18.09.20		Bank interest TDS portion transferred from POSOCO,CC
20	Bank interest of DSM A/C-TDS portion	15.64788	22.09.20		Bank interest TDS portion transferred from POSOCO,CC
21	Reactive Energy Charge	118.85979	06.10.20		Reactive Charges_ 20-21
22	Reactive Energy Charge	101.42971	04.11.20		Reactive Charges_ 20-21
23	Reactive Energy Charge	82.34791	04.12.20		Reactive Charges_ 20-21
24	Reactive Energy Charge	500.95333	06.01.21		Reactive Charges of 19-20 & 20-21
25	Reactive Energy Charge	92.51486	03.02.21		Reactive Charges of 19-20 & 20-21
26	Reactive Energy Charge	50.22963	04.03.21		Reactive Charges of 19-20 & 20-21
27	Reactive Energy Charge	32.15331	07.04.21		Reactive Charges of 19-20 & 20-21
28	Reactive Energy Charge	39.59760	05.05.21		Reactive Charges of 19-20 & 20-21
29	Reactive Energy Charge	18.96069	01.06.21		Reactive Charges of 20-21 & 21-22
30	Reactive Energy Charge	392.24613	12.07.21		Reactive Charges of 20-21 & 21-22
31	Reactive Energy Charge	214.22298	22.07.21		Reactive Charges 21-22
32	Addl. Dev	392.94201	25.08.21		DSM Charges of 19-20 received from Jharkhand
33	Addl. Dev	5.99326	03.09.21		DSM Charges of 19-20 received from Jharkhand
34	Reactive Energy Charge	330.73064	09.09.21		Reactive Charges 21-22
35	Addl. Dev	1334.97939	23.09.21		DSM Charges of 20-21 received from Bihar
36	Addl. Dev	500.00000	27.09.21		DSM Charges of 20-21 received from Bihar
37	Addl. Dev	1500.00000	29.09.21		DSM Charges of 20-21 received from Bihar
38	Addl. Dev	500.00000	01.10.21		DSM Charges of 20-21 received from Bihar
39	Addl. Dev	1000.00000	05.10.21		DSM Charges of 20-21 received from Bihar
40	Addl. Dev	402.60050	05.10.21		DSM Charges of 20-21 received from Jharkhand
41	Reactive Energy Charge	131.05971	07.10.21		Reactive Charges 21-22
42	Addl. Dev	1000.00000	22.10.21		DSM Charges of 20-21 received from Bihar
43	Addl. Dev	1000.00000	26.10.21		DSM Charges of 20-21 received from Bihar
44	Addl. Dev	539.21266	28.10.21		DSM Charges of 20-21 received from Bihar
45	Reactive Energy Charge	224.70676	03.11.21		Reactive Charges 21-22
46	Reactive Energy Charge	366.25533	03.12.21		Reactive Charges 21-22
47	Reactive Energy Charge	5.33816	09.12.21		Interest Amount received in Reactive Account
48	Addl. Dev	489.56759	04.01.22		DSM Charges of 20-21 received from Jharkhand
49	Reactive Energy Charge	449.70232	04.01.22		Reactive Charges 21-22
50	Reactive Energy Charge	547.40910	04.02.22		Reactive Charges 21-22
51	Addl. Dev	7182.00679	08.02.22		Excess amount after clearing Wk-43
52	Addl. Dev	103.38490	28.02.22		DSM Charges of 20-21 received from Jharkhand and POSOCO CC (REC)
53	Reactive Energy Charge	22.28702	04.03.22		Reactive Charges 21-22
54	Reactive Energy Charge	978.22379	08.03.22		Reactive Charges 21-22
