

KAKINADA I TRANSMISSION LIMITED

(A 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110 016

CIN : U42202DL2025GOI445359

Ref: PG_ TIIRETL/AT/

Dated: 05.07.2026

To,
The Secretary,
Central Electricity Regulatory Commission,
7th Floor, Tower B, World Trade Centre,
Nauroji Nagar, New Delhi-110029

Sub : Petition under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges with respect to the Transmission System being established by the KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited).

Sir,

Three copies (1 original + 2 copies) of the application for the above subject matter have been enclosed and e-filing has been done on CERC website. As per the public notice issued on 28.08.2010 by the Hon'ble Commission, the amount of Rs.25,00,000/- (Rupees Twenty Five Lakhs only) for filing the application is being paid through RTGS and in accordance with the Regulations 12(2), CERC Payment of Fees Regulations 2012. Form-1 duly filled in against the aforementioned application is also enclosed herewith.

Electronic Copies of the application are being forwarded to the CTUIL (Nodal Agency) and to the Bid Process Coordinator and beneficiaries of the Southern Region and DICs as party to the Petition based on the list of the beneficiaries furnished by CTUIL. The complete petition along with Annexures is posted on the website: www.powergrid.in/subsidiaries.

Thanking You,

Yours faithfully,
BIPIN
BIHARI
RATH
Digitally signed
by BIPIN BIHARI
RATH
Date: 2026.07.03
20:07:18 +05'30'
(Bipin Bihari Rath)

Project In-charge

KAKINADA I TRANSMISSION LIMITED

Email : regulatory@powergrid.in

Enclosures: As above

**BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition under Section 63 of the Electricity Act, 2003 for adoption of Transmission charges with respect to the Transmission System being established by KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

PETITION NO. :

KAKINADA I TRANSMISSION LIMITED

(A 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

Registered office:

B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi 110 016

Address for correspondence:

C/o ED (Commercial & RC), Power Grid Corporation of India Limited,
Floor No. 02, Tower-01, IRCON International Tower,
Plot No. 16, Institutional Area, Sector-32, Gurgaon-122003

**BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

PETITION NO. :.....

IN THE MATTER OF

Petition under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges with respect to the Transmission System being established by KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

KAKINADA I TRANSMISSION LIMITED

(A 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

Registered office: B-9, Qutab Institutional Area,
Katwaria Sarai, New Delhi 110 016

Address for correspondence: C/o ED (Commercial & RC),
Power Grid Corporation of India Limited, Floor No. 02,
Tower-01, IRCON International Tower, Plot No. 16,
Institutional Area, Sector-32, Gurgaon-122003

.....PETITIONER

VERSUS

Central Transmission Utility of India Limited,

Floor No. 02, Tower-01, IRCON International Tower,
Plot No. 16, Institutional Area, Sector-32,
Gurgaon-122003

& Ors.

....RESPONDENT(S)

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Place: Gurugram
Date: 03.07.2026

FILED BY
 BIPIN BIHARI RATH
 Digitally signed by
 BIPIN BIHARI RATH
 Date: 2026.07.03
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(Bipin Bihari Rath)
Project In-charge,
KAKINADA I TRANSMISSION LIMITED

**BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

PETITION NO. :.....

IN THE MATTER OF

Petition under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges with respect to the Transmission System being established by the KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

KAKINADA I TRANSMISSION LIMITED

.....PETITIONER

VERSUS

**Central Transmission Utility of India Limited,
& Ors.**

....RESPONDENT(S)

To,
The Secretary
CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI-110029

Sir,

The petition filed under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges with respect to the Transmission System being established by the KAKINADA I TRANSMISSION LIMITED (A 100% wholly owned subsidiary of Power Grid Corporation of India Limited) for which transmission charges are determined through transparent process of bidding in accordance with the guidelines issued by the Central Government, may please be registered.

**Petitioner: KAKINADA I TRANSMISSION LIMITED
(A 100% wholly owned subsidiary of Power Grid Corporation of India Limited)**

BIPIN BIHARI
RATH

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BIPIN BIHARI RATH
Date: 2026.07.03
20:08:07 +05'30'

**Represented by Bipin Bihari Rath
Project In-charge
KAKINADA I TRANSMISSION LIMITED**

**Place: Gurugram
Date: 03.07.2026**

**BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

PETITION NO. :.....

IN THE MATTER OF

Petition under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges with respect to the Transmission System being established by the KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

MEMO OF AUTHORISATION

KAKINADA I TRANSMISSION LIMITED

..... PETITIONER

I, Bipin Bihari Rath, the petitioner abovenamed do hereby nominate, appoint and constitute, to act, plead and appear on my/our behalf in the aforesaid matter.

1. Bipin Bihari Rath, Project In-charge
2. A Jagannath Rao, Chief GM
3. Ashish Agrawal, Sr DGM
4. Prashant Kumar, Dy General Manager
5. Abhijit Daimari, Dy General Manager

IN WITNESS WHEREOF I/We have set and subscribed my/our hands to this writing on this 3rd day of July 2026

FILED BY
BIPIN BIHARI RATH
RATH
(Bipin Bihari Rath)
Project In-charge
KAKINADA I TRANSMISSION LIMITED

Digitally signed by
BIPIN BIHARI RATH
Date: 2026.07.03
20:08:22 +05'30'

**Place: Gurugram
Date: 03.07.2026**

**BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

PETITION NO. :.....

IN THE MATTER OF

Petition under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges with respect to the Transmission System being established by KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

KAKINADA I TRANSMISSION LIMITED

.....PETITIONER

VERSUS

**Central Transmission Utility of India Limited,
& Ors.**

....RESPONDENT(S)

MEMO OF PARTIES

KAKINADA I TRANSMISSION LIMITED

(A 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

Registered office: B-9, Qutab Institutional Area,
Katwaria Sarai, New Delhi 110 016

Address for correspondence: C/o ED (Commercial & RC),
Power Grid Corporation of India Limited, Floor No. 02,
Tower-01, IRCON International Tower, Plot No. 16,
Institutional Area, Sector-32, Gurgaon-122003

.....PETITIONER

VERSUS

1. **Central Transmission Utility of India Limited,**
Floor No. 02, Tower-01, IRCON International Tower,
Plot No. 16, Institutional Area, Sector-32,
Gurgaon-122003
Represented by its Chief Operating Officer
Email id: ctu@ctuil.in

2. **PFC Consulting Limited**
First Floor, Urja Nidhi, 1, Barakhamba Lane,
Connaught Place, New Delhi - 110 001
Represented by its Chairman & Managing Director
Email id: pfcconsulting@pfcindia.com

3. **Tamil Nadu Power Distribution Corporation Limited (TNPDC)**
(Formerly TANGEDCO)
NPKRR Maaligai, 800, Anna Salai,
Chennai – 600 002
Represented by its Chairman & Managing Director
Email id: cfcereg@tnebn.net.org

4. **Kerala State Electricity Board Ltd (KSEBL)**
Vaidyuthi Bhavanam
Pattom, Thiruvananthapuram – 695 004
Represented by its Chairman
Email id: trac@ksebl.in

5. **Electricity Department, Government of Goa**
Vidyuti Bhawan, Panaji, Goa 403001
Represented by Chief Engineer (Electrical)
Email id: cee-elec.goa@nic.in

6. **Electricity Department, Govt. of Puducherry**
137, Netaji Subash Chandra Bose Salai
Puducherry - 605001
Represented by its Chief Secretary
Email id: se3ped.pon@nic.in

7. **Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL)**
P&T Colony, Seethmadhara,
VISHAKHAPATNAM, Andhra Pradesh,
Represented by its Chairman & Managing Director
Email id: cgmppaepdcl@gmail.com
8. **Southern Power Distribution Company of Andhra Pradesh Limited (APSPDCL)**
#19-13-65/A, Srinivasapuram, Tiruchanoor Road
Tirupati – 517503, Andhra Pradesh
Represented by Its Chairman & Managing Director
Email id: cerc.cgsappcc@gmail.com
9. **Andhra Pradesh Central Power Distribution Company Limited (APCPDCL)**
Corporate Office, Beside Polytechnic College, ITI Road
Vijayawada - 520 008, Krishna District, Andhra Pradesh
Represented by Its Chairman & Managing Director
Email id: cmd.cpdcl@apcpdcl.in
10. **Southern Power Distribution Company of Telangana Limited (TSSPDCL)**
6-1-50, Corporate Office, Mint Compound,
HYDERABAD – 500 063, Telangana
Represented by Its Chairman & Managing Director
Email id: kamaluddinalikhan@gmail.com
11. **Northern Power Distribution Company of Telangana Limited (TSNPDCL)**
H.No 2-5-3 1/2, Vidyut Bhawan, Corporate Office,
Nakkal Gutta, Hanamkonda, WARANGAL – 506 001, Telangana
Represented by Its Chairman & Managing Director
Email id: cgmir@tsnpdcl.in
12. **Bangalore Electricity Supply Company Limited (BESCOM)**
Corporate Office, K.R.Circle,

BANGALORE – 560 001, Karanataka

Represented by Its Managing Director

Email id: gmpp.work@gmail.com

13. **Gulbarga Electricity Supply Company Ltd. (GESCOM)**

Corporate Office, Station Main Road, Opp. Parivar Hotel,

Gulbarga (Kalburgi), KARNATAKA – 585102

Email id: eeptgescom@gmail.com

14. **Hubli Electricity Supply Company Ltd. (HESCOM)**

Navanagar, PB Road, HUBLI, Karnataka- 580025

Represented by Its Managing Director

Email id: legal.ptc.hescom@gmail.com

15. **Mangalore Electricity Supply Company Ltd. (MESCOM)**

Corporate Office, 1st Floor, MESCOM Bhavan,

Kavoor Cross Road, Bejai, Mangalore – 575 004, Karnataka

Email id: seecoml@rediffmail.com

16. **Chamundeswari Electricity Supply Corporation Ltd. (CESC)**

Corporate Office, #29, Vijayanagara 2nd Stage,

Hinkal, Mysuru-570017, KARNATAKA

Represented by Its Managing Director

Email id: seccesc@gmail.com

17. **Andhra Pradesh Power Purchase Coordination Committee**

CORPORATE OFFICE, BESIDE POLYTECHNIC COLLEGE,

ITI ROAD, VIJAYAWADA 520 008,

KRISHNA DISTRICT, ANDHRA PRADESH

gmcordination.appcc@gmail.com

18. **Tamilnadu Gen & Dist Co Ltd,**
7th Floor Eastern Wing, NPKRR,
Maliga,144, Anna Salai,600002,Tamil Nadu
cfcrev@tnebnet.org
19. **Telangana State PC Committee**
H NO 2-03-31/2, VIDYUTH BHAVAN,
VIDYUTH BHAVAN, HANAMKONDA,
WARANGAL - 506001, Telangana
dyccatgpcc@gmail.com
20. **HVDC, Kolar, POWERGRID,**
Kolar 2500 MW HVDC Terminal Station,
Kolar-Chintamani Road, Arahalli Post, Kolar-563 101(Ktk)
hvdckolar@powergrid.co.in
21. **SAIL-Salem Steel Plant,**
Salem Steel PlantTamilnadu
ssk@sail.in
22. **Sembcorp Gayatri Power Ltd. (SGPL)**
A BLOCK, TSR TOWERS, RAJBHAVAN ROAD,
SOMAJIGUDA, HYDERABAD, 500082
sgpl.commercial@sembcorp.com
23. **South Western Railway**
O/o Sr.Divisional Electrical Engineer,
Traction Distribution, South Western Railway,
Ground Floor, DRM Office Complex,
Adjacent To Bangalore City Railway Station,
Majestic, Bangalore-23
energycell.swr@gmail.com

24. **Pugalur HVDC Station, POWERGRID**

Nochipalayam, Sirikinar, Tiruppur,
Tamil Nadu, Dharapuram taluk, Pin-638706

hvdc.pugalur@powergrid.co.in

25. **Thrissur HVDC Station, POWERGRID**

+/- 320kV VSC HVDC Station,
Near Cashew Research Station, Mannuthy-Thannikkudem Road,
Madakkathara, Thrissur - 680651
hvdc.thrissur@powergrid.co.in

.....RESPONDENTS

FILED BY

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BIPIN BIHARI RATH
Date: 2026.07.03
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(Bipin Bihari Rath)

Project In-charge,

KAKINADA I TRANSMISSION LIMITED

Place: Gurugram

Date: 03.07.2026

BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

PETITION NO.:.....

IN THE MATTER OF

Petition under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges with respect to the Transmission System being established by KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

KAKINADA I TRANSMISSION LIMITED

.....PETITIONER

VERSUS

**Central Transmission Utility of India Limited,
& Ors.**

....RESPONDENT(S)

AFFIDAVIT

I, Bipin Bihari Rath, son of Shri Gobinda Chandra Rath, residing at Flat no- 101, Block-A, Necklace Pride Apartment, Kavadiguda Main Road, Secunderabad, Telengana, Pin -500 080, presently at Gurugram do hereby solemnly affirm and state as follows:

1. I am the Authorised Signatory of the Petitioner Company in the above matter and I am duly authorized by the Petitioner Company to affirm this affidavit. I say that I am conversant with the facts and circumstances of this case.
2. The statements made in paragraphs of the petition, are true to my knowledge and belief based on the information received and I believe them to be true.
3. I say that there are no proceedings pending in any court of law/ tribunal or arbitrator or any other authority, wherein the Petitioner is a party and where issues arising and/ or reliefs sought are identical or similar to the issues in the matter pending before the Hon'ble Commission.

BIPIN BIHARI RATH Digitally signed by
BIPIN BIHARI RATH
Date: 2026.07.03
20:09:13 +05'30'

Bipin Bihari Rath
DEPONENT

VERIFICATION:

I, the Deponent above named hereby solemnly hereby affirms that the contents of my above affidavit are true to my knowledge, no part of it is false and nothing material has been concealed there from. Verified by me on this the 2nd day of July, 2026 at Gurugram.



ATTESTED
1
02/07/26
MAHENDER S. PUNIA
ADVOCATE & NOTARY
Distt. Gurugram (Haryana) India

BIPIN BIHARI RATH Digitally signed by
BIPIN BIHARI RATH
Date: 2026.07.03
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Bipin Bihari Rath
DEPONENT

**BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION
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PETITION NO.:.....

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Petition under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges with respect to the Transmission System being established by KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited)

KAKINADA I TRANSMISSION LIMITED

.....PETITIONER

VERSUS

**Central Transmission Utility of India Limited,
& Ors.**

....RESPONDENT(S)

PETITION

The Petitioner respectfully submits as under:

- 1.** The Government of India, Ministry of Power, vide notification no. CG-DL-E 01012025-259785 dated December 26, 2024 has notified **PFC Consulting Limited** (PFCCL) as the Bid Process Coordinator (hereinafter referred to as BPC) for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish Inter-State Transmission System for “**Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)**” (“**Project**”) on Build, Own, Operate and Transfer basis.

Copy of the said notification are enclosed and marked as **Annexure-1**.

2. The final scheme of the Project consists of the following elements:

S. No	Name of the Transmission Element	Scheduled COD as per Gazette Notification	% of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre required for declaring the commercial operation (COD) of the respective Element
1.	Establishment of Kakinada 765/400 kV, 3x1500 MVA substation (GIS) alongwith 240 MVar bus reactor.	30 months (December 29, 2028)	100%	All the elements are interdependent and therefore shall be commissioned simultaneously
2.	LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation {with 240 MVar SLR at Kakinada GH end on Srikakulam – Kakinada section			
3.	+ 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV GIS S/s with control switching arrangement for proposed 1x240 MVar bus reactor			

*Note: i. * 2 Nos. of additional 400 kV GIS bays for diameter completion shall be provided at Kakinada with future element as future Line*

3. That a company under the Companies Act 2013 by the name “**KAKINADA I TRANSMISSION LIMITED** ” having its registered office at New Delhi has been incorporated on 28.02.2025 by PFCCL as its wholly owned subsidiary to initiate the activities for execution of the Project and subsequently to act as Transmission Service Provider (TSP) after being acquired by the successful bidder selected through Tariff Based Competitive Bidding process. A copy of the Certificate of Incorporation is enclosed and marked as **Annexure-2** and a copy of the Memorandum of Association and Articles of Association is enclosed and marked as **Annexure-3**.

4. BPC initiated the selection of successful bidder to acquire the TSP in accordance with the “Tariff Based Competitive Bidding Guidelines for Transmission Service” and “Guidelines for Encouraging Competition in Development of Transmission Projects” issued by Government of India, Ministry of Power under Section 63 of The Electricity Act, 2003 and as amended from time to time. Copy of the Global Invitation for Qualification as published in the newspapers as furnished by BPC is enclosed and marked as **Annexure-4**.

5. That in the RFP documents, the following is stated :-

“The Transmission Charges shall be payable by the Designated ISTS Customers in Indian Rupees through the CTU as per Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations as amended from time to time....”

Copy of the relevant extract of the RFP document issued by the BPC is enclosed and marked as **Annexure-5**, which are integral part of the RFP bidding documents furnished by BPC for bidding.

6. In furtherance of the RfP and in compliance with Clause 1.6.2.1 thereof, which mandates the BPC to obtain approval under Section 68 of the Act for laying of overhead transmission lines, the Petitioner (then wholly owned by PPFCL) approached Ministry of Power for said approval. Thereafter, approval under Section 68 of the Electricity Act, 2003 was accorded, which is annexed herewith and marked as **Annexure-11**.

7. Subsequently, e-Reverse Auction for the project was conducted on 06.06.2026 in accordance with the RfP and the TBCB Guidelines, wherein POWERGRID emerged as the Successful Bidder having quoted the lowest final quoted (uniform) Annual Transmission Charges.

8. After completion of the e-Reverse Auction and verification of the bid documents submitted by POWERGRID, the Bid Evaluation Committee (“BEC”) was constituted under the TBCB Bidding framework evaluated the bids in accordance with the “Tariff Based Competitive Bidding Guidelines for Transmission Service” and the “Guidelines for Encouraging Competition in Development of Transmission Projects” issued by the MoP under Section 63 of the Electricity Act, 2003.

9. Thereafter, on 11.06.2026, the Bid Evaluation Committee issued its Certificate confirming the following:-

- (i) the entire bidding process for the Project had been conducted in compliance with the applicable TBCB Guidelines,
- (ii) POWERGRID, having quoted the lowest Annual Transmission Charges of Rs. 1,521.23 million pursuant to the e-Reverse Auction, had emerged as the Successful Bidder, and
- (iii) the quoted tariff discovered through e-reverse bidding process was acceptable.

A copy of the Bid Evaluation Committee Certificate dated 11.06.2026 is annexed herewith and marked as **Annexure-6**.

10. On 12.06.2026, upon completion of the e-Reverse Auction and evaluation of bids in accordance with the RfP, PFCCL issued the LoI to POWERGRID, declaring it as the Successful Bidder for the Project under Clause 3.6.1 of the RfP, with the Quoted Annual Transmission Charges of Rs. 1,799.74 million.

A copy of the LoI dated 12.06.2026 issued by PFCCL to POWERGRID is annexed herewith and marked as **Annexure-7**.

11. As per the provisions 2.15.2 of Request for Proposal (RFP) and the Letter of Intent issued to Power Grid Corporation of India Limited, within 10 days of issuance of Letter of Intent by the BPC, the Successful Bidder is required to inter-alia provide the Contract Performance Guarantee, execute Share Purchase Agreement & the Transmission Service Agreement and acquire the SPV. Vide letter dated 25.06.2026, the BPC in terms of proviso Clause 2.15.2 of RFP extended the date upto 29.06.2026 for completion of activities by the successful bidder. A copy of the relevant extract of the RFP and the letter from BPC is enclosed and marked as **Annexure-5**.

12. It is submitted that in accordance with the LoI, Power Grid Corporation of India Limited on 29.06.2026 had furnished Contract Performance Guarantee of **Rs. 37.25 Crores** (Rupees Thirty Seven Crore Twenty Five Lakh Only) in favour of Central Transmission Utility of India Limited (CTUIL).

A copy of CPG is enclosed and marked as **Annexure-12**.

13. A copy of the Transmission Service Agreement (TSA) entered between CTUIL, which is the Nodal Agency of the project, and **KAKINADA I TRANSMISSION LIMITED** is enclosed and marked as **Annexure-8**.

14. That the BPC vide letter dated 30.04.2026 had intimated to the bidders that the Acquisition Price payable by the Selected Bidder for Acquisition of one hundred percent of equity shareholding of **KAKINADA I TRANSMISSION LIMITED** along with all its related assets and liabilities as **Rs. 20,42,91,760/-**. Subsequent to the bidding and during acquisition, the BPC vide letter dated 15.06.2026 intimated the successful bidder, i.e. the Petitioner that the final Acquisition Price as **Rs. 20,50,66,293/-** with the following break-up:

S.No.	Description	Amount (in Rs.)
1	PFCCL Management Fees	15,00,00,000
2	GST on PFCCL Management Fees	2,70,00,000
3	Borrowing from PFCCL	2,79,66,293
4	Share Capital	1,00,000
	Total	20,50,66,293

The aforesaid acquisition price of **Rs. 20,50,66,293/-** has been paid on 29.06.2026 to PFCCL. A copy of the aforesaid BPC letters dated 30.04.2026 and 15.06.2026 are enclosed and marked as **Annexure-9**.

15. Thereafter, Power Grid Corporation of India Limited has acquired the **KAKINADA I TRANSMISSION LIMITED** on 29.06.2026 after execution of the Share Purchase Agreement, Transmission Service Agreement and completing all procedural requirements specified in the RFP documents. A copy of the Share purchase agreement is enclosed and marked as **Annexure-10**.

16. The Petitioner shall map Nodal Agency i.e. CTUIL on the e-portal of this Hon'ble Commission at the earliest as per the procedure in vogue and completion of relevant formalities. The

Petitioner is also sending a copy of the present Petition to CTUIL via e-mail. The Petition is also being hosted on the website and is accessible on **www.powergrid.in/subsidiaries**.

That a copy of the Petition is marked to BPC to enable submission of the requisite documents / information by BPC before this Hon'ble Commission regarding the Bidding process undertaken and thereby ensure processing of petition.

That a copy of the Application is marked to Designated ISTS Customers (DICs) and beneficiaries of the Southern Region as party to the Petition based on the list of the beneficiaries furnished by the CTUIL.

17. That POWERGRID has acquired the TSP on **29.06.2026** and the same is effective date of the project as per provisions of TSA. The schedule construction period of the project is **30** months. As such, Scheduled CoD of the project works out to be **29.12.2028**.
18. That **KAKINADA I TRANSMISSION LIMITED** hereby submits that this petition is filed under Section 63 of the Electricity Act, 2003 for Adoption of Transmission Charges to establish the Project under Build, Own, Operate and Transfer basis, which has been determined through transparent process of competitive bidding in accordance with the guidelines issued by the Central Government.
19. It is submitted that Section 63 of the Electricity Act, 2003 empowers the Appropriate Commission for Adoption of Transmission Charges.
20. Keeping in view the above, Hon'ble Commission may kindly adopt the Transmission Charges with respect to the Transmission System being established by the **KAKINADA I TRANSMISSION LIMITED (a 100% wholly owned subsidiary of Power Grid Corporation of India Limited)**.

21. PRAYER

The Petitioner hereby humbly prays the Hon'ble Commission to:

- (a) Admit and allow the present Petition; and
- (b) Adopt, under Section 63 of the Electricity Act, 2003, the quoted Transmission Charges of Rs. 1,799.74 million per annum discovered through the TBCB process conducted by PFC Consulting Limited for the Inter-State Transmission System for "*Transmission System for proposed Green Hydrogen / Green Ammonia Projects in Kakinada Area (PHASE-I)*"; and
- (c) Take on record and recognize the Bid Evaluation Committee Certificate dated 11.06.2026, the Letter of Intent dated 12.06.2026, and the Transmission Service Agreement dated 29.06.2026 as constituting final and conclusive proof of compliance with the Tariff Based Competitive Bidding Guidelines and the lawful discovery of the Transmission Charges; and
- (d) Direct that recovery of the adopted Transmission Charges shall be in accordance with the Transmission Service Agreement executed for the Project; and
- (e) Condone any inadvertent or procedural defects, if any, in the present Petition and permit the Petitioner to place on record such additional documents, clarifications or information as this Hon'ble Commission may require in the interest of justice; and / or
- (f) Pass such other order / orders, as may be deemed fit and proper in the facts and circumstances of the case.

KAKINADA I TRANSMISSION LIMITED

Petitioner

BIPIN BIHARI RATH
Digitally signed by
BIPIN BIHARI RATH
Date: 2026.07.03
20:10:06 +05'30'

Represented by Bipin Bihari Rath
Project In-charge

KAKINADA I TRANSMISSION LIMITED

Place: Gurugram

Date: 03.07.2026



भारत का राजपत्र The Gazette of India

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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

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नई दिल्ली, बृहस्पतिवार, दिसम्बर 26, 2024/पौष 5, 1946

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NEW DELHI, THURSDAY, DECEMBER 26, 2024/PAUSHA 5, 1946

विद्युत मंत्रालय

अधिसूचना

नई दिल्ली, 26 दिसम्बर, 2024

का.आ. 5564(अ).—विद्युत अधिनियम, 2003 (सं. 36, 2003) की धारा 63 के अंतर्गत परिचालित दिशा-निर्देशों के पैरा 3 के उप-पैरा 3.2 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, केंद्र सरकार, राष्ट्रीय पारेषण समिति की 25वीं बैठक की सिफारिशों पर, संबंधित बोली-प्रक्रिया समन्वयक (बीपीसी) के विवरण के साथ टीबीसीबी मोड के तहत निम्नलिखित पारेषण स्कीम को अधिसूचित करती है:-

क्र.सं.	पारेषण स्कीम का नाम तथा कार्यक्षेत्र	
1.	काकीनाडा क्षेत्र में प्रस्तावित ग्रीन हाइड्रोजन / ग्रीन अमोनिया परियोजनाओं के लिए पारेषण प्रणाली (चरण-I) अस्थायी कार्यान्वयन समय-सीमा: एसपीवी हस्तांतरण की तिथि से 24 महीने बीपीसी: पीएफसी कंसल्टिंग लिमिटेड कार्यक्षेत्र:	
क्र.सं.	पारेषण स्कीम का कार्यक्षेत्र	क्षमता/किमी
1.	काकीनाडा में 765/400 केवी, 3x1500 एमवीए सबस्टेशन (जीआईएस) के साथ-साथ 240 एमवीएआर बस रिएक्टर की स्थापना	3x1500 एमवीए, 765/400 केवी आईसीटी (10x500 एमवीए जिसमें 1 अतिरिक्त इकाई शामिल

	भावी प्रावधान (के लिए स्थान): ➤ 765/400 केवी, 1500 एमवीए, आईसीटी-3 ➤ 765 केवी आईसीटी बे- 3 ➤ 400 केवी आईसीटी बे- 3 ➤ 765 केवी लाइन बे- 8 (एसएलआर के लिए प्रावधान के साथ) ➤ 400 केवी लाइन बे- 12 (एसएलआर के लिए प्रावधान के साथ) ➤ 400 केवी बस सेक्शन लाइजर: 1 सेट	है) • 765 केवी आईसीटी बे - 3 (जीआईएस) • 400 केवी आईसीटी बे - 3 (जीआईएस) • 765 केवी लाइन बे - 4 (जीआईएस) (काकीनाडा में श्रीकाकुलम- वेमागिरी 765 केवी डी/सी लाइन के एलआईएलओ के टर्मिनेशन के लिए) • 765 केवी, 240 एमवीएआर बस रिएक्टर-1 (4x80 एमवीएआर जिसमें बस रिएक्टर और लाइन रिएक्टर दोनों के लिए 1 स्विचेबल अतिरिक्त इकाई शामिल है) • 765 केवी बस रिएक्टर बे- 1 (जीआईएस) • 765 केवी बस रिएक्टर बे - 1 (जीआईएस)
2.	काकीनाडा सबस्टेशन पर वेमागिरी - श्रीकाकुलम 765 केवी डी/सी लाइन का एलआईएलओ (~20 किमी) {श्रीकाकुलम - काकीनाडा खंड पर काकीनाडा जीएच छोर पर 240 एमवीएआर एसएलआर के साथ (~334 किमी)}	• -20 किमी • काकीनाडा में 765 केवी, 240 एमवीएआर एसएलआर-2 (6x80 एमवीएआर स्विचेबल इकाई)
3.	• प्रस्तावित 1x240 एमवीएआर बस रिएक्टर के लिए नियंत्रण स्विचिंग व्यवस्था के साथ काकीनाडा 765/400 केवी जीआईएस एस/एस पर 2x125 एमवीएआर एमएससी सहित ± 300 एमवीएआर स्टैटकॉम • काकीनाडा 765/400 केवी एस/एस पर 2x125 एमवीएआर एमएससी के साथ दूसरे ± 300 एमवीएआर स्टैटकॉम के लिए स्थान का प्रावधान	• 400 केवी बे- 1 (जीआईएस)*
नोट: क) *व्यास पूरा करने के लिए 2 अतिरिक्त 400 केवी जीआईएस बे काकीनाडा में प्रदान किए जाएंगे जिसमें फ्यूचर लाईन के रूप में फ्यूचर एलिमेंट हो।		

2. बोली प्रक्रिया समन्वयक की इस संबंध में नियुक्ति विद्युत मंत्रालय द्वारा जारी एवं समय-समय पर यथासंशोधित दिशा-निर्देशों में निर्धारित शर्तों के अधीन है।

[फा. सं. 15/3/2018-ट्रांस-भाग(4)]

नाओरेम इंद्रकुमार सिंह, अवर सचिव (पारेषण)

**MINISTRY OF POWER
NOTIFICATION**

New Delhi, the 26th December, 2024

S.O. 5564(E).—In exercise of the powers conferred by sub-para 3.2 of Para 3 of the Guidelines circulated under Section 63 of the Electricity Act, 2003 (No. 36 of 2003), the Central Government, on the recommendations of 25th meeting of National Committee on Transmission, hereby notifies the following transmission scheme under TBCB mode, with details of respective Bid-Process Coordinator (BPC): -

Sl No.	Name & Scope of the Transmission Scheme
1.	Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I) Tentative implementation timeframe: 24 months from date of SPV transfer BPC: PFC Consulting Limited

Scope:		
Sl. No.	Scope of the Transmission Scheme	Capacity/km
1.	Establishment of Kakinada 765/400 kV, 3x1500 MVA substation (GIS) alongwith 240 MVar bus reactor Future Space Provisions: ➤ 765/400 kV, 1500 MVA, ICTs – 3 Nos. ➤ 765 kV ICT bays – 3 Nos. ➤ 400 kV ICT bays – 3 Nos. ➤ 765 kV line bays – 8 Nos. (with provision for SLR) ➤ 400 kV line bays – 12 Nos. (with provision for SLR) ➤ 400 kV Bus Sectionalizer : 1 set	• 3x1500 MVA, 765/400 kV ICT (10x500 MVA including 1 spare unit) • 765 kV ICT bay – 3 Nos. (GIS) • 400 kV ICT bay – 3 Nos. (GIS) • 765 kV line bays – 4 Nos. (GIS) (at Kakinada for termination of LILO of Srikakulam – Vemagiri 765 kV D/c line) • 765 kV, 240 MVar Bus Reactor – 1 No. (4x80 MVarinc. 1 switchable spare unit for both bus reactor and line reactor) • 765 kV Bus Reactor bays – 1 No. (GIS)
2.	LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation (~20 km) {with 240 MVar SLR at Kakinada GH end on Srikakulam – Kakinada section (~334 km)}	• ~20 km • 765 kV, 240 MVar SLR at Kakinada– 2 Nos. (6x80 MVar switchable units)
3.	• + 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV GIS S/s with control switching arrangement for proposed 1x240 MVar bus reactor • Space provision for 2 nd ± 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV S/s	• 400 kV bay – 1 No. (GIS) *
Note: i. * 2 Nos. of additional 400 kV GIS bays for diameter completion shall be provided at Kakinada with future element as future Line		

2. The appointment of the Bid Process Coordinator is subject to the conditions laid down in the Guidelines issued by Ministry of Power in this regard, amended from time to time.

[F. No. 15/3/2018-Trans-Part(4)]

NAOREM INDRAKUMAR SINGH, Under Secy. (Transmission)

अधिसूचना

नई दिल्ली, 26 दिसम्बर, 2024

का.आ. 5565(अ).—विद्युत अधिनियम, 2003 (सं. 36, 2003) की धारा 63 के अंतर्गत परिचालित दिशा-निर्देशों के पैरा 3 के उप-पैरा 3.2 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, केंद्र सरकार ने नीचे उल्लिखित राजपत्र अधिसूचना के माध्यम से टीबीसीबी मोड के तहत कार्यान्वयन के लिए निम्नलिखित स्कीम अधिसूचित की थी:

क्र. सं.	स्कीम का नाम	राजपत्र अधिसूचना जिसके द्वारा स्कीम अधिसूचित की गई
1.	तूतीकोरिन क्षेत्र में प्रस्तावित ग्रीन हाइड्रोजन/ग्रीन अमोनिया परियोजनाओं के लिए पारेषण प्रणाली	सां.आ. 3901(अ) दिनांकित 12.09.2024 [फा. सं. 15/3/2018-ट्रांस-भाग(4)]

2. अब, केंद्र सरकार ने 25वीं राष्ट्रीय पारेषण समिति की सिफारिशों पर उपर्युक्त स्कीम के कार्यक्षेत्र को संशोधित करने का निर्णय लिया है। इस प्रकार, उपर्युक्त स्कीम के क्रम सं.1 में उल्लिखित कार्यक्षेत्र को संशोधित किया जाता है और क्रम सं.11 एवं नोट संख्या (4) को नीचे उल्लिखित अनुसार जोड़ा जाता है; पारेषण स्कीम और बोली प्रक्रिया समन्वयक के अन्य कार्यक्षेत्र अपरिवर्तित रहेंगे:

क्र. सं.	स्कीम का नाम	स्कीम के दायरे/कार्यान्वयन समय-सीमा में संशोधन
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1.	तृतीकोरिन क्षेत्र में प्रस्तावित ग्रीन हाइड्रोजन/ग्रीन अमोनिया परियोजनाओं के लिए पारेषण प्रणाली	क्र. सं.	पारेषण स्कीम का कार्यक्षेत्र	क्षमता/किमी
		1.	1x240 एमवीएआर बस रिएक्टर के साथ 3x1500 एमवीए, 765/400 केवी तृतीकोरिन (जीएच) एस/एस (जीआईएस) की स्थापना। भावी प्रावधान (के लिए स्थान): ➤ 765/400 केवी, 1500 एमवीए, आईसीटी -3 ➤ 765 केवी आईसीटी बे - 3 ➤ 400 केवी आईसीटी बे - 3 ➤ 765 केवी लाइन बे -6 एसएलआर) (के प्रावधान के साथ ➤ 400 केवी लाइन बे -16एसएलआर) (के प्रावधान के साथ ➤ 400 केवी बस सेक्शनलाइज़र :1 सेट	• 765/400 केवी, 1500 एमवीए, आईसीटी -3 (10x500 एमवीए जिसमें 1 अतिरिक्त इकाई शामिल है) • 765 केवी आईसीटी बे -3 (जीआईएस) • 400 केवी आईसीटी बे -3 (जीआईएस)* • 765 केवी लाइन बे -2 (जीआईएस) एस पर /एस (जीएच) तृतीकोरिन (जीएच) तृतीकोरिन- तृतीकोरिन पीएस 765 केवी डीसी लाइन की / (समाप्ति के लिए • 765 केवी, 240 एमवीएआर बस रिएक्टर -1 (4x80 एमवीएआर जिसमें 1 स्विच करने योग्य अतिरिक्त इकाई शामिल है) • 765 केवी बस रिएक्टर बे 1 (जीआईएस)
		11.	• तृतीकोरिन 765/400 केवी जीएच एस एस में/2x125 एमवीएआर एमएससी के साथ ± 300 एमवीएआर स्टेटकॉम, प्रस्तावित 1x240 एमवीएआर बस रिएक्टर के लिए नियंत्रण स्विचिंग व्यवस्था के साथ • तृतीकोरिन 765/400 केवी जीएच एस एस में/2x125 एमवीएआर एमएससी के साथ दूसरे ± 300 एमवीएआर स्टेटकॉम के लिए जगह का प्रावधान	• 400 केवी बे -1 (जीआईएस) *
		नोट: (4) * व्यास पूर्णता के लिए तृतीकोरिन में भावी लाइन के रूप में भावी तत्व के साथ (जीएच)2 अतिरिक्त 400 केवी जीआईएस बे प्रदान किए जाएंगे।		

[फा. सं. 15/3/2018-ट्रांस-भाग(4)]

नाओरेम इंद्रकुमार सिंह, अवर सचिव (पारेषण)

NOTIFICATION

New Delhi, the 26th December, 2024

S.O. 5565(E).—In exercise of the powers conferred by sub-para 3.2 of Para 3 of the Guidelines circulated under Section 63 of the Electricity Act, 2003 (No. 36 of 2003), the Central Government had notified following scheme, for implementation under TBCB mode, vide Gazette Notification mentioned below:

Sl. No.	Name of the Scheme	Gazette Notification by which Scheme was notified
1.	Transmission system for proposed Green Hydrogen/ Green Ammonia projects in Tuticorin area	S.O. 3901(E) dated 12.09.2024 [F. No. 15/3/2018-Trans-Part(4)]

2. Now, the Central Government, on the recommendations of 25th National Committee on Transmission has decided to modify the scope of above mentioned scheme. As such, the scope mentioned at Sl. No.1 of above scheme is hereby modified and Sl No. 11 & Note No. iv are added as mentioned below; other scopes of the Transmission Scheme and Bid Process Co-ordinator shall remain unchanged:

Sl. No.	Name of the Scheme	Modification in scope/ implementation timeframe of the scheme		
1.	Transmission system for proposed Green Hydrogen/ Green Ammonia projects in Tuticorin area	Sl. No.	Scope of the Transmission Scheme	Capacity/km
		1.	Establishment of 3x1500 MVA, 765/400 kV Tuticorin (GH) S/s (GIS) with 1x240 MVAR bus Reactor. Future Space Provisions: ➤ 765/400 kV, 1500 MVA, ICTs – 3 Nos. ➤ 765 kV ICT bays – 3 Nos. ➤ 400 kV ICT bays – 3 Nos. ➤ 765 kV line bays – 6 Nos. (with provision for SLR) ➤ 400 kV line bays – 16 Nos. (with provision for SLR) ➤ 400 kV Bus Sectionalizer : 1 set	• 765/400 kV, 1500 MVA, ICTs – 3 Nos. (10x500 MVA including 1 spare unit) • 765 kV ICT bays – 3 Nos. (GIS) • 400 kV ICT bays – 3 Nos. (GIS)* • 765 kV line bays – 2 Nos. (GIS) (at Tuticorin (GH) S/s for termination of Tuticorin (GH) – Tuticorin PS 765 kV D/c line) • 765 kV, 240 MVAR Bus Reactor – 1 No. (4x80 MVAR including 1 switchable spare unit) • 765 kV Bus Reactor bays – 1 No. (GIS)
		11.	• $\pm$ 300 MVAR STATCOM with 2x125 MVAR MSC at Tuticorin 765/400 kV GH S/s with control switching arrangement for proposed 1x240 MVAR bus reactor • Space provision for 2nd $\pm$ 300 MVAR STATCOM with 2x125 MVAR MSC at Tuticorin 765/400 kV GH S/s	• 400 kV bay – 1 No. (GIS) *
		Note: iv. *2 Nos. Additional 400 kV GIS bays for diameter completion shall be provided at Tuticorin (GH) with future element as future Line		

[F. No. 15/3/2018-Trans-Part(4)]

NAOREM INDRAKUMAR SINGH, Under Secy. (Transmission)



**GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS**

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that KAKINADA I TRANSMISSION LIMITED is incorporated on this TWENTIETH day of FEBRUARY TWO THOUSAND TWENTY FIVE under the Companies Act, 2013 (18 of 2013) and that the company is Company limited by shares

The Corporate Identity Number of the company is **U42201DL2025GOI442994**

The Permanent Account Number (PAN) of the company is **AALCK5912F***

The Tax Deduction and Collection Account Number (TAN) of the company is **DELK29425E***

Given under my hand at Manesar this TWENTIETH day of FEBRUARY TWO THOUSAND TWENTY FIVE

Document certified by DS MINISTRY OF CORPORATE
AFFAIRS , CRC MANESAR 2 <RO@SRC@MCA.GOV.IN>.