55	Reactive Energy Charge	502.63132	04.04.22		Reactive Charges 21-22
56	Addl. Dev	13586.90110	02.05.22		Addl Dev Charge 21-22
57	Reactive Energy Charge	91.67842	02.05.22		Reactive Charges 21-22
58	Addl. Dev	323.72543	17.05.22		DSM Charges of 21-22 received from Jharkhand
59	Addl. Dev	223.19034	31.05.22		DSM Charges of 21-22 received from Jharkhand
60	Addl. Dev	17070.55890	02.06.22		DSM charges
61	Reactive Energy Charge	104.77973	02.06.22		Reactive Charges 21-22
62	Addl. Dev	700.00000	10.06.22		DSM Charges of 21-22 received from Jharkhand and DVC (Bhutan)
63	Addl. Dev	230.65522	24.06.22		DSM Charges of 21-22 received from Jharkhand and DVC (Bhutan)
64	Addl. Dev	200.00000	28.06.22		DSM Charges of 21-22 received from Jharkhand
65	Addl. Dev	200.00000	01.07.22		DSM Charges of 21-22 received from Jharkhand
66	Reactive Energy Charge	491.14301	08.07.22		Reactive Charges 21-22 received from Bihar
67	Addl. Dev	200.00000	14.07.22		DSM Charges of 21-22 received from Jharkhand
68	Addl. Dev	900.00000	20.07.22		DSM Charges of 21-22 received from Sikkim and Bihar
69	Addl. Dev	300.00000	25.07.22		DSM Charges of 21-22 received from Jharkhand
70	Addl. Dev	200.00000	26.07.22		DSM Charges of 21-22 received from Jharkhand
71	Addl. Dev	400.00000	28.07.22		DSM Charges of 21-22 received from Jharkhand
72	Addl. Dev	553.96908	08.08.22		DSM Charges of 21-22 received from Bihar
73	Reactive Energy Charge	56.45017	08.08.22		Reactive Charges 22-23
74	Reactive Energy Charge	586.61896	07.09.22		Reactive Charges 22-23
75	Reactive Energy Charge	152.77578	07.10.22		Reactive Charges 22-23
76	Addl. Dev	15507.63580	07.11.22		DSM Charges 22-23
77	Reactive Energy Charge	94.63234	07.11.22		Reactive Charges 22-23
78	Reactive Energy Charge	89.18883	02.12.22		Reactive Charges 22-23
79	Reactive Energy Charge	162.52773	05.01.23		Reactive Charges 22-23
80	Reactive Energy Charge	3.93158	07.02.23		Reactive Charges 22-23
81	Reactive Energy Charge	292.70498	06.03.23		Reactive Charges 22-23
82	Reactive Energy Charge	321.80291	30.03.23		Reactive Charges 22-23
83	Addl. Dev	10079.39783	06.04.23		DSM Charges 22-23
84	Reactive Energy Charge	716.65397	04.05.23		Reactive Charges 23-24
85	Reactive Energy Charge	508.35350	07.06.23		Reactive Charges 23-24
86	Reactive Energy Charge	83.11163	05.07.23		Reactive Charges 23-24
87	Reactive Energy Charge	498.36959	04.08.23		Reactive Charges 23-24
88	Reactive Energy Charge	50.77966	05.09.23		Reactive Charges 23-24
89	Reactive Energy Charge	5.26035	06.10.23		Reactive Charges 23-24
90	Reactive Energy Charge	6.79669	06.11.23		Reactive Charges 23-24
91	Reactive Energy Charge	0.11306	05.12.23		Reactive Charges 23-24
	Total	**218731.92988**			