Digitally signed by
DS MINISTRY OF CORPORATE
AFFAIRS , CRC MANESAR 2
Date: 2025.02.28 12:31:05 IST

PRAMOD KUMAR

Assistant Registrar of Companies/ Deputy Registrar of Companies/ Registrar of Companies

For and on behalf of the Jurisdictional Registrar of Companies

Registrar of Companies

Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on mca.gov.in

Mailing Address as per record available in Registrar of Companies office:

KAKINADA I TRANSMISSION LIMITED

Urjanidhi, First Floor, 1, Barakhamba Lane, Connaught Place, New Delhi, Central Delhi- 110001, Delhi

*as issued by Income tax Department



Form No. INC-33



Form language

☒ English

☐ Hindi

e-MOA (e-Memorandum of Association)

[Pursuant to Schedule I (see Sections 4 and 5) to the Companies Act, 2013]]

Refer instruction kit for filing the form

*All fields marked in * are mandatory*

* Table applicable to company as notified under schedule I of the Companies Act, 2013

(A - MEMORANDUM OF ASSOCIATION OF A COMPANY LIMITED BY SHARES

B - MEMORANDUM OF ASSOCIATION OF A COMPANY LIMITED BY GUARANTEE AND NOT HAVING A SHARE CAPITAL

C - MEMORANDUM OF ASSOCIATION OF A COMPANY LIMITED BY GUARANTEE AND HAVING A SHARE CAPITAL

D - MEMORANDUM OF ASSOCIATION OF AN UNLIMITED COMPANY AND NOT HAVING SHARE CAPITAL

E - MEMORANDUM OF ASSOCIATION OF AN UNLIMITED COMPANY AND HAVING SHARE CAPITAL)

A - MEMORANDUM OF
ASSOCIATION OF A COMPANY
LIMITED BY SHARES

Table A/B/C/D/E

1 The name of the company is

KAKINADA I TRANSMISSION
LIMITED

2 The registered office of the company will be situated in the State of

Delhi

3 (a) The objects to be pursued by the company on its incorporation are:

1. To develop Power System
Network

To plan, promote and develop an integrated and efficient power transmission system network in all its aspects including planning, investigation, research, design and engineering, preparation of preliminary, feasibility and definite project reports, construction, operation and maintenance of transmission lines, sub-stations, load dispatch stations and communication facilities and appurtenant works, coordination of integrated operation of state, regional and national grid system, execution of turn-key jobs for other utilities/organizations and wheeling of power in accordance with the policies, guidelines and objectives laid down by the Central Government from time to time.

2. To study, investigate, collect information and data

To study, investigate, collect information and data, review operation, plan, research, design and prepare Report, diagnose operational difficulties and weaknesses and advise on the remedial measures to improve, undertake development of new and innovative product connected with business of the Company as well as modernize existing EHV, HV lines and Sub-Stations.

3. To act as Consultants/ Technical Advisers of public/ private sector enterprises etc.

To act as consultants, technical advisors, surveyors and providers of technical and other services to Public or Private Sector enterprises engaged in the planning, investigation, research, design and preparations of preliminary, feasibility and definite project reports, manufacture of power plant and equipment, construction, generation, operation and maintenance of power transmission system from power generating stations and projects, transmission, distribution and sale of power.

(b) *Matters which are necessary for furtherance of the objects specified in clause 3(a) are

1. To obtain authority etc. to carry out its objects

To obtain license, approvals and authorization from Governmental Statutory and Regulatory Authorities, as may be necessary to carry out and achieve the Objects of the Company and connected matters which may seem expedient to develop the business interests of the Company in India and abroad.

2. To obtain charters, concession etc.

To enter into any arrangement with the Government of India or with any State Government or with other authorities/

commissions, local bodies or public sector or private sector undertakings, Power Utilities, Financial Institutions, Banks, International Funding Agencies and obtain such charters, subsidies, loans, advances or other money, grants, contracts, rights, sanctions, privileges, licenses or concessions whatsoever (whether statutory or otherwise) which the Company may think it desirable to obtain for carrying its activities in furthering the interests of the Company or its members.

3. To enter into Implementation/ Construction Agreement

To enter into any agreement, contract or any arrangement for the implementation of the power generation, evacuation, transmission and distribution system and network with Power/Transmission Utilities, State Electricity Boards, Vidyut Boards, Transmission Companies, Generation Companies, Licensees, Statutory bodies, other organizations (whether in Private, Public or Joint Sector Undertaking) and bulk consumers of power etc.

4. To carry on the business or purchasing, importing, exporting and trading power

To carry on the business or purchasing, importing, exporting and trading of power subject to the provisions of Electricity Act, 2003 and to supply electric power generated by other plants to distribution companies, trading companies, other generation companies and other Persons, and in this regard execute agreements with Central and State generating authorities, departments or companies, Independent Power Producers and other Persons.

5. To enter into Agreements; etc.

To secure the payments of money, receivables on transmission and distribution of electricity and sale of fuel, as the case may be, to the State Electricity Boards, Vidyut Boards, Transmission Utilities, Generating Companies, Transmission Companies, Distribution Companies, State Governments, Licensees, statutory bodies, other organizations (whether in Private, Public or Joint Sector Undertaking) and bulk consumers of power etc. through Letter of Credits/ESCROW and other security documents.

6. To execute transmission service Agreements

To execute Transmission Service Agreements or other agreements for transmission of power to distribution, trading, and other companies, State Electricity Boards, State Utilities and any other organization and Persons.

7. To co-ordinate with Central Transmission Utility

To coordinate with the Central Transmission Utility for transmission of electricity under the provisions of Electricity Act 2003.

8. To borrow money

Subject to provisions of Sections 73, 179, 180 and other applicable provisions of the Companies Act, 2013 and subject to other laws or directives, if any, of SEBI/RBI, to borrow money in Indian rupees or foreign currencies and obtain foreign lines of credits/ grants/aids etc. or to receive money or deposits from public for the purpose of the Company's business in such manner and on such terms and with such rights, privileges and obligations as the Company may think fit. The Company may issue bonds/ debentures whether secured or unsecured; bills of exchange,

promissory notes or other securities, mortgage or charge on all or any of the immovable and movable properties, present or future and all or any of the uncalled capital for the time being of the Company as the Company may deem fit and to repay, redeem or pay off any such securities or charges.

9. To lend money

To lend money on property or on mortgage of immovable properties or against Bank guarantee and to make advances of money against future supply of goods and services on such terms as the Directors may consider necessary and to invest money of the Company in such manner as the Directors may think fit and to sell, transfer or to deal with the same.

10. To acquire, own, lease or dispose off the property

To own, possess, acquire by purchase, lease or otherwise rights, title and interests in and to, exchange or hire real estate, equipment, Transmission lines, lands, buildings, apartments, plants, equipment, machinery, fuel blocks and hereditaments of any tenure or descriptions situated in India or abroad or any estate or interest therein and any right over or connected with land so situated and turn the same to account in any manner as may seem necessary or convenient for the purpose of business of the Company and to hold, improve, exploit, re-organize, manage, lease, sell, exchange or otherwise dispose of the whole or any part thereof.

11. To deal in Scrips/Govt. Securities

Subject to applicable provisions of law, to subscribe for, underwrite, or otherwise acquire, hold, dispose of and deal with

the shares, stocks, debentures or other securities and titles of indebtedness or the right to participate in profits or other similar documents issued by any Government authority, Corporation or body or by any company or body of persons and any option or right in respect thereof.

12. To create funds and appropriate profits

To create any depreciation fund, reserve fund, sinking fund, insurance fund, gratuity, provident fund or any other fund, for depreciation or for repairing, improving extending or maintaining any of the properties of the Company or for any other purposes whatsoever conducive to the interests of the Company.

13. To purchase or otherwise acquire companies

To acquire shares, stocks, debentures or securities of any company carrying on any business which this Company is entitled to carry on or acquisition of undertaking itself which may seem likely or calculated to promote or advance the interests of the Company and to sell or dispose of or transfer any such shares, stocks or securities and the acquired undertaking.

14. To enter into partnership Agreement or Merge /amalgamate

To enter into partnership or into any agreement for joint working, sharing or pooling profits, joint venture, amalgamation, union of interests, co-operation, reciprocal concessions or otherwise or amalgamate with any person or company carrying on or engaged in or about to carry on or engaged in any business or transaction in India or abroad which the Company is authorized to carry on or engage

in any business undertaking having objects identical or similar to, as are being carried on by this Company.

15. To have agencies and branch offices in India and abroad

To establish and maintain agencies, branch offices and local agencies, to procure business in any part of India and world and to take such steps as may be necessary to give the Company such rights and privileges in any part of the world as deemed proper in the interest of the Company.

16. To promote institutions or other companies

To promote and undertake the formation of any institution or Company or subsidiary company or for any aforesaid objects intended to benefit the Company directly or indirectly and to coordinate, control and guide their activities.

17 (a) To acquire know how and import-export of machinery and tools etc.

To negotiate and enter into agreements and contracts with domestic and foreign companies, persons or other organizations, banks and financial institutions, in relation to the business of the Company including that of technical know-how, import, export, purchase or sale of plant, machinery, equipment, tools, accessories and consumables, financial assistance and for carrying out all or any of the objects of the Company.

17 (b) To negotiate and enter into agreements etc.

To negotiate and enter into agreements and contracts for execution of turnkey jobs, works, supplies and export of plant, machinery, tools and accessories

etc.

18. To enter into contracts/arrangements in connection with issue of shares/securities

Upon and for the purpose of any issue of shares, debentures or any other securities of the Company, to enter into agreement with intermediaries including brokers, managers of issue/commission agents and underwriters and to provide for the remuneration of such persons for their services by way of payment in cash or issue of shares, debentures or other securities of the Company or by granting options to take the same or in any other manner as permissible under the law.

19. To enter into contracts of indemnity and/or guarantee

To enter into contracts of indemnity and get guarantee and allocations for the business of the Company.

20. To arrange for Training and Development

To make arrangements for training of all categories of employees and to employ or otherwise engage experts, advisors, consultants etc. in the interest of achieving the Company's objects.

21. To promote conservation, protect environment, theft etc.

To promote conservation and protection of electricity from theft, safety of life and to protect environments including air, land and water etc.

22. To provide for welfare of employees

To pay and provide for the remuneration, amelioration and welfare of persons employed or

formerly employed by the Company and their families providing for pension, allowances, bonuses, other payments or by creating for the purpose from time to time the Provident Fund, Gratuity and other Funds or Trusts. Further to undertake building or contributing to the building or houses, dwellings or chawls by grants of money, or by helping persons employed by the Company to effect or maintain insurance on their lives by contributing to the payment of premium or otherwise and by providing or subscribing or contributing towards educational institutions, recreation, hospitals and dispensaries, medical and other assistance as the Company may deem fit.

23. To take Insurance

To ensure any rights, properties, undertakings, contracts, guarantees or obligations or profits of the Company of every nature and kind in any manner with any person, firm, association, institution or company.

24. To share the profits pay, dividends and provide bonus etc

To distribute among members of the Company dividend including bonus shares out of profits, accumulated profits or funds and resources of the Company in any manner permissible under law.

25. To institute and defend the legal proceedings

To institute, conduct, defend, compound or abandon any legal proceedings by or against the Company or its officers or otherwise concerning the affairs of the Company and also to compound and to allow time for

payment or satisfaction of any debts or recovery due, claims or demands by or against the Company and to refer any claims or demands by or against the Company or any differences arising in execution of contracts to conciliation and arbitration and to observe, comply with and/or challenge any awards preliminary, interim or final made in any such arbitration.

26. To pay and subsequently write off preliminary expenses

To pay out of the funds of the Company all costs, charges, expenses and preliminary and incidental to the promotion, formation, establishment and registration of the Company or other expenses incurred in this regard.

27. To contribute and make donations

Subject to provisions of Companies Act, 2013 to contribute money or otherwise assist to charitable, benevolent, religious, scientific national, defense, public or other institutions or objects or purposes.

28. To open accounts in Banks

To open an account or accounts with any individual, firm or company or with any bank bankers or shrofs and to pay into and withdraw money from such account or accounts.

29. To accept gifts, donations etc.

To accept gifts, bequests, devises and donations from members and others and to make gifts to members and others of money, assets and properties of any kind.

30. To pursue the objects of the Company as principal, agents, trustee or in any other capacity

To carry out all or any of the objects of the company and do all or any of the above things in any part of the world and either as principal, agent, contractor or trustee or otherwise and either alone or in conjunction with others.

31. To enter into Contracts

To negotiate and/or enter into agreement and contract with individuals, companies, corporations, foreign or Indian, for obtaining or providing technical, financial or any other assistance for carrying on all or any of the objects of the Company and also for the purpose of activating, research, development of projects on the basis of know-how and/or financial participation and for technical collaboration, and to acquire or provide necessary formulate and patent rights for furthering the objects of the company.

32. To contribute towards promotion of trade and industry

To aid pecuniary or otherwise, any association, body or movement having for its object the solution, settlement or surmounting of industrial or labour problems or trouble or the promotion of industry or trade.

33. To take all necessary steps for winding up of the company

Subject to the provisions of Companies Act, 2013 or any amendment or re-enactment thereof in the event of winding up to distribute among the members in specie any property of the Company or any proceeds of sale on disposal of any property in accordance with the provisions of the Act.

34. To do and perform all coincidental and ancillary acts for the attainment of its objects

To do all such other things as may be deemed incidental or conducive to the attainment of the above Objects or any of them and to carry on any business which may seem to the Company capable of being conveniently carried in connection with any of the Company's Objects or calculated directly or indirectly to enhance the value of or render profitable any of the Company's property or rights.

35. To take up studies and research experiments.

To establish, provide, maintain and conduct or otherwise subsidies research laboratories and experimental workshops for scientific, technical or researches, experiments and to undertake and carry on directly or in collaboration with other agencies scientific and technical research experiments and tests of all kinds and to process, improve and invent new products and their techniques of manufacture and to promote, encourage, reward in every manner studies and research, scientific and technical investigations and inventions of any kind that may be considered likely to assist, encourage and promote rapid advances in technology, economies, import substitution or any business which the Company is authorized to carry on.

36. To evolve scheme for restructuring or arrangement.

Subject to provisions of the Companies Act,2013, to evolve scheme for restructuring or arrangement, to amalgamate or merge or to enter into partnership or into any consortium or arrangement for

sharing of profits, union of interests, co-operation, joint venture with any Person or Persons, partnership firm/firms, or company or companies carrying on or engaged in any operation capable of being conducted so conveniently in co-operation with the business of the Company or to benefit the Company or to the activities for which the Company has been established.

37. To apply for purchase, or otherwise acquire.

To apply for purchase, or otherwise acquire any trademarks, patents, brevets, inventions, licenses, concessions and the like, conferring any exclusive or nonexclusive or limited rights to use, or any secret or other information as to any invention which may be capable of being used for any of the purposes of the Company, or the acquisition of which may benefit the Company and to use, exercise, develop or grant licenses in respect of or otherwise turn to account the property, rights or information so acquired.

38. To sell, dispose or hive off an undertaking of the Company

To sell, dispose or hive off an undertaking of the Company or any part thereof for such consideration as the Company may think fit and in particular for shares, debentures or securities of any other association, corporation or company.

39. To sell, improve, manage, develop

To sell, improve, manage, develop, exchange, loan, lease or let, under-lease, sub - let, mortgage, dispose of, deal with in any manner, turn to account or otherwise deal with any rights or property of the Company.

40. To outsource parts of its activities

To outsource parts of its activities to achieve higher efficiencies and throughputs in the achievement of its business goals.

4 The liability of the member(s) is limited, and this liability is limited to the amount unpaid if any, on the shares held by them.

5 Every member of the company undertakes to contribute:

(i) to the assets of the company in the event of its being wound up while he is a member, or within one year after he ceases to be a member, for payment of the debts and liabilities of the company or of such debts and liabilities as may have been contracted before he ceases to be a member; and

(ii) to the costs, charges and expenses of winding up (and for the adjustment of the rights of the contributories among themselves), such amount as may be required, not exceeding * rupees.

(iii) The share capital of the company is rupees, divided into

10000	Equity Share	Shares of	10	Rupees each	
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6

☒ We, the several persons, whose names and address are subscribed, are desirous of being formed into a company in pursuance of this memorandum of association, and we respectively agree to take the number of shares in the capital of the company set against our respective names:

☐ I, whose name and address is given below, am desirous of forming a company in pursuance of this memorandum of association and agree to take all the shares in the capital of the company:

☐ We, the several persons, whose names and addresses are subscribed, are desirous of being formed into a company in pursuance of this memorandum of association:

Subscriber Details					
S. No.	*Name, Address, Description and Occupation	DIN / PAN / Passport number	No. of shares taken	DSC	Dated
1	SACHIN SHUKLA S/o Raj Kumar Shukla R/o 4th Floor, House No 6, H1 Block, Good Earth City Center, South City II, Gurgaon - 122018, Haryana, India, Occupation - Service (As Nominee of PFC Consulting Limited)	0*6*3*6*	100 Equity,0 Preference	Sachin Shukla Digitally signed by Sachin Shukla Date: 2025.02.06 17:46:40 +05'30'	06/02/2025
2	NAVEEN KUMAR S/o Jagdish Chander R/o F-024, Assotech Windsor Court Sector 78, Noida, Uttar Pradesh, India 201301 Occupation - Service (As Nominee of PFC Consulting Limited)	1*4*7*5*	100 Equity,0 Preference	Naveen Kumar Digitally signed by Naveen Kumar Date: 2025.02.07 10:13:56 +05'30'	06/02/2025
3	PFC CONSULTING LIMITED R/o First Floor, Urjanidhi, 1, Barakhamba Lane, Connaught Place, New Delhi - 110001 Through its Authorised representative Sachin Arora S/o Prem Lal Arora R/o F-5, 1903, Supertech, Eco, Village, 1, Noida, Gautam Buddh Nagar, Uttar Pradesh-201301 Occupation-Service	A*G*A*4*4*	9400 Equity,0 Preference	Sachin Arora Digitally signed by Sachin Arora Date: 2025.02.06 17:47:32 +05'30'	06/02/2025
4	SANJAY KUMAR NAYAK S/o Jagabandhu Nayak R/o K 713, Jalvayu Tower, Sector-56, Gurgaon, Haryana - 122011, Occupation - Service (As Nominee of PFC Consulting Limited)	0*1*7*9*	100 Equity,0 Preference	Sanjay Kumar Nayak Digitally signed by Sanjay Kumar Nayak Date: 2025.02.06 17:48:38 +05'30'	06/02/2025
5	RAKESH MOHAN S/o Lakshman Singh R/o Flat No 364, Sunehari Bagh Appartment, Sector-13 Rohini, Rohini sector-14, North West Delhi, Delhi - 110085 Occupation - Service (As Nominee of PFC Consulting Limited)	0*6*4*2*	100 Equity,0 Preference	Rakesh Mohan Digitally signed by Rakesh Mohan Date: 2025.02.06 17:49:58 +05'30'	06/02/2025
6	NEERAJ SINGH S/o Dayashankar Singh R/o C-703 F-2, The Crescent Appartment, Sector-50, Noida, Gautam Budha Nagar, Uttar Pradesh - 201301 Occupation - Service (As Nominee of PFC Consulting Limited)	0*6*3*9*	100 Equity,0 Preference	Neeraj Singh Digitally signed by Neeraj Singh Date: 2025.02.06 17:49:58 +05'30'	06/02/2025

7	RISHAB JAIN S/o Naveen Jain R/o T-11, First Floor, Green Park Extension, Green Park Market, New Delhi - 110016 Occupation - Service (As Nominee of PFC Consulting Limited)	0*4*5*6*	100 Equity,0 Preference	Rishab Jain Digitally signed by Rishab Jain Date: 2025.02.06 17:50:41 +05'30'	06/02/2025
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Total shares taken			10000 Equity,0 Preference		
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Signed before me

Membership type of the witness (ACA/FCA/ACS/FCS/AC MA/FCMA)	*Name of the witness	*Address, Description and Occupation	DIN / PAN / Passport number / Membership number	DSC	Dated
FCS	Nitin Kochhar	Flat No. 608, Sixth Floor, Pragati Tower - 26, Rajendra Place, New Delhi - 110008	6*3*	NITIN KOCHHAR Digitally signed by NITIN KOCHHAR Date: 2025.02.07 15:34:26 +05'30'	06/02/2025

7 Shri / Smt Of resident of

aged years shall be the nominee in the event of death of the sole member.