Annexure- C.2

ERLDC Fees & Charges

Annexure-IX

		2021-22				2022-23				2023-24	
Sl No	**Entity Name**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**
1	Adhunik PNRL	Yes	Yes				Yes		Yes	Yes	
2	Alipurduar HVDC										
3	Alipurduar Transmission Limited										
4	BARH STG-I	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	BARH-II	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	Bharatiya Rail Bijlee Company Ltd.	Yes				Yes	Yes				
7	Bihar State Power Transmission Company Ltd.								Yes		
8	Darbhanga-Motihari Transmission Company Ltd.	Yes	Yes								
9	Darlipali Super Thermal Power Project	Yes	Yes								
10	DVC										
11	DVC Seller										
12	ENICL										
13	FSTPP-I - II	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	FSTPP-III	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	GATI INFRASTRUCTURE PVT. LTD					Yes	Yes				Yes
16	GMR Kamalanga Energy Ltd.										
17	GRIDCO	Yes	Yes	Yes	Yes						
18	HVDC SASARAM										
19	Jharkhand Bijli Vitran Nigam Limited										
20	JINDAL INDIA THERMAL POWER LTD.										
21	Jorethang Loop HEP							Yes	Yes	Yes	Yes
22	Kanti Bijlee Utpadan Nigam limited	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
23	KHSTPP-I	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	KHSTPP-II	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	Maithon Power Limited	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	Nabinagar Power Generation Corporation Ltd.					Yes		Yes	Yes	Yes	Yes
27	NORTH KARANPURA TRANSCO LIMITED										
28	NVVN Bangladesh						Yes				Yes
29	NVVN Nepal										Yes
30	Odisha Generation Phase-II Transmission Limited										
31	PMJTL										
32	PMTL										
33	POWERGRID ISTS										
34	POWERLINK ISTS										
35	Purulia & Kharagpur Transmission Comp. Ltd.										
36	RANGEET HEP										
37	Rognichu HEP					Yes					
38	Shiga Energy Private Ltd							Yes	Yes	Yes	Yes
39	SIKKIM										
40	Sneha Kinetic Power Project Private Ltd										
41	TALCHER SOLAR PV POWER STATION,NTPC LIMITED	Yes	Yes								
42	Tata Power Trading Company Limited		Yes	Yes		Yes					
43	TEESTA HEP										
44	Teesta Urja Ltd.(Teesta -III HEP)	Yes									
45	Teestavalley Power Transmission Ltd.										
46	TSTPP-I	Yes	Yes								
47	WBSEDCL				Yes		Yes			Yes	

Annexure-C.3.1

DSM account Reconciliation Status of ER constituents

Annexure-VI

	2019-20				2020-21				2021-22				2022-23				2023-24			
Name of The Utility	**Q1 (17.07.19)**	**Q2 (21.10.19)**	**Q3 (13.01.20)**	**Q4 (15.04.20)**	**Q1 (15.07.20)**	**Q2 (23.10.20)**	**Q3 (20.01.21)**	**Q4 (28.04.21)**	**Q1 (06.07.21)**	**Q2 (07.10.21)**	**Q3 (11.01.22)**	**Q4 (18.04.22)**	**Q1 (15.07.22)**	**Q2 (21.10.22)**	**Q3 (19.01.23)**	**Q4 (28.04.23)**	**Q1 (28.07.23)**	**Q2 (19.10.23)**		
BSPHCL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO		
JUVNL	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
DVC	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO		
GRIDCO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		
WBSETCL	YES	YES	YES	YES	YES	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO		
SIKKIM	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
NTPC	YES	YES	YES	YES	YES	YES	YES	YES	Yes	YES	YES	YES	YES	YES	YES	YES	YES	YES		
NHPC	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO		
MPL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES		
APNRL	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
CHUZACHEN(GATI)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		
NVVN(Ind-Bng)	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES		
NVVN(Ind-Nep)	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES		
GMR	YES	YES	YES	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
JITPL	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	YES	NO	NO	YES	NO	NO	NO		
TPTCL (DAGACHU)	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES	YES	NO	NO	NO	YES	NO	NO		
JLHEP(DANS ENERGY)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES		
BRBCL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES		
POWERGRID (ER-I)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO		
POWERGRID (ER-II)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		
TUL (TEESTA-III)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	NO	NO		
DIKCHU	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	YES	YES	NO		
SHIGA (TASHIDING)	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES		
Rongnichu	NA				NA				NA		YES	NO	NO	NO	NO	YES	NO	NO		

(1)The dates in the bracket indicates the date of sending the Reconciliation statements by ERLDC to utilities.
(2) YES Indicates that signed reconciliation statement received by ERLDC
(3) NO Indicates that signed reconciliation statement is not received by ERLDC

Reactive Account Reconciliation Status

Annexure-VII

Annexure-C.3.2

	2019-20				2020-21				2021-22				2022-23				2023-24			
	Reactive account Reconciliation Status of ER constituents																			
Name of The Utility	Q1 (17.07.19)	Q2 (21.10.19)	Q3 (13.01.20)	Q4 (15.04.20)	Q1 (15.07.20)	Q2 (23.10.20)	Q3 (20.01.21)	Q4 (28.04.21)	Q1 (06.07.21)	Q2 (07.10.21)	Q3 (11.01.22)	Q4 (18.04.22)	Q1 (15.07.22)	Q2 (21.10.22)	Q3 (19.01.23)	Q4 (28.04.23)	Q1 (28.07.23)	Q2 (19.10.23)		
BSPHCL	YES	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO		
JUVNL	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
DVC	YES	N/A	N/A	N/A	YES	NO	NO	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO		
GRIDCO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES		
WBSETCL	YES	YES	NO	NO	YES	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO		
SIKKIM	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
NVVN(Ind-Bng)																	YES	YES		
NVVN(Ind-Nep)																	YES	YES		

TRAS Account Reconciliation Status

	2023-24			
	TRAS account Reconciliation Status			
Name of The Utility	Q1 (28.07.23)	Q2 (19.10.23)		
NTPC	YES	YES		
BRBCL	YES	YES		
MPL	YES	YES		

SRAS Account Reconciliation Status

	2022-23		2023-24			
Name of The Utility	Q3 (19.01.23)	Q4 (28.04.23)	Q1 (28.07.23)	Q2 (19.10.23)		
NTPC	YES	YES	YES	YES		
MPL	YES	YES	YES	YES		
NHPC	YES	NO	NO	NO		

Annexure-C.4

Annexure-VIII

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

Sl. No.	STUs / SLDCs Name	Quarter-I (2022-23)	Quarter-II (2022-23)	Quarter-III (2022-23)	Quarter-IV (2022-23)	Quarter-I (2023-24)	Quarter-II (2023-24)
	Date of Issuance	28-07-2022	26-10-2022	30-01-2023	18-04-2023	21-07-2023	27-10-2023
1	West Bengal - SLDC and STU	NO	NO	NO	NO	NO	NO
2	DVC - SLDC	NO	NO	YES	YES	NO	NO
3	OPTCL-SLDC and STU	YES	YES	YES	YES	YES	NO
4	Jharkhand STU and SLDC	NO	NO	NO	NO	NO	NO
5	Bihar-SLDC and STU	YES	NO	NO	NO	NO	NO
6	Andhra Pradesh	NO	NO	NO	NO	NO	NO
7	CHHATTISGARH	NO	NO	NO	NA	NO	NO
8	Delhi	NO	NO	NO	NA	NO	NO
9	HIMACHAL PRADESH	NO	NO	NO	NO	NO	NO
10	JAMMU & KASHMIR	NO	NA	NA	NA	NA	NO
11	KARNATAKA	NO	NO	NO	NO	NO	NO
12	MADHYA PRADESH	NO	NO	NO	NO	NO	NO
13	MAHARASTRA	NO	NO	NO	NO	NO	NO
14	Manipur	NA	NA	NA	NA	NO	NO
15	RAJASTHAN	NO	NO	NO	NO	YES	YES
16	Gujarat	NA	NO	NO	NA	NO	NO
17	Uttar Pradesh	NA	NO	NO	NO	NO	NO
18	Tamil Nadu	NA	NA	NA	NA	NO	NO
19	Telangana	NA	NA	NO	NO	NA	NA
20	CTU	NO	NO	NO	NO	NO	NO