Form No. INC-34**e-AOA (e-Articles of Association)**

[Pursuant to Section 5 of the Companies Act, 2013 and rules made thereunder read with Schedule I]



Form language

☒ English ☐ Hindi

Refer instruction kit for filing the form

All fields marked in * are mandatory

Table applicable to company as notified under schedule I of the Companies Act, 2013 (F, G, H)

F

Table F / G / H (basis on the selection of above-mentioned field) as notified under schedule I of the companies Act, 2013 is applicable to

(F – a company limited by shares

G – a company limited by guarantee and having a share capital

H – a company limited by guarantee and not having share capital)

F - A COMPANY LIMITED
BY SHARES

The name of the company is

KAKINADA I
TRANSMISSION LIMITED

Check if not applicable	Check if altered	Article No.	Description
☐	☒		Interpretation
			1. Interpretation clause In the interpretation of these Articles unless repugnant to the subject or context-Act The Act means The Companies Act 2013 as amended from time to time and includes any statutory modification or re-enactment thereof for the time being in force. Articles of the Company Articles means the articles of association of a company as originally framed or as altered from time to time or applied in pursuance of any previous company law or of this Act. Auditor(s) Auditor(s) mean and include persons appointed as such for the time being by the Comptroller Auditor General of India. Board or Board of Directors Board or Board of Directors in relation to a company means the collective body of the directors of the company. Books of Account Books of account includes records maintained in respect of (i) all sums of money received and expended by a company and matters in relation to which the receipts and expenditure take place (ii) all sales and purchases of goods and services by the company (iii) the assets and liabilities of the company and (iv) the items of cost as may be prescribed under section 148 in the case of a company which belongs to any class of companies specified under that section. Capital Capital means the share capital for the time being raised or authorized to be raised for the purpose of the Company. Company Shall means KAKINADA I TRANSMISSION LIMITED Debenture Debenture includes debenture stock bonds or any other instrument of a company evidencing a debt whether constituting a charge on the assets of the company or not. Director(s) Director means a director appointed to the Board of a company under Section 2(34) of the Act. Dividend Dividend includes any interim dividend. Financial Institution Financial Institution includes a scheduled bank and any other financial institution defined or notified under the Reserve Bank of India Act 1934. Gender Words importing the masculine gender also include the feminine gender. Generation Company Generation Company shall mean any entity engaged in the business of generation of

electricity. In Writing and Written In writing and Written include printinglithography and other modes of representing or reproducing words in a visibleform. key managerial personnel key managerial personnel in relation to acompany means (i) the Chief Executive Officer or the managing director or themanager (ii) the company secretary (iii) the whole-time director (iv) the ChiefFinancial Officer and (v) such other officer as may be prescribed. Meeting orGeneral Meeting Meeting means Annual General Meeting or Extraordinary GeneralMeeting of Members duly called and constituted including an adjourned meeting.In the context of Board of Directors it shall mean the meeting of the Directorsincluding an adjourned meeting. Member Member in relation to a company means(i) the subscriber to the memorandum of the company who shall be deemed to haveagreed to become member of the company and on its registration shall be enteredas member in its register of members (ii) every other person who agrees inwriting to become a member of the company and whose name is entered in theregister of members of the company (iii) every person holding shares of thecompany and whose name is entered as a beneficial owner in the records of adepository. Month Month means a calendar month. Office Office means theRegistered Office of the company for the time being. paid-up share capital orshare capital paid-up means such aggregate amount of money credited as paid-up asis equivalent to the amount received as paid up in respect of shares issued andalso includes any amount credited as paid-up in respect of shares of thecompany but does not include any other amount received in respect of suchshares by whatever name called. Persons Persons include Corporations and firmsas well as individuals. Power Transmission Utility Power Transmission Utilityshall mean any entity engaged in the business of power transmission. ProxyProxy includes Attorney duly constituted under a valid Power of Attorney.Project-In-Charge A Director of the Company designated as Project In-charge foradministrating day to day activities of the Company. Public Company PublicCompany means a company which a. is not a private company and b. has a minimumpaid-up share capital as may be prescribed Provided that a company which is asubsidiary of a company not being a private company shall be deemed to bepublic company for the purposes of this Act even where such subsidiary companycontinues to be a private company in its articles. Registrar Registrar means aRegistrar an Additional Registrar a Joint Registrar a Deputy Registrar or anAssistant Registrar having the duty of registering companies and dischargingvarious functions under this Act. Register of Members Register of Members meansthe Register of Members to be kept pursuant to the Act. Related Party Section2(76)of the Act describes related party with reference to a company which means(i) a director or his relative (ii) a key managerial personnel or his relative(iii) a firm in which a director manager or his relative is a partner (iv) aprivate company in which a director or manager is a member or director (v) apublic company in which a director or manager is a director or holds along withhis relatives more than two per cent. of its paid-up share capital (vi) anybody corporate whose Board of Directors managing director or manager isaccustomed to act in accordance

with the advice directions or instructions of a director or manager (vii) any person on whose advice directions or instructions a director or manager is accustomed to act Provided that nothing in sub-clauses (vi) and (vii) shall apply to the advice directions or instructions given in a professional capacity (viii) any company which is (A) a holding subsidiary or an associate company of such company or (B) a subsidiary of a holding company to which it is also a subsidiary (ix) such other person as may be prescribed. Seal Means the common seal of the company for the time being. Securities Exchange Board Securities and Exchange Board means the Securities and Exchange Board of India established under section 3 of the Securities Exchange Board of India Act 1992. Securities Securities means the securities as defined in clause (h) of section 2 of the Securities Contracts (Regulation) Act 1956. Share Means a share in the share capital of a company and includes stock. Share Capital Share Capital means the total equity share capital of the Company agreed to be issued and called the Authorized Capital of the Company as mentioned in the Memorandum of Association of the Company. Singular Number Words importing the singular number include where the context admits the plural number and vice-versa. State Electricity Board State Electricity Board means the Electricity Board or Vidyut Board or any other body by whatever name called set up by the State Government under Electricity (Supply) Act 1948 as amended which expression shall include its successors administrators authorized representatives and permitted assigns. Transmission Company Transmission Company shall mean any entity engaged in the business of transmission of electricity. Year or Financial Year Meaning of Words Year means English calendar year and Financial Year shall have the meaning assigned thereto by Section 2(41) of the Act. Unless the context otherwise requires words or expressions contained in these regulations shall bear the same meaning as in the Act or any statutory modification thereof in force at the date at which these regulations become binding on the company. Marginal Notes Marginal Notes are for ease of reference only and shall not affect the construction and interpretation of these Articles. Other Expressions Other words or expressions contained in these Articles shall bear the same meaning as a reassigned to them in the Act or any statutory modification thereof. 2. Table F not to Apply The regulations contained in Table F in the First Schedule to the Companies Act 2013 shall not apply except to the extent that the same are repeated or contained or expressly made applicable by these Articles or by the Act but the regulations for the management of the Company and for the observance of the members thereof and their representatives shall be subject to any exercise of the statutory powers of the Company with reference to the repeal or alteration of or addition to its regulations by Special Resolution as prescribed by the said Companies Act 2013 be such as contained in these Articles. 3. Business Purpose The Company shall be engaged in the business of Transmission of Electricity including construction operation maintenance and other related activities.

Share Capital and Variation of rights

☐	☒	II 1	4. Share Capital Increase of capital by the Company and how carried into effect The Authorized Share Capital of the Company is as mentioned in clause V of the Memorandum of Association of the Company. The Company in General Meeting may from time to time by resolution increase its authorized share capital by creation of new shares such increase to be of such aggregate amount and to be divided in to shares of such respective amounts as may be determined by the General Meeting subject to the provisions of the Act.
☐	☒		
☐	☒	2	5. New Capital same as existing capital Any capital raised by the creation of new shares shall be considered as part of the original capital and shall be subject to the same provisions herein contained with reference to the payment of calls and installments forfeiture liens surrender transfer and transmission voting and otherwise.
☐	☒		
☐	☒	3	6. Reduction of Capital The Company may from time to time by special resolution reduce its capital which may be paid off either with or without extinguishing or reducing liability on shares which is in excess of the wants of the company or canceling such share capital which has been lost or is unrepresented by available assets.
☐	☒		
☐	☒	4	7. Subdivision and consolidation of shares The Company in general meeting may from time to time sub-divide or consolidate its shares or any of them and exercise any of the other powers conferred by Section 61 of the Act and shall file with the Registrar such notice of exercise of any such powers as may be required by the Act.
☐	☒		
☐	☒	5	8. Register and Index of Members Beneficial owners The Company shall cause to be kept a Register and also an Index of Members and Debenture-holders in accordance with Sections 88 of the Act. Further as permissible under Section 88 of the Act the register and Index of beneficial owners maintained by a Depository shall be deemed to be the corresponding Register and Index for the purpose of this Act.
☐	☒		
☐	☒	6	9. Foreign Register of members The Company shall be entitled to keep in any country outside India a Foreign Register of members resident in that country subject to compliance with the provisions of Section 88 of the Act.
☐	☒		
☐	☒	7	10. Shares to be numbered distinctively The shares in the capital held otherwise than in the depository mode shall be numbered progressively in sequence and given distinctive number Except and in the manner herein mentioned no share shall be forfeited or surrendered and shall continue to bear the number which it had originally borne.
☐	☒		
☐	☒		11. Share Application Money The Company shall ensure that the share application money paid is held by it in an account with a Scheduled Commercial Bank (in the name of the Company). 12. Further Issue of Capital (a) Where at any time the Company wishes to raise its subscribed share capital by issue of further shares it shall first offer such shares to its existing shareholders in proportion to their existing shareholdings on the date of such issue. Such offer to the existing shareholders shall
☐	☒		

be in accordance with the provisions of Section 62 of the Act. (b) The Company shall subject to applicable provisions of the Act and Articles of Association make uniform calls from time to time upon all the Shareholders in respect of the moneys remaining unpaid on the issued share capital within 30 days or such time as the Board may deem fit and appropriate. 13. Shares under control of Directors Subject to the provisions of these Articles and of the Act the shares including any shares forming part of any increased capital of the Company shall be under the control of the Directors who may allot or otherwise dispose of the shares to such persons in such proportion on such terms and conditions and at such times as the Directors may think fit and subject to the sanction of the Company in General Meeting subject to the provisions of Sections 52 and section 54 of the Act at a premium or par and such option being exercisable for such time and for such consideration as the Directors think fit. The Board shall cause to be filed the returns as to allotment provided for in Section 39(4) of the Act. 14. Issue of shares for consideration other than cash Subject to these Articles and the provisions of the Act if any the Board may issue and allot shares in the capital of the Company as payment or in consideration or as part payment or in part consideration of the purchase or acquisition of any property or for services rendered to the Company in the conduct of its business and shares which may be so issued or allotted shall be credited or deemed to be credited as fully paid up or partly paid up shares. 15. Power of Company to Issue Shares The Company in General Meeting may subject to the provisions of Section 42 62 of the Act provide that any shares (whether forming part of the original capital or of any increased capital of the Company) shall be offered to such persons (whether a Member or not) in such proportion and on such terms and conditions of the Act) at a premium or at par or at a discount as such General Meeting shall determine and with full power to give any person (whether a Member or not) the option to call for or be allotted shares of any class of the Company either subject to compliance with the provisions of Sections 52 and 54 of the Act at a premium or at par or at discount such option being exercisable at such times and for such consideration as may be directed by such General Meeting or the Company in General Meeting may make any other provisions whatsoever for the issue allotment or disposal of any shares. 16. Acceptance of shares Any person applying for shares in the Company followed by an allotment of any shares and subscribers to the Memorandum shall be a shareholder within the meaning of these Articles and every person whose name is on the Register of Members shall for the purposes of these Articles be a Member of the Company. 17. Deposit call to be a debt payable Immediately The Money (if any) which the Board shall on the application for allotment of any shares being made by them require or direct to be paid by way of deposit call or otherwise in respect of any shares allotted by them shall immediately on the insertion of the name of the allottee in the Register of Members as the name of the holder of such shares become a debt due to and recoverable by the Company from the allottee thereof and shall be paid by him accordingly. 18. Liability of Members Every Member or his heirs executors or administrators shall pay to the

Company the portion of the capital and premium if any represented by or payable on his share or shares which may for the time being remain unpaid thereon in such amounts at such time or times and in such manner as the Board shall from time to time in accordance with the Company's regulations require or fix for the payment thereof. 19. Share Certificates A certificate issued under the common seal of the company specifying the shares held by any person shall be prima facie evidence of the title of the person to such shares. (a) Every Member or allottee of shares who is holding such shares in the physical form shall be entitled without payment to receive a certificate specifying the name of the person in whose favour it is issued the shares to which it relates and the amount paid-up thereof. Such certificates shall be issued only in pursuance of a resolution passed by the Board and on surrender to the Company of the letter of allotment or the fractional coupons of requisite value save in case of issues against letters of acceptance or of renunciation or in cases of issue of bonus shares. Every such certificate shall be issued under the seal of the Company which shall be affixed in the presence of two Directors and the Secretary or some other person appointed by the Board for the purpose and the two directors and the Secretary or other persons as authorized by the Board shall sign the share certificate. Provided if the composition of the Board permits of it at least one of the aforesaid two directors shall be a person other than a Managing or a Whole Time Director. Particulars of every share certificate issued shall be entered in the Register of Members against the name of the person to whom it has been issued indicating the date of issue. For issue of any further duplicate certificate the Board shall be entitled to charge such amount which shall not exceed fifty Rupees per Certificate. (b) A Director may sign a share certificate by affixing his signature thereon by means of any machine equipment or other mechanical means such as engraving in metal or lithography but not by means of a rubber stamp. PROVIDED that the Director shall be personally responsible for the safe custody of such machine equipment or other material used for the purpose. 20. Renewal of Share Certificates (a) No certificate of any share or shares shall be issued either in exchange for those which are sub-divided or consolidated or in replacement of those which are defaced mutilated torn or old decrepit destroyed or where the pages on the reverse for recording transfers have been duly utilized unless the certificate in lieu of which it is issued is surrendered to the Company and for issuing such share certificate the company may charge such fee as the Board thinks fit not exceeding twenty rupees per certificate. (b) When a new share certificate has been issued in pursuance of clause (a) of this Article it shall state on the face of it and against the stub or counterfoil to the effect that it is issued in lieu of share certificate No sub-divided replaced on consolidation. (c) If a share certificate is lost or destroyed a new certificate in lieu thereof shall be issued only with the prior consent of the Board and on such reasonable terms such as furnishing supporting evidence and indemnity and the payment of out-of-pocket expenses incurred by the Company in investigating evidence produced as the Board thinks fit. (d) When a new share certificate has been issued in

pursuance of clause (c) of this Article it shall state on the face of it and against the stub or counterfoil to the effect that it is duplicate issued in lieu of share certificate No. and the word duplicate shall be stamped or printed prominently on the face of the share certificate. (e) Where a new share certificate has been issued in pursuance of clause (a) and or clause (c) of this Article particulars of every such share certificate shall be entered in a Register of Renewed and Duplicate Share Certificates indicating against the name(s) of the person(s) to whom the certificate is issued the number and date of issue of the share certificate in lieu of which the new certificate is issued and the necessary changes indicated in the Register of Members by suitable cross reference in the Remarks column. (f) All blank forms to be used for issue of share certificates shall be printed and the printing shall be done only on the authority of a resolution of the Board and the blank forms shall be consecutively machine-numbered and the forms and the blocks engravings facsimiles relating to the printing of such forms shall be kept in the custody of the Secretary or of such other person as the Board may appoint for the purpose and the Secretary or the other person aforesaid shall be responsible for rendering an account of these forms to the Board. (g) The Committee of the Board Company Secretary of the Company or a Director specifically authorized by the Board for such purpose shall be responsible for the maintenance preservation and safe custody of all books and documents relating to the issue of share certificates including the blank forms of share certificates referred to in clause (f). (h) All books referred to in clause (g) shall be preserved in good order for not less than thirty years and in disputed cases shall be preserved permanently.