Reconciliation Between Open Access department of ERLDC and Applicants

Sl. No.	Applicants Name	Quarter-I (2022-23)	Quarter-II (2022-23)	Quarter-III (2022-23)	Quarter-IV (2022-23)	Quarter-I (2023-24)	Quarter-II (2023-24)
	Date of Issuance	28-07-2022	26-10-2022	30-01-2023	18-04-2023	21-07-2023	27-10-2023
1	Bihar State Power Holding Company Limited	NA	NA	NA	NA	NA	NA
2	Calcutta Electric Supply Company	NA	NA	NA	NA	NA	NA
3	GRIDCO Ltd	YES	YES	NA	NA	YES	NO
4	GMR Energy Trading Limited	NA	NA	NA	NA	NA	YES
5	Jindal India Thermal Power Limited	NO	NO	NO	NO	NO	NO
6	Jharkhand Bijli Vitaran Nigam Limited	NO	NO	NO	NO	NO	NO
7	NHPC Limited	NA	NA	NA	NA	NA	NA
8	West Bengal State Electricity Distribution Company Limited	NO	NO	NA	NA	NO	NO
9	Adani Enterprises Limited	NA	NA	NA	NA	NO	NA
10	ADANI HYBRID ENERGY JAISALMER THREE LIMITED AHS	YES	YES	NA	NA	NA	NA
11	ADANI HYBRID ENERGY JAISALMER THREE LIMITED AHW	YES	YES	NA	NA	NA	NA
12	Arunachal Pradesh Power Corporation Private Limited	NO	NO	NO	NO	NO	NO
13	Clean Solar Power (Jodhpur) Private Limited	YES	YES	YES	NA	NA	NA
14	DALMIA CEMENT (BHARAT) LIMITED (RCW)	NA	NA	NA	NO	NO	NO
15	HINDUSTAN POWER EXCHANGE LIMITED	NA	YES	YES	YES	YES	YES
16	INDIAN ENERGY EXCHANGE LIMITED	NO	NO	NO	YES	YES	NO
17	India Power Corporation Limited	NO	NO	NO	NO	NO	NO
18	ITC Limited Dairy Plant	NO	NO	NA	NA	NO	NO
19	ITC Limited ITD Munger	YES	YES	NA	NA	NO	NO
20	ITC LTD Kidderpore	NO	NO	NO	NA	NA	NA
21	I T C LIMITED, Sonar and Royal Bengal	NA	NO	NA	NA	NA	NA
22	ITC Limited Corporate Office Kolkatta	NA	NA	NA	NA	NA	NO
23	KREATE ENERGY(I) PRIVATE LIMITED	NO	NO	NO	NO	NO	NO
24	NATIONAL ALUMINIUM COMPANY LIMITED AP	NA	NA	NA	NO	NO	NO
25	NATIONAL ALUMINIUM COMPANY LIMITED-OD	NA	NA	NA	NO	NA	NO
26	NTPC VIDYUT VYAPAR NIGAM LIMITED	YES	NA	NA	NA	NO	NA
27	POWER EXCHANGE INDIA LIMITED	NO	YES	YES	YES	YES	YES
28	PTC INDIA LIMITED	YES	YES	NO	NA	NA	NA
29	TATA POWER TRADING COMPANY LIMITED	NO	NO	NO	NO	NO	NO
30	TATA STEEL LIMITED @132kV	NO	NA	NA	NA	YES	NO
31	Saranyu Power Trading Private Limited	NA	NO	NA	NO	NA	NA
32	SHUBHEKSHA ADVISORS PRIVATE LIMITED	NA	NA	NA	NA	NA	NO
33	OSTRO KANNADA POWER PRIVATE LIMITED	NA	NO	NA	NA	NA	NA