21. Joint holders (a) Where two or more persons are registered as the holders of any share they shall be treated as a single shareholder and shall be deemed to hold the same as joint holders with benefits of survivorship subject to the following and other provisions contained in these Articles. (b) The Company shall be entitled to decline to register more than four persons as the holders of any share. (c) The Joint holders of any share shall be liable severally as well as jointly for and in respect of all calls and other payments which ought to be made in respect of such shares. (d) On the death of any such joint holder the survivor or survivors shall be the only person or persons recognized by the Company as having any title to the share but the Directors may require such evidence of death as they may deem fit and nothing herein contained shall be taken to release the estate of the deceased joint holder from any liability on shares held by him jointly with any other person. (e) Delivery of share certificate to any one of such joint holders shall be deemed to be delivery to all of them and any one of such joint holders may give effectual discharge and receipts for any dividends or other moneys payable in respect of such shares and or in respect of any other obligation of the Company towards them. (f) Only the person whose name stands in the Register of Members as the first of the joint holders of any shares shall be entitled to delivery of the certificate relating to such share or to receive notices from the Company and any notice given to such person shall be deemed proper notice to all joint holders. (g) Any one of two or more joint

			holders may vote at any meeting either personally or by proxy in respect of such share as if he were solely entitled thereto and if more than one of such joint holders be present at any meeting personally or by proxy the holder whose name stands first or higher (as the case may be) on the Register of Members in respect of such share shall alone be entitled to vote in respect thereof. PROVIDED always that a member present at any meeting personally shall be entitled to vote in preference to a person present by proxy although the name of such person present by proxy stands first on the Register of Members in respect of such shares. 22. Terms and Conditions of Preference Shares Subject to the provisions of section 55 any preference shares may with the sanction of an ordinary resolution be issued on the terms that they are to be redeemed on such terms and in such manner as the company before the issue of the shares may by special resolution determine.
			Lien
☐	☒	9	23. Company to have lien on shares The Company shall have a first and paramount lien upon all shares (other than fully paid up shares) registered in the name of each member (whether solely or jointly with others) and upon the sale proceeds thereof for all moneys (whether presently payable or not) called or payable at a fixed time in respect of all such shares (not being fully paid up) for all moneys presently payable by him or his estate to the Company. Any such lien shall extend to all dividends payable and bonuses declared from time to time declared in respect of such shares.
☐	☒	10	24. Enforcing lien by sale For the purpose of enforcing such lien the Board may sell the shares subject thereto in such manner as they shall think fit and for that purpose it may cause to be issued a duplicate certificate in respect of such shares and may authorize one of their Directors to execute a transfer thereof on behalf of and in the name of the Board. No sale shall be made until notice period for making call as aforesaid have expired and until notice in writing of the intention to sell shall have been made known to the shareholder for default in payment and default has been made by him in the payment of money called in respect of such shares for thirty days after the date of such notice. Upon issue of a duplicate certificate or certificates in lieu of the original share the certificate or certificates originally issued shall stand cancelled and become null and void and the same shall have no effect.
☐	☒	11	25. Application of proceeds of sale The net proceeds of any such sale shall be received by the Company and applied in or towards payment of such part of the amount as is presently payable and the residue if any shall (subject to a like lien for sums not presently payable as existed upon the shares before sale) be paid to the person entitled to the shares at the date of the sale.
☐	☒	12	
			Calls on shares
☐	☒		26. Directors may make calls The Board may from time to time subject to the terms on which any shares may have been issued and subject to the conditions of

		13	allotment by a resolution passed at a meeting of the Board (and not by resolution by circulation) make such calls as it thinks fit upon the Members in respect of all moneys unpaid on the shares held by them respectively and each member shall pay the amount of every call so made on him to the person or persons and at the times and places appointed by the board. A call may be made payable by installments.
☐	☒	14	27. Notice of calls Not less than thirty days notice in writing of any call shall be given by the Company specifying the time and place of payment and the person or persons to whom such call shall be paid.
☐	☒	15	28. When call made A call shall be deemed to have been made at the time when the resolution of the Board authorizing such call was passed at a meeting of the Board and demand notice is issued.
☐	☒	16	29. Calls may be revoked or postponed A call may be revoked or postponed at the discretion of the Board.
☐	☒	17	30. Directors may extend time The Board may from time to time at its discretion extend the time fixed for the payment of any call and may extend such time as to all or any of the Members for reasons which the Board may consider satisfactory but no Member shall be entitled to such extension save as a matter of grace.
☐	☒	18	31. Calls to carry interest If any Member fails to pay any call due from him on the day appointed for payment thereof or any such extension thereof as aforesaid he shall be liable to pay interest on the same from the day appointed for the payment thereof to the time of actual payment at rate not exceeding 10 per cent per annum as may be decided by the Board but the Board may in its absolute discretion and in special circumstances waive or reduce the levy of interest as deemed appropriate. Sums deemed to be call Any sum which by the terms of issue of a share becomes payable on allotment or at any fixed date whether on account of the nominal value of the share or by way of premium shall for the purposes of these Articles be deemed to be a call duly made and payable on the date on which by the terms of issue the same becomes payable and in case of non-payment all the relevant provisions of these Articles as to payment of interest and expenses forfeiture or otherwise shall apply as if such sum had become payable by virtue of a call duly made and notified. 32. Sums deemed to be call Any sum which by the terms of issue of a share becomes payable on allotment or at any fixed date whether on account of the nominal value of the share or by way of premium shall for the purposes of these Articles be deemed to be a call duly made and payable on the date on which by the terms of issue the same becomes payable and in case of non-payment all the relevant provisions of these Articles as to payment of interest and expenses forfeiture or otherwise shall apply as if such sum had become payable by virtue of a call duly made and notified. 33. Partial payment not to preclude Forfeiture Neither the receipt by the Company of a portion of any money which shall from time to time be due from any Member to the Company in respect of his shares either by way of principal or interest nor any indulgence granted by the Company in respect of the

			payment of any such money shall preclude the Company from there after proceeding to enforce a forfeiture of such shares as hereinafter provided. 34. Payment in anticipation of calls may carry interest The Board may if it thinks fit agree to and in anticipation receive from any Member willing to advance the same all of calls money or any part of the amounts of his respective shares beyond the sums actually called up and upon the moneys so paid in advance or upon so much thereof from time to time and at any time thereafter as exceeds the amount of the calls then made upon and due in respect of the shares on account of which such advances are. made the Board may pay or allow interest at such rate as the Member paying the sum in advance and the Board agree upon. The Board may agree to repay at any time any amount so advanced or may at any time repay the same upon giving to the Member three months notice in writing. PROVIDED that moneys paid in advance of calls on any shares may carry interest but shall not confer a right to dividend or to participate in profits. (b) No Member paying any such sum in advance shall be entitled to voting rights in respect of the moneys so paid by him until the same would but for such payment become presently payable.
			Transfer of shares
☐	☒	19	35. Register of Transfers The Company shall maintain a Register of Transfers and therein shall be fairly and distinctively enter the particulars of every transfer or transmission of any share in the physical form.
☐	☒	20	36. Form of transfer The instrument of transfer shall be in writing and in such form as prescribed under the Act. All the provisions of Section 56 of the Act shall be duly complied with in respect of all transfers and of the registration thereof. The Company shall not charge any fee for registration of a transfer of shares or debentures.
☐	☒	21	37. Instrument of Transfer to be completed and presented to the Company The Instrument of Transfer duly stamped and executed by the transferor and the transferee shall be delivered to the Company in accordance with the provisions of the Act. The instrument of transfer shall be accompanied by the Share Certificate or such evidences the Board may require to prove the title of transferor and his right to transfer the shares and every registered Instrument of Transfer shall remain in the custody of the Company until destroyed by order of the Board. Any instrument of transfer which the Directors may decline to register shall be returned to the person depositing the same.
☐	☒		38. Transferor deemed to be holder The transferor shall be deemed to be the holder of such shares until the name of the transferee shall have entered in the Register of Members in respect thereof. Before the registration of a transfer the certificate or certificates of the shares must be delivered to the Company along with Transfer Deed. No transfer to insolvent etc. 39. No transfer shall be made to a person of unsound mind or to an insolvent. 40. Closure of Register of Members Debenture holders The Directors shall have power on giving not less than seven days previous notice as required by Section 91 of the Act to close the Register of Transfer Register of

		22	Members or Register of Debenture holders or the register of other security holders of the Company for any period or periods not exceeding in the aggregate forty-five days in each year (but not exceeding thirty days at any one time) as they may determine. 41. Nomination by shareholder Every share-holder or debenture holder may at any time nominate in the prescribed manner a person to whom his shares or debenture shall vest in the event of his death as provided in Section 72 of the Act. 42. Title to shares of deceased holder In the event there is no nomination the executors or administrators of a deceased Member or the holder of a Succession Certificate in respect of the shares of a deceased Member (not being one of two or more joint holders) shall be the only persons whom the Company will be bound to recognize as having any title to the shares registered in the name of such Member and the Company shall not be bound to recognize such executors or administrators or holders unless such executors administrators or holders shall have first obtained probate or Letters of Administration or Succession Certificate as the case may be from a duly constituted Court in India. PROVIDED that the Directors may at their absolute discretion dispense with production of Probate Letters of Administration or Succession Certificate upon such terms as to indemnity or otherwise as they think fit and may enter the name of the person who claims to be absolutely entitled to the shares standing in the name of a deceased Member as a Member.
			Transmission of shares
☐	☒	23	43. Transmission of Shares Subject to the provisions of the Act any person becoming entitled to any share in consequence of the death lunacy or insolvency of any Member or by any lawful means other than by a transfer in accordance with these Articles may with the consent of the Directors (which they shall be under no obligation to give) and upon producing such evidence that he sustains the character in respect of which he proposes to act under this. Article or of his title as the Directors may require and upon such indemnity as the Directors may require either be registered as a Member in respect of such shares or elect to have some person nominated by him and approved by the Directors registered as a Member in respect of such shares. PROVIDED that if such persons shall elect to have his nominee registered he shall testify his election by executing in favor of his nominee an instrument of transfer in accordance with these Articles and until he does so he shall not be freed from any liability in respect of such shares.
☐	☒	24	44. Right of Board to decline or suspend registration (i) Any person becoming entitled to a share in consequence of the death or insolvency of a member may upon such evidence being produced as may from time to time properly be required by the Board and subject as hereinafter provided elect either -(a) to be registered himself as holder of the share or (b) to make such transfer of the share as the deceased or insolvent member could have made. (ii) The Board shall in either case have the same right to decline or suspend registration as it would have had if the deceased or insolvent member had transferred the share before his death or insolvency.

☐	☒		45. The Company not liable for disregard of notice prohibiting registration of transfer The Company shall incur no liability or responsibility whatever in consequence of its registering or giving effect to any transfer of shares made or purported to be made by any apparent legal owner thereof (as shown or appearing in register of Members) to the prejudice of persons having or claiming any equitable right title or interest to or in the same shares notwithstanding that the Company may have had notice of such equitable right title or interest or notice prohibiting registration of such transfer and may have entered such notice or referred to it in any book or attended or given effect to any notice which may have been given to it of any equitable right title or interest or be under any liability whatsoever for refusing or neglecting so to do though it may have been entered or referred to in some book of the Company but the Company shall nevertheless be at liberty to regard and attend to any such notice and give effect thereto if the Directors shall so think fit.
☐	☒	25	
☐	☒		46. Rights of successors A person becoming entitled to a share by reason of the death or insolvency of the holder shall be entitled to the same dividends and other advantages to which he would have been entitled if he were the registered holder of the shares except that he shall not before being registered as a Member in respect of the shares be entitled to exercise any right conferred by membership in relation to meetings of the Company. PROVIDED that the Directors shall at any time give notice requiring any such person to elect to be registered himself or to transfer the shares and if the notice is not complied within ninety days from the date of issue of the notice the Directors may thereafter withhold payment of all dividends bonuses or other moneys payable in respect of the shares until the requirements of the notice have been complied with.
☐	☒	26	
☐	☒	27	•
☐	☒		Forfeiture of shares
☐	☒		47. If money payable on shares not paid notice to be given to members If any Member fails to pay any call or installment of a call on or before the day appointed for the payment of the same or any such extension thereof as aforesaid the Board may at any time thereafter during such time as any part of the call or installment remains unpaid serve a notice on him requiring him to pay the same together with any interest which may have accrued and all expenses that may have been incurred by the Company by reason of such non-payment.
☐	☒	28	
☐	☒		48. Contents of Notice The notice shall name a further day (not being less than fourteen days from the date of the service of notice) and a place or places on and at which such call or installment and such interest thereon at such rate as the Directors shall determine from the day on which such call or installment ought to have been paid and expenses as aforesaid are to be paid. The notice shall also state that in the event of the non-payment on or before the day at or before the time and at the place appointed the shares in respect of which the call was made or installment is payable shall be liable to be forfeited.
☐	☒	29	

☐	☒	30	49. In default of payment shares to be Forfeited If the requirement of any such notice as aforesaid are not complied with every or any share in respect of which such notice has been given may at any time thereafter but before payment of all calls or installments interest and expenses due in respect thereof be forfeited by a resolution of the Board to that effect. Such forfeiture shall include all dividends declared or any other moneys payable in respect of the aforesaid share and not actually paid before the forfeiture. In default of payment shares to be Forfeited.
☐	☒	31	50. Notice of forfeiture to a Member When any share shall have been so forfeited notice of the forfeiture shall be given to the Member in whose name it stood immediately prior to the forfeiture and an entry of the forfeiture with the date thereof shall forthwith be made in the Register of Members but no forfeiture shall be in any manner invalid by any omission or neglect to make any such entry as aforesaid in the Register.
☐	☒	32	51. Forfeited share to be property of the Company and may be sold etc. Any share so forfeited shall be deemed to be the property of the Company and maybe sold re-allotted or otherwise disposed of either to the original holder thereof or to any person upon such terms and in such manner as the Board shall think fit.
☐	☒	33	52. Member still liable to pay calls owing at the time of forfeiture and interest Any members whose shares have been forfeited shall notwithstanding the forfeiture be liable to pay and shall forthwith pay to the Company on demand all calls installment interest and expenses owing upon or in respect of such shares at the time of the forfeiture together with interest accrued thereon at the time of the forfeiture at such rate as the Board may determine and the Board may enforce the payment thereof if it thinks fit.
☐	☒	34	53. Effect of forfeiture The forfeiture of a share shall involve extinction at the time of the forfeiture of all interest in and all claims and demands against the Company in respect of the share and all other rights incidental to the share except only such of those rights as by these Articles are expressly saved. 54. Evidence of forfeiture A declaration in writing by Chairman or Managing Director of the Company or by any person duly authorised in this regard that certain shares in the Company have been duly forfeited on a date stated in the declaration shall be conclusive evidence of the facts therein stated as against all persons claiming to be entitled to the shares and such declaration and the receipt of the Company for the consideration if any given for the shares on the sale or disposition thereof shall constitute a good title to such shares and the person to whom the shares are sold shall be registered as the holder of such shares and shall not be bound to see as to the application of the purchase money nor shall his title to such shares be affected by any irregularity or invalidity in the proceedings in reference to such forfeiture sale or disposition. 55. Validity of sale under Articles of forfeited shares Upon any sale after forfeiture or for enforcing a lien in purported exercise of the powers herein before given the board may appoint some person to execute an instrument of transfer of the shares sold and cause the

			purchasers name to be entered in the Register of Members in respect of the shares sold and the purchaser shall not be bound to see the regularity of the proceedings or to the application of the purchase money and after his name has been entered in the Register in respect of such shares the validity of the sale shall not be impeached by any person and the remedy of any person aggrieved by the sales hall be in damages only and against the Company exclusively. 56. Cancellation of Share Certificates in respect of forfeited shares Upon any sale re-allotment or other disposal under the provisions of the preceding Articles the certificate or certificates originally issued in respect of the relative shares shall (unless the same shall on demand by the Company have been (previously) surrendered to it by the defaulting member) stand cancelled and become null and void and of no effect and the Directors shall be entitled to issue a duplicate certificate or certificates in respect of the said shares to the person or persons entitled thereto. 57. Power to annul forfeiture The Board may at any time before any share so forfeited shall have been sold re-allotted or otherwise disposed of annul the forfeiture thereof upon such terms and conditions as it thinks fit.
			Alteration of capital
☐	☒	35	58. Alteration of Share Capital The company may from time to time by ordinary resolution increase the share capital by such sum to be divided into shares of such amount as may be specified in the resolution. Subject to the provisions of section 61 the company may by ordinary resolution the Company may from time to time-- (a) consolidate and divide all or any of its share capital into shares of larger amount than its existing shares (b) convert all or any of its fully paid-up shares into stock and reconvert that stock into fully paid-up shares of any denomination (c) Sub-divide its shares or any of them into shares of smaller amount than is fixed by the memorandum so however that in the sub-division the proportion between the amount paid and the amount if any unpaid on each reduced share shall be the same as it was in the case of the share from which the reduced share is derived. (d) Cancel any shares which as the date of the passing of the resolution have not been taken or agreed to be taken by any person and diminish the amount of its share capital by the amount of the shares so cancelled. The resolution whereby any share is sub-divided may determine that as between the holders of the shares resulting from such sub-division one or more of such shares shall have some preference or special advantage as regards dividend capital voting or otherwise over or as compared with the others or other subject to the provisions of the Act. Subject to the provisions of Sections 66 of the Act the Board may accept from any member the surrender on such terms and conditions as shall be agreed of all or any of his shares. The company may by special resolution reduce in any manner and with and subject to any incident authorised and consent required by law --(a) its share capital (b) any capital redemption reserve account or (c) any share premium account.
☐	☒	36	•

☐	☒	37	•
☐	☒	38	•
		Capitalisation of profits	
☐	☒	39	59. Capitalization of Profits (1) Any General Meeting of the Company may resolve that any amounts standing to the credit of the Free Reserve or Share Premium Account or the Capital Redemption Reserve Account or any moneys investment or other assets forming part of the undivided profits including profits or surplus moneys arising from the realization and (when permitted by the law) from the appreciation in value of any capital assets of the Company standing to the credit of the General Reserve or any other Reserve or Reserve Fund or any other Fund of the Company or in the hands of the Company and available for dividend be capitalized- (a) by the issue and distribution of shares as fully paid-up and to the extent permitted by the Act debentures debenture stock bonds or other obligations of the Company or (b) by crediting share of the Company which may have been issued and are not fully paid-up with the whole or any part of the sum remaining unpaid thereon PROVIDED that any amounts standing to the credit of the Share Premium Account or the Capital Redemption Reserve Account shall be applied only in crediting the payment of capital on shares to be issued to Members as fully paid bonus shares (Further capitalization of reserve created by the revaluation of assets are not to be used for issuance of Bonus Shares as per section 63 of the Act). (2) Such issue and distribution under sub-clause (1) (a) of this Article and payment to the credit of unpaid share capital under sub-clause (1) (b) of this Article shall be made among and in favour of the Members or any class of them or any of them entitled thereto and in accordance with their respective rights and interests and in proportion to the amount of capital paid-up on the shares held by them respectively in respect of which such distribution or payment shall be made on the footing that such Members become entitled thereto as capital. (3) The Directors shall give effect to any such resolution and for the said purpose the Board may settle any difficulty which may arise in regard to distribution as it thinks expedient including in regard to fractional entitlements and shall apply such profits General Reserve other Reserve or any other Fund or account as aforesaid as may be required for the purpose of making payment in full on the shares or other obligations of the Company so distributed under sub clause (1) (a) of this Article or (as the case may be) for the purpose of paying in whole or in part the amount remaining unpaid on the shares which may have been issued and are not fully paid-up under sub-clause (1)(b) above. PROVIDED that no such distribution or payment shall be made unless recommended by the Directors and if so recommended such distribution and payment shall be accepted by such Members as aforesaid in full satisfaction of their interest in the said capitalized fund. (4) For the purpose of giving effect to any such resolution the Directors may settle any difficulty which may arise in regard to the distribution or payment as aforesaid as they think expedient and in particular they may issue fractional certificates and may fix the value for distribution of any specific asset and may determine that any cash payment be made to any

			Members on the footing of the value so fixed and may vest any such cash shares debentures stock bonds or other obligations in trustees upon such trusts for the persons entitled thereto as may seem expedient to the directors and generally may make arrangement for the acceptance allotment and sale of such shares debentures debentures stock bonds or other obligations and fractional certificates or otherwise as they may think fit. (5) When deemed requisite a proper contract shall be filed in accordance with the Act and the Board may appoint any person to sign such contract on behalf of the Members entitled as aforesaid. Subject to the provisions of the Act and these Articles in cases where some of the shares of the Company are fully paid and others are partly paid such capitalization may be effected by the distribution of further shares in respect of the fully paid shares and by crediting the partly paid shares with the whole or part of the unpaid liability thereon but so that as between the holders of the fully paid shares and the partly paid shares the sums so applied in the payment of such further shares and in the extinguishment or diminution of the liability on the partly paid shares shall be applied pro rata in proportion to the amount then already paid or credited as paid on the existing fully paid and partly paid shares respectively.
☐	☒	40	•
			Buy-back of shares
☐	☒	41	60. Buy Back of Shares Notwithstanding anything contained in these articles but subject to the provisions of sections 68 to 70 and any other applicable provision of the Act or any other law for the time being in force the company may purchase its own shares or other specified securities.
			General meetings
☐	☒	42	61. Annual General Meeting The Company shall in each year hold a General Meeting as its Annual General Meeting in addition to any other meeting in that year. All General Meetings other than Annual General Meetings shall be called Extraordinary General Meetings. If for any reason beyond the control of the Board the general meeting (including an Annual General meeting) cannot be held on the appointed day the Board shall have power to postpone the General meeting of which a notice should be given to the members. Every member of the Company shall be entitled to attend either in person or by proxy and the Auditor of the Company shall have the right to attend and to be heard at any General Meeting which he attends on any part of the business which concerns him as Auditor.
☐	☒		62. Extraordinary General Meeting The Board may whenever it thinks fit call an Extraordinary General Meeting of the Company. The Board shall at the requisition in writing by a Member or Members holding in the aggregate not less than one-tenth of such of the paid-up capital of the company on that date and carries the right of voting in regard to the matter in respect of which the requisition has been made. 63. Requisition of Members to state object of Meeting Any valid requisition so made by Members must state the object or objects of the meeting proposed to be called and must be signed by

		43	the requisitionists and deposited at the registered office of the company. PROVIDED that such requisition may consist of several documents in like form each signed by one or more requisitionists. 64. On receipt of requisition Directors to call meeting and in default requisitionists may do so Upon the receipt of any such requisition the Board shall forthwith call an Extraordinary General Meeting and if they do not proceed within twenty-one days from the date of the requisition being deposited at the Registered Office to cause a meeting to be called on a day not later than forty-five days from the date of deposit of the requisition the requisitionists or such of their number as represent either a majority in value of the paid-up share capital held by all of them or one-tenth of such of the paid-up share capital of the Company as is referred to in Section 100(2) of the Act whichever is less may themselves call the meeting but in either case any meeting so called shall be held within three months from the date of the deposit of the requisition as aforesaid. 65. Meeting called by requisitionists Any meeting called under the foregoing Articles by the requisitionists shall be called in the same manner as nearly as possible as that in which meetings are to be called by the Board. 66. Twenty-one days notice of meeting to be given A general meeting of a Company may be called by giving not less than clear twenty-one days notice either in writing or through electronic mode in such a manner as may be prescribed Every notice of a meeting shall specify the place date day and the hour of meeting and shall contain statement of the business to be transacted at such meeting. And The notice of every meeting shall be given to every member of the Company Legal Representative of any deceased member or the assignee of an insolvent member auditor or auditors of the Company and every director of the Company and all such persons as are under these Articles entitled to receive notice from the Company Provided that a general meeting may be called after giving shorter notice than that specified in this sub-section if consent in writing or by electronic mode is accorded thereto (i) in the case of an annual general meeting by not less than ninety-five per cent. of the members entitled to vote thereat and (ii) in the case of any other general meeting by members of the company(a) holding if the company has a share capital majority in number of members entitled to vote and who represent not less than ninety-five per cent. of such part of the paid-up share capital of the company as gives a right to vote at the meeting or (b) having if the company has no share capital not less than ninety-five per cent. of the total voting power exercisable at that meeting Provided further that where any member of a company is entitled to vote only on some resolution or resolutions to be moved at a meeting and not on the others those members shall be taken into account for the purposes of this sub-section in respect of the former resolution or resolutions and not in respect of the latter.
			Proceedings at general meetings
☐	☒		67. Business to be transacted at the General Meeting and nature thereof In the case of an Annual General Meeting all business to be transacted thereat shall be deemed special other than (i) the consideration of the financial statements and reports of the Board of Directors and Auditors (ii) the declaration of any dividend (iii) the

		44	appointment of Directors in place of those retiring (iv) the appointment of and the fixing of the remuneration of the Auditors and in the case of any other meeting all business shall be deemed to be Special Business and there shall be annexed to the notice of the Meeting an Explanatory statement setting out all material facts concerning each such item of special business including in particular the nature of the concern or interest financial or otherwise if any therein of (i) every Director and the Manager (if any) (ii) every other key managerial personnel and relatives of the persons mentioned in sub clauses (i) and (ii). Where any such item of Special Business relates to or affects any other company the extent of shareholding interest in such other company of every promoter director and the manager if any and of every other key managerial personnel of the Company shall also be set out in the statement if the extent of such shareholding interest is not less than two per cent of the paid-up share capital of that other company and where any item of business consists of the according of approval to any documents by the meeting the time and place where the document can be inspected shall be specified in the statement aforesaid. The annual general meeting shall be called during business hours on any day that is not a National Holiday and it is to be held either at the registered office of the company or at some other place within the city in which the registered office of the company is situated.
☐	☒	45	68. Omission to give notice not to invalidate any resolution passed The accidental omission to give any such notice as aforesaid to any of the Members or the non-receipt thereof shall not invalidate any resolution passed at any such meeting.
☐	☒	46	69. Meeting not to transact business not mentioned in notice No General Meeting Annual or Extraordinary shall be competent to enter upon discuss or transact any business which has not been mentioned in the notice or notices upon which it was convened.
☐	☒	47	70. Body Corporate deemed to be personally present A body corporate being a Member shall be deemed to be personally present if it is represented in accordance with Section 113 of the Act.
☐	☒		71. Quorum at General Meeting No business shall be transacted at any general meeting unless a quorum of members is present at the time when the meeting proceeds to business. Save as otherwise provided herein the quorum for the general meetings shall be as provided in section 103 of the Companies Act 2013 72.. If quorum not present meeting to be dissolved or adjourned If at the expiration of half an hour from the time appointed for holding a general meeting of the Company a quorum is not present the meeting if convened by or upon the requisition of Members shall stand dissolved but in any other case the meeting shall stand adjourned to the same day in the next week or if that day is a public holiday until the next succeeding day which is not a public holiday at the same time and place or to such other day and at such other time place as the Board may determine and if at such adjourned meeting a quorum is not present at the expiration of half an hour from the time appointed for holding the meeting the Members present shall form

		48	the quorum and may transact the business for which the meeting was called. 73. Chairman of General Meeting The Chairman of the Board shall be entitled to take the Chair at every General Meeting whether Annual or Extraordinary. If at any meeting the Chairman is not present within fifteen minutes of the time appointed for holding such meeting or he has informed that he shall be unable or unwilling to take the Chair then any one of directors with mutual consent shall so preside at the meeting. If no Director be present or if all the Directors present decline to take the Chair then the Members present shall elect one of the members to be the Chairman of the Meeting. 74. No Business whilst chair vacant No business shall be discussed at any General Meeting except the election of a Chairman whilst the Chair is vacant. 75. Chairman with consent may adjourn meeting The Chairman with the consent of the Members may adjourn any meeting from time to time and from place to place within the city town or village in which the Registered Office of the Company is situated but no business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place. Notwithstanding the provision as above in the event of disorder at a validly convened meeting the Chairman may adjourn the meeting provided that such an adjournment shall not be a longer period than the Chairman considers necessary to bring order at the meeting and Chairman communicates his decision to those present in so far as it is possible. 76. Questions at General Meeting how Decided Every question submitted to a meeting shall be decided in the first instance unless a poll is demanded on a show of hands. Before or on the declaration of the result of the voting on any resolution on a show of hands a poll may be ordered to be taken by the Chairman of the meeting on his own motion and shall be ordered to be taken by him on a demand made in that behalf by any member or members present in person or by proxy and holding shares in the Company which confer a power to vote on the resolution not being less than one-tenth of the total voting power in respect of the Resolution or on which an aggregate sum of not less than five lakh rupees has been paid up. The demand for a poll may be withdrawn at any time by the person or persons making the demand. Unless a poll is so demanded a declaration by the Chairman that a resolution has on show of hands been carried through unanimously or by a particular majority or lost and an entry to that effect in the Minutes Book of the Company shall be conclusive evidence of the fact without proof of the number or proportion of the votes recorded in favour of or against the resolution. 77. Chairmans Casting Vote In the case of an equality of votes the Chairman shall have a casting vote in addition to the vote or votes to which he may be entitled otherwise. 78. Poll to be taken if demanded If a poll is demanded as aforesaid the same shall be taken at such time (not later than forty-eight hours from the time when the demand was made) and place in the city or town in which the Registered office of the Company is for the time being situated as the Chairman shall direct either at once or after an interval or adjournment and the result of the poll shall be deemed to be the resolution of the meeting. 79. In which case poll taken without Adjournment Any poll duly demanded on the election of
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the Chairman of a meeting or on any question of adjournment shall be taken at the meeting forthwith. 80. Demand for poll not to prevent transaction of other business The demand for a poll except on the questions of the election of the Chairman and of an adjournment shall not prevent the continuance of a meeting for the transaction of any business other than the question on which the poll has been demanded. 81. Minutes of General Meetings(a) The Company shall cause minutes of the proceedings of every General Meeting or every resolution passed by postal ballot to be kept by making within thirty days of the conclusion of every such meeting concerned record thereof kept with Minute Book for that purpose with their pages consecutively numbered. (b) Each page of every such book shall be initialed or signed and the last page of the record of proceedings of each meeting in such book shall be dated and signed by the Chairman of the same meeting within the aforesaid period of thirty days or in the event of the death or inability of that Chairman within that period by a Director duly authorised by the Board for the purpose. (c) In no case the minutes of proceedings of a meeting shall be attached to any such book as aforesaid by pasting or otherwise. (d) The minutes of each meeting shall contain a fair and correct summary of the proceedings thereat. (e) All decisions taken and appointments of officers made at any meeting aforesaid shall be included in the minutes of the meeting. (f) Nothing herein contained shall require or be deemed to require the inclusion in any such minutes of any matter which in the opinion of the Chairman of the meeting (a) is or could reasonably be regarded as defamatory of any person or (b) is irrelevant or immaterial to the proceedings or (c) is detrimental to the interests of the Company. The Chairman of the meeting shall exercise an absolute discretion in regard to the inclusion or non-inclusion of any matter in the minutes on the aforesaid grounds.(g) Any such minutes shall be evidence of the proceedings recorded therein. Where the minutes have been kept in accordance with section then until the contrary is proved the meeting shall be deemed to have been duly called and held all appointments of directors key managerial personnel auditors or company secretary in practice shall be deemed to be valid. No document purporting to be a report of the proceedings of any general meeting of a company shall be circulated or advertised at the expense of the company unless it includes the matters required to be contained in the minutes of the proceedings of such meeting. The company shall observe secretarial standards with respect to general and Board meetings specified by the Institute of Company Secretaries of India constituted under section 3 of the Company Secretaries Act 1980 and approved as such by the Central Government. (h) The book containing the minutes of the proceedings of any general meeting of the Company or of a resolution passed by postal ballot shall be kept at the registered office of the Company and shall be open during business hours to the inspection by any member without any charge for such period not being less than two hours in each business day are allowed for inspection.

Adjournment of meeting

☐	☒	49	82. Adjournment of Meeting (i)The Chairperson may with the consent of any meeting at which a quorum is present and shall if so directed by the meeting adjourn the meeting from time to time and from place to place. (ii) No business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place. (iii) When a meeting is adjourned for thirty days or more notice of the adjourned meeting shall be given as in the case of an original meeting. (iv) Save as aforesaid and as provided in section 103 of the Act it shall not be necessary to give any notice of an adjournment or of the business to be transacted at an adjourned meeting.
			Voting rights
☐	☒	50	83. Members in arrears not to vote No member shall be entitled to vote either personally or by proxy at any General Meeting or Meeting of a class of shareholders either upon a show of hands or upon a poll in respect of any shares registered in his name on which any calls or other sums presently payable by him have not been paid or in regard to which the Company has exercised any right of lien.
☐	☒	51	84. Number of votes to which Member Entitled Subject to the provisions of these Articles and without prejudice to any special privileges or restrictions as to voting for the time being attached to any class of shares for the time being forming part of the capital of the Company every Member shall be entitled to be present and to speak and vote at such meeting by show of hand for which the Member present in person shall have one vote. On a poll taken at a meeting of a company a member entitled to more than one vote or his proxy need not to use all his votes or cast in the same way all the votes he uses.
☐	☒	52	85. Votes by a Member entitled to more than one vote On a poll taken at a meeting of the Company a Member entitled to more than one vote by virtue of his shareholding or his proxy or other person entitled to vote for him as the case may be need not if he votes use all his votes or cast in the same way all the votes he uses and he may vote in different manner as he deems fit.
☐	☒	53	86. Vote of Member who is a minor If any shareholder be a minor the vote in respect of his share or shares shall be by his guardian or any one of his guardians if more than one to be selected in case of dispute by the Chairman of the meeting.
☐	☒	54	87. Votes of Joint Members If there be joint registered holders of any shares the vote of the senior who tenders a vote whether in person or by proxy shall be accepted to the exclusion of the votes of the other joint holders. For this purpose seniority shall be determined by the order in which the namesst and in the register of members.
☐	☒	55	88. Voting in person or by proxy or Representative Subject to the provisions of these Articles votes may be given either personally or by proxy. A body corporate being a Member may vote either by proxy or by a representative duly authorised in accordance with Section 113 of the Act and such representative shall be entitled to exercise the same rights and powers(including

			the right to vote by proxy) and by postal ballot on behalf of the body corporate which he represents as that body could exercise if it were an individual Member of the Company.
☐	☒	56	89. Votes in respect of shares of Deceased Any person entitled under the Transmission Clause to transfer any shares may vote at any General Meeting in respect thereof in the same manner as if he were the registered holder of such shares. PROVIDED that forty-eight hours at least before the time of holding the meeting or adjourned meeting as the case maybe at which he proposes to vote he shall satisfy the Chairman of his right to transfer such shares and give such indemnity (if any) as the Chairman may require or the Chairman shall have previously admitted his right to vote at such meeting in respect thereof. 90. Time for objection to vote No objection shall be made to the validity of any vote except at the meeting or poll at which such vote was tendered and every vote whether given personally or by proxy not disallowed at such meeting or poll shall be deemed valid for purposes of such meeting or poll whatsoever. 91. Chairman of the meeting to be the judge of the validity of any Vote The Chairman of any meeting shall be the sole judge of the validity of every vote tendered at such meeting. The Chairman present at the taking of a poll shall be the sole judge of the validity of every vote tendered at such poll.
			Proxy
☐	☒	57	92. Appointment of proxy A person can act as proxy on behalf of members not exceeding fifty and holding in the aggregate not more than ten percent of the total share capital of the company carrying voting rights Provided that a member holding more than ten percent of the total share capital of the Company carrying voting rights may appoint a single person as proxy and such person shall not act as proxy for any other person or shareholder. Every proxy shall be appointed in writing under the hand of the Member or if such Member is a body corporate under the common seal of such corporation or be signed by an appointer or his attorney duly authorised in writing. The proxy so appointed shall not have any right to speak at the meetings.
☐	☒	58	93. Deposit of instrument of Proxy etc. The instrument appointing a proxy and the power of attorney or other authority (if any) under which it is signed or a notarized copy of that power or authority shall be deposited at the Registered Office of the Company not later than forty-eight hours before the time for holding the meeting at which the person named in the instrument proposes to vote and in default the instrument of proxy shall not be treated as valid. No instrument appointing a proxy shall be valid after the expiration of twelve months from the date of its execution.
☐	☒		94. Form of proxy An instrument appointing a proxy shall be in the form No. MGT-11 as prescribed in the rules made under section 105 of the Companies Act 2013 95. Proxy either for specified meeting or for a period An instrument of proxy may appoint a proxy either for the purpose of a particular meeting specified in the instrument and any adjournment thereof or it may

		59	appoint for the purpose of every meeting of the Company or of every meeting to be held before a date specified in the instrument and every adjournment of any such meeting. 96. Validity of votes given by proxy not withstanding death of Member A vote given in accordance with the terms of an instrument of proxy shall be valid notwithstanding the previous death or insanity of the principal or there vocation of the proxy or of the authority under which the proxy was executed or the transfer of the shares in respect of which the proxy is given. Provided that no intimation in writing of such death insanity revocation or transfer shall have been received by the company at its office before the commencement of the meeting or adjourned meeting at which the proxy is used.
			Board of Directors
☐	☒	60	97. Management of Affairs The day to day management of the business and affairs of the Company shall be vested with Project-in-charge under the supervision direction control of the Board. The Board may exercise all such powers of the Company and do all such acts deeds and things as are not prohibited by the Act or any other statute or by the Memorandum of Association of the Company and without prejudice to the foregoing shall be responsible for all policy matters and the supervision direction and control of the conduct of the business affairs operations of the Company.
☐	☒		
☐	☒	61	98. First Directors Shri Sachin Shukla Shri Naveen Kumar and Shri Anubhav Kansal shall be the First Directors of the Company.
☐	☒		99. Number and appointment of Directors The Board of Directors of the Company shall consist of not less than 3 but not more than 15 Directors. A Director shall not be required to hold any qualification shares in the Company. Notwithstanding anything to the contrary contained in these Articles so long as any moneys remain owing by the Company to a Financial Institution or any other person by the Company or the Company has entered into any agreement or undertaking or arrangement (hereinafter refer as agreement) with Bodies (like State Electricity Board Nigam) or the Board of Directors have decided to seek nomination on the Board from the beneficiary state or any Financial Institution or PFC Consulting Limited or person holds Debentures in the Company by direct subscription or private placement the Company may agree to grant to such Financial Institution PFC Consulting Limited person or other Bodies as a condition of such loan or subscription to Debenture or any other agreement or to a Debenture Trustee the right to appoint from time to time any person or persons as Director or Directors of the Company (which director or directors is are hereinafter referred to as Nominee Directors) retiring or non-retiring subject to and on such terms and conditions as the Company may agree with such Financial Institutions PFC Consulting Limited Person other Bodies and or Debenture Trustee. The Company shall have a right to remove from office Nominee Director(s) at the option of the Company in consultation with Financial Institutions PFC Consulting Limited Bodies persons or Debenture Trustee. Such Nominee Director(s) shall not be required to hold any

		62	Share qualification in the Company. Also at the option of the Company such Nominee Director(s) shall not be liable to retirement by rotation of the Directors. Subject as aforesaid the Nominee Director(s) shall be entitled to the same rights and privileges and be subject to the same obligations as any other Director of the Company. The Nominee Director(s) so appointed shall hold the said office only so long as moneys remain owing by the Company to the Financial Institution or so long as the Debenture Trustee hold debenture in the Company or operation of agreement and the Nominee Directors so appointed in the exercise of the said person shall ipso facto vacate such office immediately the money owing by the Company to the Financial Institution or on the Debenture Trustee ceasing to hold Debentures Shares on the satisfaction of liability of the Company arising out of any Guarantee furnished by the Financial Institutions or satisfactory completion of term of agreement with Bodies. The Nominee Director(s) appointed under this article shall be entitled to receive all notice of and attend all General meeting Board Meeting and of the meetings of the Committee of which the Nominee Director(s) is are member(s) as also the minutes of meetings. The financial institutions Debenture Trustee persons bodies shall also be entitled to receive all such notice and minutes. The Company shall pay to the Nominee Director(s) sitting fees and expenses which other Director of the Company are entitled but if any other fees commission remuneration in any form is payable to the Director of the Company the fees commission money and remuneration in relation to such Nominee Director(s) shall accrued to Debenture Trustee and same shall accordingly be paid by the Company directly to the debenture trustee. Any expenses that may incurred by the financial institution or such Nominee Director(s) in connection with their appointment or Directorship shall also be paid or reimbursed by the Company to the financial Institution or as the case may be to such Nominee Director(s). Provided that if any such Nominee Director(s) is are an officer of the Financial Institution the sitting fees in relation to such Nominee Director(s) shall also accrue to the Financial Institute and the same shall accordingly be paid by the Company directly to that Financial Institution. Provided further that if such Nominee Director(s) is are an official of any of the Reserve Bank of India the sitting fees in relation to such Nominee Director(s) shall also accrue to Financial Institution to whom he represents as Nominee Director from Reserve Bank of India and the same shall accordingly be paid by the Company directly to that Financial Institution. Provided also that in the event of the Nominee Director(s) being appointed as Whole Time Director(s) such Nominee Director(s) shall exercise such powers and duties as may be approved by the Lenders or Bodies in consultation with Board and have such rights as are usually exercised or available to a Whole Time Director in management of the Borrower or Bodies and such Nominee Director(s) shall be entitled to receive such remuneration fees commission and moneys as may be approved by the Lenders or Bodies in consultation with Board.
☐	☒		100. Company may increase the number of Directors Subject to Section 149 of the Act the Company may subject to special resolution in General Meeting increase

			the maximum number of Directors. Further the Company may subject to the provisions of Section 169 of the Act bypassing the ordinary resolution in the General Meeting of the members may remove any Director before the expiration of his period of office and appoint another person in the place of director so removed.
☐	☒		101. Appointment of Alternate Directors In accordance with Section 161 and other applicable provisions (if any) of the Act the Board shall have power at any time and from time to time to appoint a person not being a person holding any alternate directorship for any other Director in the Company to act as an alternate director for a director(hereinafter called the original Director) during his absence for a period of not less than three months from India.
		64	
☐	☒		102. Directors power to fill up casual Vacancies Casual vacancies among Directors may be filled by the Board of Directors at their meeting and any person so appointed shall hold the office as per the provision of section 161.
		65	
☐	☒		103. Appointment of Additional Director Subject to the provisions of Section 161 and other applicable provisions (if any) of the Act the Board shall have power at any time and from time to time to appoint a person as an Additional Director but so that the total number of Directors shall not at any time exceed the maximum number fixed by these Articles. The Additional Director so appointed shall retire from Office at next following Annual General Meeting but shall be eligible for election by the company at that meeting as a Director. 104. Directors may act notwithstanding any vacancy The continuing Directors may act notwithstanding any vacancy in their body but if and so long as their number is reduced below the minimum number fixed by Article 100 thereof the continuing Directors may act for the purpose of increasing the number of Directors to that number or of summoning a General Meeting for that purpose. 105. Remuneration of Directors Subject to the provisions of the Act the Chairman or Managing Director or any other functional Directors who is are in the whole-time employment of the Company may be paid remuneration either by way of a monthly payment or at a specified percentage of the net profit of the Company or partly by one way and partly by the other keeping in view the limiting provisions governing the Managerial remuneration under the provisions of the Act. Subject to the provisions of the Act a Director who is neither in the whole-time employment nor a Chairman cum Managing Director of the Company may be paid remuneration either-(a) by way of monthly quarterly or annual payment with the approval of the Central Government or (b) by way of commission if the Company by a special resolution authorizes such payment and The sitting fee payable to a Director (excluding Whole-time Director) for attending a meeting of the Board or Committee thereof shall be such sum as may be fixed by the Board provided that the same shall not exceed Rs. 100000- or such other sum as prescribed in the Act as amended from time to time. Travelling expenses incurred by Director going out on Companys Business. The Board may allow and pay to any Director who is not a bona-fide resident of the place where the Registered Office of the Company or where the meetings of the Board are actually held and who has to

come to such place for the purpose of attending any meeting such sum as the Board may consider fair compensation for travelling boarding lodging and other actual incidental expenses in addition to his fee for attending such meeting as specified above. If any Director be called upon to go or reside out of the bona fide place of his residence on the Companys business he shall be entitled to be paid and reimbursed any travelling or other actual expenses incurred by him in connection with the business of the Company. 106. When office of Directors to become Vacant Subject to Section 167 of the Act the office of a Director shall become vacant if-(a) he incurs any of the disqualifications specified in section 164 under the act(b) he absents himself from all the meetings of the Board of Directors held during a period of twelve months with or without seeking leave of absence of the Board (c) he acts in contravention of the provisions of entering into contracts or arrangements in which he is directly or indirectly interested (d) he fails to disclose his interest in any contract or arrangement in which he is directly or indirectly interested (e) he becomes disqualified by an order of a court or the Tribunal (f) he is convicted by a court of any offence whether involving moral turpitude or otherwise and sentenced in respect thereof to imprisonment for not less than six months Provided that the office shall be vacated by the director even if he has filed an appeal against the order of such court (g) he is removed in pursuance of the provisions of this Act (h) he having been appointed a director by virtue of his holding any office or other employment in the holding subsidiary or associate company ceases to hold such office or other employment in that company. 107. Directors may contract with Company Except with the consent of the Board of Directors given by a resolution at a meeting of the Board and subject to such conditions the company shall not enter into any contract or arrangement with a related party with respect to(a) sale purchase or supply of any goods or materials (b) selling or otherwise disposing of or buying property of any kind (c) leasing of property of any kind (d) availing or rendering of any services (e) appointment of any agent for purchase or sale of goods materials services or property (f) such related partys appointment to any office or place of profit in the company its subsidiary company or associate company (g) underwriting the subscription of any securities or derivatives thereof of the company. Every contract or arrangement entered as related party transaction shall be referred in the Boards report to the shareholders along with the justification for entering into such contract or arrangement. 108. Disclosure of interest by Directors1) Every Director of the Company who is in any way whether directly or indirectly concerned or interested in a contract or arrangement or proposed by Directors interested in a contract or arrangement or proposed contract or arrangement entered into or to be entered into by or on behalf of the Company shall disclose the nature of his concern or interest at every financial year or whenever there is change in the disclosure of interest. (2) Nothing in sub-clause (1) of this Article shall apply to any contract or arrangement entered into or to be entered into between the Company and any other company where any of the Directors of the Company or two or more of the Directors together holds

			or hold not more than two per cent of the paid-up share capital in the other company. 109. Interested Directors not to participate or vote in Boards proceedings An interested director who is in any way whether by himself or through any of his relatives or firm body corporate or other association of individuals in which he or any of his relatives is a partner director or a member interested in a contract or arrangement or proposed contract or arrangement entered into or to be entered into by or on behalf of a company shall take any part in the discussion of or vote on any contract or arrangement entered into or to be entered into by or on behalf of the Company if he is in any way whether directly or indirectly concerned or interested in such contract or arrangement nor shall his presence count for the purpose of forming a quorum at the time of any such discussion or vote and if he does vote his vote shall be void. A contract or arrangement entered into by the company without disclosure or with participation by a director who is concerned or interested in any way directly or indirectly in the contract or arrangement shall be voidable at the option of the company. 110. Register of Contracts in which Directors are interested The company shall keep registers in accordance with Section 189(1) giving separately the particulars of all contracts or arrangements to which to matter of disclosure of interest by directors and related party transaction applies in such manner and containing such particulars as may be prescribed and after entering the particulars such registers shall be placed before the next meeting of the Board and signed by all the directors present at the meeting and shall with in thirty days of appointment make such disclosure as are necessary for the purpose of same. The Register shall be kept at the Registered office of the Company and shall be open to inspection at such office shall be open for inspection at such office during business hours and extracts may be taken there from and copies thereof as may be required by any member of the company shall be furnished by the company to such extent in such manner and on payment of same fee as in the case of the Register of Members of the Company. 111. Director may be Director of companies promoted by the Company A Director may become a Director of any other company promoted by the Company or in which it may be interested as a vendor shareholder or otherwise and no such Director shall be accountable for any benefits received as Director or shareholder of such a company except in so far as Section 188 of the Act may be applicable. 112. Register of Directors and key managerial personnel and their Shareholding The Company shall keep at its registered office a Register containing such particulars of its Directors and key managerial personnel Manager as may be prescribed under Section 170 of the Act and shall comply with the provisions of the said Section in all respects. The register shall include the details of securities held by each of them in the company or its holding subsidiary subsidiary of companys holding company or associate companies.
			Proceedings of the Board
☐	☒		113. Meetings of Directors The Directors may meet together as a Board for the dispatch of business from time to time so that at least four such meetings shall be held in every year in such a manner that not more than
		67	69

			one hundred and twenty days shall intervene between two consecutive meetings of the Board. The Directors may adjourn and regulate their meetings as they think fit.
☐	☒	68	114. Board may appoint Chairman All meetings of the Directors shall be presided over by the Chairman if present but if at any meeting of the Directors the Chairman is not present at the time appointed for holding the same then in that case the Directors shall choose one of the Directors present to preside over the meeting.
☐	☒	69	115. Certain persons not to be appointed Chairman Managing Directors Functional Director The Company shall not appoint a person as its Chairman Managing Director or Whole-time Director who-(a) is an undischarged insolvent or had at any time been adjudged an insolvent (b) is or has at any time been convicted by a Court of an offence involving moral turpitude.
☐	☒	70	116. Notice of Directors Meeting A meeting of the Board shall be called by giving not less than seven days notice in writing to every director at his address registered with the company and such notice shall be sent by hand delivery or by post or by electronic means. Board may be called at shorter notice to transact urgent business where at least one independent director if any shall be present. Every notice convening a meeting of the Board of Directors shall set out the agenda of the business to be transacted thereat insufficient detail provided however that the meeting may consider any other business with the permission of the chair.
☐	☒	71	117. When meeting to be convened The Company Secretary or any director of the Company may as and when directed by the Chairman to do so convene a meeting of the Board by giving a notice inwriting to every Director.
☐	☒	72	118. Quorum at Board Meeting No business shall be transacted at any Board meeting unless a quorum of Board of Director is present at the time when the meeting proceeds to business. Save as otherwise provided herein the quorum for the Board meetings shall be as provided in section 174.
☐	☒	73	119. Questions at Board meetings how to be decided All questions arising at a Meeting of the Board or any committee thereof shall be decided by majority of votes of directors present and in case of equality of votes the Chairperson shall have a second and casting vote.
☐	☒	74	120. Committee of Board Subject to the restrictions contained in Section 179 180 and other applicable provisions of the Act and preceding Articles the Board may delegate any of its powers to Committees of the Board consisting of such member or members of its body as it may think fit. PROVIDED that the Board may from time to time revoke modify and discharge any such Committee of the Board either wholly or in part. Every Committee of the Board so formed shall in the exercise of the powers so delegated conform to any Policy regulations that may from time to time be laid down by the Board. All acts done by any such Committee of the Board in conformity with such regulations and in

			fulfillment of the purposes of their appointment shall have the like force and effect as if done by the Board.
☐	☒	75	121. Meeting of Committee how to be Governed The meetings and proceedings of any such Committee of the Board consisting of two or more members shall be governed by the provisions of the act and guidelines laid down for regulating the meetings and proceedings of the Directors so far as the same are applicable thereto and are not superseded by any regulations made by Directors under the last preceding Article.
☐	☒		
			122. Resolution by circulation No resolution on matters shall be deemed to have been duly passed by the Board or by a Committee thereof by circulation unless the resolution has been circulated indraft together with the necessary papers if any to all the Directors or members of the Committee as the case may be at their addresses registered with the company in India by hand delivery or by post or by courier or through such electronic means as may be prescribed and has been approved by a majority of the directors or members who are entitled to vote on the resolution. Resolution passed in such circulation shall be made part of the minutes of such meeting. Provided that where not less than one-third of the total number of directors of the company for the time being require that any resolution under circulation must be decided at a meeting the chairperson shall put the resolution to be decided at a meeting of the Board. 123. Defects in appointment of Directors not to invalidate actions taken All acts done by any meeting of the Board or by a Committee of the Board or by any person acting as a Director shall notwithstanding that it was subsequently noticed that there was some defect in the appointment of such Director or persons acting as aforesaid or that they or any of them were disqualified or had vacated office or that the appointment of any of them had been terminated by virtue of any provisions contained in the Act or these Articles be as valid as if every such person had been duly appointed and was qualified to be a Director and had not vacated his office or his appointment had not been terminated. PROVIDED that nothing in this Article shall be deemed to give validity to acts done by a Director after his appointment had been noticed by the Company to be invalid or to have terminated. 124. Minutes of proceedings of meetings of the Board (a) The Company shall cause minutes of all proceedings of every meeting of the Board and committee thereof to be kept by making within thirty days of the conclusion of every such meeting record thereof in Minute Book kept for that purpose with their pages consecutively numbered. (b) Each page of every such book shall be initialed or signed and the last page of the record of proceedings of each meeting in such book shall be dated and signed by the Chairman of the said meeting or the Chairman of the next succeeding meeting. The minute books of the Board and committee meetings shall be preserved permanently and kept in the custody of the company secretary of the company or any director duly authorized by the Board for the purpose and shall be kept in the registered office or such place as Board may decide. The minutes shall also contain- (i) the names of the Directors present at the meeting And (ii) in the case of each resolution passed at the meeting the names of the Directors if any dissenting from or not

			concurring with the resolution. Nothing deemed to require the inclusion in any such minutes of any matter which in the opinion of the Chairman of the meeting (i) is or could reasonably be regarded as defamatory of any person. (ii) is irrelevant or immaterial to the proceedings or (iii) is detrimental to the interests of the Company. The Chairman shall exercise an absolute discretion in regard to the inclusion or non-inclusion of any matter in the minutes on the grounds specified in this sub-clause. (c) Minutes of meetings kept in accordance with the aforesaid provisions shall be evidence of the proceedings recorded therein. 125. Powers of Board The Board may exercise all such powers of the Company and do all such acts and things as it is entitled to do under section 179 of the Act and rules made thereunder or by the Memorandum or Articles of the Company but shall not decide matters required to be exercised or done by the Company in General Meeting Subject to these Articles no regulation made by the Company in General Meeting shall invalidate any prior act of the Board which would have been valid if that regulation had not been so made. Certain powers of the Board Without prejudice to the general powers conferred by the Act and preceding Article and so as not in any way to limit or restrict those powers and without prejudice to the other powers conferred by these Articles and by General Body it is hereby declared that the Directors shall have the following powers that is to say power-(1) to pay and charge to the capital account of the Company any commission or interest lawfully payable there out under the provisions of Sections 40 of the Act (2) Subject to Sections 179 and 180 of the Act to purchase or otherwise acquire for the Company any property rights or privileges which the Company is authorised to acquire at or for such price or consideration and generally on such terms and conditions as they may think fit and in any such purchase or other acquisition to accept such title as the Directors may believe or may be advised to be reasonably satisfactory (3) At their discretion and subject to the provisions of the Act to pay for any property rights or privileges acquired by or services rendered to the Company either wholly or partially in cash or in shares bonds debentures mortgages or other securities of the Company and any such shares may be issued either as fully paid-up or with such amount credited as paid-up thereon as may be agreed upon and any such bonds debentures mortgages or other securities may be either specially charged upon all or any part of the property of the Company and its uncalled capital or not so charged (4) To secure the fulfillment of any contract or engagement entered into by the Company in the normal course of business by mortgage or charge any of the property of the Company and its uncalled capital for the time being or in such manner as they may think fit (5) To accept from any Member as far as may be permissible by law a surrender of his shares or any part thereof on such terms and conditions as shall be agreed upon (6) To appoint any person to accept and hold in trust for the Company any property belonging to the Company in which it is interested or for any other purposes and to execute and do all such deeds and things as may be required in relation to any such trust and to provide for the remuneration of such trust or trustees (7) To institute conduct defend compound or abandon any legal
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proceedings by or against the Company or its officers or otherwise concerning the affairs of the Company and also to compound and allow time for payment or satisfaction of any debts due and of any claim or demand by or against the Company and to refer any differences to arbitration and observe and execute any awards made thereon (8) To act on behalf of the Company in all matters relating to bankruptcy and insolvency (9) To make and give receipts releases and other discharges for moneys payable to the Company and for the claims and demands of the Company (10) Subject to applicable provisions of the Act to invest and deal with any moneys of the Company not immediately required for the purposes thereof upon such security(not being shares of this Company) or without security and in such manner as they may think fit and from time to time to vary or realise such investments. Save as provided in Section 187 of the Act all investments shall be made and held in the Companys own name (11) To execute in the name and on behalf of the Company in favour of any Director or other person who may incur or going to incur any personal liability whether as principal or surety for the benefit of the Company such mortgages of the Companys property (present and future)as they think fit and any such mortgage may contain a power of sale and such other powers provisions covenants as shall be agreed upon (12) To open account with any bank or banks and to determine from time to time who shall be titled to sign on the Companys behalf bills notes receipts acceptances endorsements cheques dividend warrants releases contracts and documents and to issue the necessary authority for such purpose (13) To distribute by way of bonus or commission amongst the staff of the Company on the profits of any particular business or transaction and to charge such bonus or commission as part of the working expense of the Company (14) To provide for the welfare of employees or ex-employees of the Company and their families or connections of such persons by building or contributing to the building of houses dwellings or chawls or by grants of money pension gratuities allowances bonus or other payments or by creating and from time to time subscribing or contributing to provident and other funds associations institutions or trusts and by providing or subscribing or contributing towards places of instrument and recreation hospitals and dispensaries medical and other attendance and other assistance as the Board shall think fit and to subscribe or contribute or otherwise to assist or to guarantee money to charitable benevolent religious scientific national or other institutions or objects which shall have any moral or other claim to support or aid by the Company either by reason of locality of operation or of public and general utility or otherwise (15) Before recommending any dividend to set aside out of the profits of the Company such sums as they may think proper for depreciation or to a Depreciation Fund or to an Insurance Fund or as a Reserve Fund or Sinking Fund or any Special Fund to meet contingencies or to repay debentures or debenture stock or for special dividends or for equalizing dividends or for repairing improving extending and maintaining any of the property of the Company and for such other purposes (including the purposes referred to in the preceding clause) as the Board may in their absolute discretion think conducive to

			the interest of the Company and subject to Section 179 of the Act to invest the several sums so set aside or so much thereof as required to be invested upon such investments (other than shares of the Company) as they may think fit and from time to time to deal with and vary such investments and dispose of and apply and expend all or any part thereof for the benefit of the Company in such manner and for such purposes as the Board in their absolute discretion think conducive to the interest of the Company notwithstanding that the matters to which the Board apply or upon which they expend the same or any part thereof may be matters to or upon which the capital moneys of the Company might rightly be applied or expended and to divide the Reserve Fund or division or a reserve Fund to another Reserve Fund or division of a Reserve Fund and with full power to employ the assets constituting all or any of the above funds including the Depreciation Fund in the business of the Company or in the purchase or repayment of Debentures or debenture stock and without being bound to keep the same separate from the other assets and without being bound to pay interest on the same with power however to the Board at their discretion to pay or allow to the credit of such funds interest at such rate as the Board may think proper (16) To appoint and at their discretion remove or suspend such officers such as Executive Director general managers managers secretaries assistants supervisors clerks agents and servants etc. for permanent temporary or special services as they may from time to time think fit and to determine their powers and duties and fix their salaries or emoluments or remunerations and to require security in such instances and to such amounts as they may think fit. And also from time to time to provide for the management and transaction of the affairs of the Company in any specified locality in India or abroad in such manner as they think fit and the provisions contained in the following sub-clauses shall be without prejudice to the general powers conferred by this sub clause (17) From time to time and at any time to establish any number of offices and establishment for properly managing the affairs of the Company in any specified locality in India or elsewhere and to appoint staff for such offices and to fix their remuneration (18) Subject to the provisions of the Act from time to time and at any time to delegate to any such local Board or any member or members thereof or any managers or agents so appointed or to any other person(s) any of the powers authorities and discretions for the time being vested in the Board and to authorise the members for the time being of any such local Board or any of them to fill up any vacancies therein and to act notwithstanding vacancies and any such appointment or delegation under the preceding and this sub-clause may be made on such terms and subject to such conditions as the Board may think fit and the Board may at any time remove any person so appointed and may annul or vary any such delegation (19) At anytime and from time to time by Power of Attorney under the Seal of the Company to appoint any person or persons to be the Attorney or Attorneys of the Company for such purposes and with such powers authorities and discretions (not exceeding those vested in or exercisable by the Board under these presents and excluding the power to make calls and excluding also those which are to be exercised by the
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			Board in its Meetings) and for such period and subject to such conditions as the Board may from time to time think fit and any such appointment may (if the Board thinks fit) be made in favour of the members or any of the members of any local Board established as aforesaid or in favour of any company or the shareholders directors nominees or managers or any company or firm or otherwise in favour of any persons whether appointed by name or designation by the Board and any such Power of Attorney may contain such powers for the protection or convenience of such Attorney as the Board may think fit and Board may specifically bestow powers enabling any such delegate or attorneys to sub-delegate all or any of the powers authorities and discretions for the time being vested in them (20) Subject to Sections 188 of the Act for or in relation to any of the matters aforesaid or otherwise for the purposes of the Company to enter into such negotiations and contracts and rescind and vary such contracts and execute and do all such acts deeds and things in the name and on behalf of the Company as they may consider expedient (21) From time to time to make vary and repeal bye-laws for the regulations of the business of the Company regulate employment of its officers and servants by making service Rules and Regulations (22) Maintain proper records at places as per provisions of the Act and where the Company has a branch office whether in or outside India the Company shall be deemed to have complied with this Article if proper Books of Account relating to the transactions effected at the branch office are kept at the branch office and proper summarized returns made up-to-date at intervals of not more than three months are sent by the branch office to the Company at its Office or other place in India at which the Companys Books of Accounts are kept as aforesaid (23) Ensure proper maintenance of the Books of Account which shall give a true and fair view of the state of the affairs of the Company or branch office as the case may be and explain its transactions. The Books of Account and other books and papers shall be open to inspection by any Director during business hours.
			Chief Executive Officer, Manager, Company Secretary or Chief Financial Officer
☐	☒	77	126. CEO MANAGER CS AND CFO Subject to the provisions of the Act – (i) A chief executive officer manager company secretary or chief financial officer may be appointed by the Board for such term at such remuneration and upon such conditions as it may thinks fit and any chief executive officer manager company secretary or chief financial officer so appointed may be removed by means of a resolution of the Board (ii) A director may be appointed as chief executive officer manager company secretary or chief financial officer. As per provisions of the Act or these regulations requiring or authorising a thing to be done by or to a director and chief executive officer manager company secretary or chief financial officer shall not be satisfied by its being done by or to the same person acting both as director and as or in place of chief executive officer manager company secretary or chief financial officer.
☐	☒	78	•
			The Seal

☐	☒	79	127. The Seal its custody and use The Board shall provide a Common Seal for the purpose of the Company and shall have power from time to time to destroy the same and substitute a new Seal in lieu thereof and the Board shall provide for the safe custody of the Seal for the time being and the seal shall never be used except on the authority of the Board or by Committee of the Board as authorised. 128. Deeds how executed Every deed or other instrument to which the Seal of the Company is required to be affixed shall unless the same is executed by a duly constituted attorney issued under the seal be signed by two Directors or one Director and Secretary or some other person authorised by the Board for the purpose PROVIDED that in respect of the Share Certificate the Seal shall be affixed in accordance with Article as mentioned above.
			Dividends and Reserve
☐	☒	80	129. Division of profits and dividends in proportion to amount paid- up (a) The profits of the Company subject to any special rights relating thereto created or authorised to be created by these Articles and subject to the provisions of these Articles shall be divisible among the Members in proportion to the amount of capital paid-up or credited as paid-up on the shares held by them. (b) All dividends shall be apportioned and paid proportionately to the amounts paid or credited as paid on the shares held during any portion or portions of the period in respect of which the dividend is paid but if any share is issued on terms providing that it shall rank for dividend from a particular date such share shall rank for dividend accordingly.
☐	☒	81	130. The Company in General Meeting may declare a dividend Company in General Meeting may declare dividends to be paid to Members according to their respective rights but no dividends shall exceed the amount recommended by the Board but the Company in General Meeting may declare a smaller dividend.
☐	☒	82	131. Dividends only to be paid out of Profits (a) No dividend shall be declared or paid by the Company for any financial year except out of its profits for that year arrived at in the manner set out in Section 123 of the Act. (b) Where owing to inadequacy or absence of profits in any financial year any Company proposes to declare dividend out of the accumulated profits earned by it in previous years and transferred by the company to reserves such declaration of dividend shall not be made except in accordance with such rules as may be made in that behalf. (c) No dividend shall be declared or paid by a company from its reserves other than free reserves.
☐	☒	83	132. Interim Dividend Subject to the provisions of Section 123 the Board may from time to time pay the Members such interim dividend as appear to it to be justified by the profits of the Company.
☐	☒	84	133. Capital paid - up in advance to carry Interest Where capital is paid in advance of calls such capital may carry interest but shall not in respect thereof confer a right to dividend or participate in profits.

☐	☒	85	134. Retention of dividends until completion of transfer The Board may retain the dividends payable on shares in terms of Section 126 in respect of which any person is entitled to become a Member or on completion any person under those Articles is entitled to transfer or until such person shall become a Member in respect of such shares or shall duly transfer the same.
☐	☒		
☐	☒	86	135. Transfer of shares must be Registered A transfer of shares shall not pass the right to any dividend declared thereon before the registration of transfer. Provided that where any instrument of transfer of shares has been delivered to the Company for registration and the transfer of such shares has not been registered by the Company it shall notwithstanding anything contained in any other provision of this Act. (a) transfer the dividend in relation to such shares to the Unpaid Dividend Account referred to in Section 124 of the Act unless the Company is authorised by the registered holder of such shares in writing to pay such dividend to the transferee specified in such instrument of transfer and (b) keep in abeyance in relation to such shares any offer of rights shares under clause(a) of sub-section (1) of section 62 of the Act and any issue of fully paid-up bonus shares in pursuance of first proviso to sub-section (5) of section 123 of the Act.
☐	☒		
☐	☒	87	136. No Member to receive dividend whilst indebted to the Company The Company's right of reimbursement Thereon No Member shall be entitled to receive payment as interest or dividend in respect of his shares whilst any money may be due or owing from him to the Company in respect of such share or shares or otherwise howsoever either alone or jointly with any person or persons and the Board may deduct from the interest or dividend payable to any Member all sums of money so due from him to the Company.
☐	☒		
☐	☒	88	137. Dividends how remitted (1) Unless otherwise directed any dividend payable in cash may be paid by cheque or warrant or in any electronic mode or by a pay slip or receipt or in any other manner having the force of a cheque or warrant sent through the post to the registered address of the Member or person entitled or in case of joint holders to that one of them first named in the Register in respect of the joint holdings. Every such cheque or warrant shall be made payable to the order of the person to whom it is sent the Company shall not be liable or responsible for any cheque or warrant or pay slip or receipt lost in transmission or for any dividend lost to the Member or person entitled thereto by the forged endorsement of any cheque or warrant or the forged signature of any pay slip or receipt or the fraudulent recovery of the dividend by any other means. (2) Notwithstanding anything contained in these Articles any dividend declared may be paid by Electronic Clearing System through any Sponsor Bank after getting registration with the Reserve Bank of India for using this facility and collecting from the members necessary bank mandate in the prescribed format. 138. Dividends and call together Any General Meeting declaring a dividend may on the recommendation of the Board make a call on the Members of such amount as the meeting may fix but so that the call on each Member shall not exceed the dividend payable to him and so that the call be made payable at the same time as the dividend and the
☐	☒		

			dividend may if so arranged between the Company and the Member be set off against the calls. 139. Unclaimed dividend No unclaimed dividend shall be forfeited and all unclaimed dividends shall be dealt with in accordance with the provisions of Section 124 and other applicable provisions of the Act. 140. No interest against Dividend No dividend shall bear interest against the company.
			Accounts
☐	☒		141. Directors to keep true accounts (a) Every company shall prepare and keep at its registered office including its branch office or offices or at such other place in India as the Board thinks fit Books of Accounts and other relevant books and papers and financial statement for every financial year which give a true and fair view of the state of the affairs of the company in accordance with Section 128 of the Act with respect to- (i) all sums of money received and expended by the Company and the matters in respect of which the receipts and expenditure take place (ii) all sales and purchases of goods by the Company (iii) the assets and liabilities of the Company. (iv) state of affairs of the company. (b) Where the Board decides to keep all or any of the Books of Account at any place other than the Office of the Company the Company shall within seven days of the decision file with the Registrar a Notice in writing giving the full address of that other place in accordance with Section 128 of the Act. (c) The company may keep such books of account or other relevant papers in electronic mode in such manner as may be prescribed. (d) The Company shall preserve in good order the Books of Account relating to a period of not less than eight financial years immediately preceding a financial year. The books of account and other relevant books and papers maintained in electronic mode shall remain accessible in India so as to be usable for subsequent reference together with the vouchers relevant to any entry in such Books of Account. 142. Inspection of accounts or record by members No Member (not being a director) shall have any right of inspecting any account or books or documents of the Company except as conferred by Section 94 of the Act or authorised by the Board or by the company in general meeting. The Board may determine whether and to what extent and at what time and place and under what conditions or regulations the accounts and books of the Company or any of them may be open to inspection of the Members. Notwithstanding anything to the contrary contained herein above the authorised representative of Promoters shall have a right to inspect the accounts books plant facility documents records premises equipment and machinery and all other property of the Company at convenient time(s) after giving advance notice to the Company. 143. Statement of Accounts to be furnished to General Meeting The Directors shall from time to time in accordance with Sections 129 and 134 and other applicable provisions of the Act cause to be prepared and to be laid before the Company in General Meeting such Balance Sheets Profit and Loss Accounts and Reports as are required by these Sections. 144. Copies shall be sent to each Member Without prejudice to the provisions of Section 101 and subject to the provisions of Section 136 of the Act a copy of the financial statements including consolidated

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			financial statements auditors report and every other document required by law to be annexed or attached to the Balance Sheet shall at least twenty-one days before the General Body Meeting at which the same are to be laid before the members be sent to the members of the company to every trustee for every holder of any debenture issued by the company and to all persons other than such members or trustee being the person so entitled to attend the General Body Meeting. 145. Copy of financial statement to be filed with registrar The Company shall comply with Section 137 of the Act as to filing copies of the Balance Sheet and Profit and Loss Account and documents required to be annexed or attached thereto with the Registrar.
			Winding up
☐	☒	90	146. Procedure for winding up If the Company shall be wound up and the assets available for distribution among the members as such shall be insufficient to repay the whole of the paid up capital such assets shall be distributed so that as nearly as may be the losses shall be borne by the members in proportion to the capital paid up or which ought to have been paid up at the commencement of the winding-up on the shares held by them respectively. And if in a winding-up the assets available for distribution among the members shall be more than sufficient to repay the whole of the capital paid up at the commencement of the winding-up the excess shall be distributed amongst the members in proportion to the capital at the commencement of the winding-up paid up or which ought to have been paid up on the shares held by them respectively. But this Article is to be without prejudice to the rights of the holders of shares issued upon special terms and conditions. If the Company shall be wound up whether voluntarily or otherwise the liquidators may with the sanction of a Special Resolution divide among the contributions in specie or kind any part of the assets of the Company and may with the like sanction vest any part of the assets of the Company in Trustees upon such trusts for the benefit of the contributories or any of them as the liquidators with the like sanction shall think fit.
			Indemnity
☐	☒	91	147. Officers to be indemnified Subject to provisions of the Act every Officer of the company shall be indemnified out of the assets of the Company against any liability incurred by him in defending any proceedings whether civil or criminal in which judgment is given in his favour or in which he is acquitted or in which relief is granted to him by the court or the Tribunal. Provided that if such person is proved to be guilty the premium paid on such insurance shall be treated as part of the remuneration.
			Others
☐	☒		148. Company not bound to recognize holding of shares on trust or any interest in shares other than that of registered holder Except as ordered by a Court of competent jurisdiction or as required by law the Company shall not be bound to recognize holding of any share upon any trust and to recognize any equitable contingent future or partial interest in any share or any interest in any fractional part of a share (except only as is by these Articles otherwise expressly provided) any right in

respect of a share other than an absolute right thereto in accordance with these Articles in the person from time to time registered as the holder thereof but the Board shall be at liberty at their sole discretion to register any share in the joint names of any two or more persons or the survivor or survivors of them. 149. Funds etc. of Company may not be applied in purchase of shares of the Company. The Company shall not give either directly or indirectly and either by means of a loan or guarantee the provision of security or otherwise any financial assistance for the purpose of or in connection with the purchase or subscription made or to be made by any person for purchase of any shares in the Company except in conformity with the provisions of Section 67 of the Act. 150. Underwriting and Brokerage Commission may be paid Subject to the provisions of Section 40 of the Act the Company may at any time pay a commission to any person in consideration of his subscribing or agreeing to subscribe for any shares in or debentures of the Company or procuring or agreeing to procure subscriptions for any shares in or debentures of the Company but so that the commission shall not exceed in case of shares five percent of the price at which the shares are issued and in case of debentures two and a half percent of the price at which the debentures are issued. Such commission may be satisfied by payment in cash or by allotment of fully or partly paid shares or debentures or partly in one way and partly in the other. Brokerage The Company may also on any issue of shares or debentures pay such brokerage as may be lawful. 151. Interest out of Capital Interest may be paid out of capital Where any shares are issued for the purpose of raising money to defray the expenses of the construction of any work or building or the provision of any plant which cannot be made profitable for a lengthy period the Company may pay interest on so much of that share capital as is for the time being paid up for the period at the rate and subject to the conditions and restrictions provided by the Company Act 2013 and may charge the same to capital as part of the cost of construction of the work or building or the provision of plant. 152. Annual Returns The Company shall comply with the provisions of Sections 92 of the Act as to the making of Annual Returns. 153. Borrowing powers As per the provisions of Section 73 76 179 180 and other applicable provisions of the Act the Board of Directors may from time to time at its discretion by resolution at a meeting of the Board and subject to the approval of the shareholders in General Meeting accept deposits from Members either in advance of calls or otherwise and generally raise or borrow or secure the payment of any sums of money for the purpose of the Company. Provided however where the moneys already borrowed (apart from temporary loans obtained from the Company's bankers in the ordinary due course of business) exceed the aggregate of the paid-up capital of the Company its free reserves (not being reserves set apart for any specific purpose) and the securities premium the Board shall not borrow such moneys without the consent of the Company in General Meeting. Payment or repayment of borrowed Moneys Subject to the provisions of Article 64 hereof the payment and repayment of moneys borrowed as aforesaid may be secured in such manner and upon such terms and

conditions in all respects as the Board of Directors may think fit by resolutions passed at a meeting of the Board and in particular by the issue of bonds or debentures of the Company whether unsecured or secured by a mortgage or charge over all or any part of the property of the Company (both present and future) including its uncalled capital for the time being and debentures and other securities may be made assignable free from any equities between the Company and the person to whom the same may be issued. Terms of issue of Debentures Any debentures or other securities may be issued or otherwise and may be issued on condition that they shall be convertible into shares of any denomination and with any privileges and conditions to redemption surrender drawing allotment of shares and attending (but not voting) at General Meetings. Debentures with the right to conversion into or allotment of shares shall be issued only with the consent of the Company in General Meetings accorded by special resolution. Register of charges to be Kept The Board shall cause a proper Register to be kept in accordance with the provisions of Section 85 of the Act of all charges and floating charges affecting the property or assets of the Company or any of its undertakings and shall cause the requirements of Sections 77 79 and 81 to 87 (both inclusive) of the Act in that behalf to be duly complied with so far as they are required to be complied with by the Board. Register of Debenture holders The Company shall if at any time it issues debentures keep a Register and Index of Debenture holders in accordance with Section 88 of the Act. The Company shall have the power to keep in any Country outside India a Register of Debenture holders residing outside India in such manner as may be prescribed. Application to Debentures and other securities The provisions of the Articles shall apply mutatis mutandis to debentures bonds or other securities issued by the company. 154. Dematerialization of Securities Definitions For the purpose of this Article Depository means a depository as defined in clause (e) of sub-section (1) of section 2 of the Depositories Act 1996. Beneficial Owner means a person or persons whose name is recorded in the Register maintained by a Depository under the Depository Act 1996. SEBI means the Securities and Exchange Board of India established under section 3 of the Securities Exchange Board of India Act 1992. Securities means the securities as defined in clause (h) of section 2 of the Securities Contracts (Regulation) Act 1956 Dematerialization of Securities Notwithstanding anything contained in these Articles the Company shall be entitled to dematerialize its existing securities rematerialize its securities held in the Depositories and or offer its fresh securities in dematerialized form pursuant to the provisions of the Depositories Act 1996 and the rules framed there under if any. Option for investors Every person subscribing to or holding securities of the Company shall have the option to receive securities certificates or to hold these securities with the Depository. Such a person who is the beneficial owner of the securities can at any time opt out of the Depository if permitted by the law in respect of any security in the manner and within the time prescribed issued to the beneficial owner the required certificate of the securities. If a person opts to hold his securities with a Depository the Company shall intimate

such Depository the details of allotment of the security and on receipt of the information the depository shall enter in its records the name of the allottees as the beneficial owner of the securities. Securities in Depository to be in Fungible Form All securities held by a Depository shall be dematerialized and be in fungible form. Nothing contained in Section 88 89 112 and 186 of the Act shall apply to a Depository in respect of the securities held by it on behalf of the Beneficial Owners.

Rights and Liabilities of Beneficial Owner

(a) Notwithstanding anything to the contrary contained in the Act or these Articles a Depository shall be deemed to be the registered owner for the purposes of effecting transfer of ownership of security on behalf of the beneficial owners. (b) Save as otherwise provided in (a) above the Depository as the registered owner of the securities shall not have any voting rights or any other rights in respect of the securities held by it. (c) Every person holding securities of the Company and whose name is entered as the beneficial owner in the records of the Depository shall be deemed to be a member of the Company. The beneficial owner of securities shall be entitled to all the rights and benefits and be subject to all the liabilities in respect of his securities which are held by a Depository. Service of Documents Notwithstanding anything to the contrary contained in the Act or Articles to the contrary where securities are held in a Depository the records of the beneficial ownership may be served by such Depository on the Company by means of electronic mode or by delivery of floppies or discs. Provisions of Articles to apply to shares held in Depository Nothing contained in Section 56 of the Act or these Articles shall apply to a transfer of securities effected by a transferor and transferee both of whom are entered as beneficial owners in the records of a Depository.

Allotment of Securities dealt within a Depository Notwithstanding anything in the Act or these Articles where securities are dealt with by the Depository the Company shall intimate the details thereof to the Depository immediately on allotment of such securities. Distinctive numbers of securities held in the depository Mode Nothing contained in the Act or these Articles regarding the necessity of having distinctive numbers on securities issued by the Company shall apply to securities held with a Depository.

Register and Index of Beneficial Owners The Register and Index of Beneficial Owners maintained by a Depository under the Depositories Act 1996 shall be deemed to be the Register and Index of member and security holder for the purpose of these Articles. 155. Conversion of Shares into Stock and Reconversion Shares may be converted into stock and reconverted The Company in General Meeting may convert any paid up shares into stock and when any shares shall have been converted into stock these several holders of such stock may henceforth transfer their respective interest therein or any part of such interest in the same manner and subject to the same regulations as if no such conversion had taken place or as near thereto as circumstances will admit. The Company may at any time reconvert any stock into paid-up shares. Rights of stock holders The holders of stock shall according to the amount of stock held by them have the same rights privileges and advantages as regards dividends voting at meetings of the Company and other matters as if they

held the shares from which the stock arose. 156 .Audit Accounts to be audited The Auditors of the Company shall be appointed or reappointed by the Comptroller and Auditor General of India and their remuneration rights and duties shall be regulated by Section 139 to 143 and 145 to 148 of the Act. Powers of the Comptroller and Auditor General of India The Comptroller and Auditor General of India shall have the powers- (a) to direct the manner in which the Company's accounts shall be audited by the auditors appointed in pursuance of Article hereof and to give such auditors instruction in regard to any matter relating to the performance of their functions as such. (b) to conduct a supplementary or test audit of the financial statement of the Company by such person or persons as he may authorize in this behalf and for the purposes of such audit to have access at all reasonable times to all accounts account books vouchers documents and other papers of the Company and to require information or additional information to be furnished to any person or persons so authorized on such matters by such person or persons and in such form as the Comptroller and Auditor General may by general or special order direct. Comments upon or supplement to audit report by the Comptroller Auditor General of India to be placed before the annual general meeting The auditors aforesaid shall submit a copy of his/her audit report to the Comptroller and Auditor General of India who shall have the right to comment upon or supplement such audit report in such manner as he may think fit. Any such comments upon or supplement to the audit report shall be placed before the Annual General Meeting of the Company at the same time and in the same manner as the audit report. 157. Service of Documents Manner of Service of Documents A document or notice may be served or given by the Company to any Member either through speed post registered post or through electronic mode to his registered address or (if he has no registered address in India) to the address if any in India supplied by him to the Company for serving documents or notices on him. Notice is to be sent by the company through its authorized and secured computer programme which is capable of producing confirmation and keeping record of such communication addressed to the person entitled to receive such communication at the last electronic mail address provided by the member. The notice may be sent through e-mail as a text or as an attachment to e-mail or as a notification providing electronic link or Uniform Resource Locator for accessing such notice through in-house facility or its registrar and transfer agent or authorise any third party agency providing bulk e-mail facility. When notices or documents served on Members Where a document or notice is sent by post service of the document or notice shall be deemed to be effected by properly addressing prepaying and posting a letter containing the document or notice. When notice or notifications of availability of notice are sent by e-mail the company should ensure that it uses a system which produces confirmation of the total number of recipients e-mailed and a record of each recipient to whom the notice has been sent and copy of such record and any notices of any failed transmissions and subsequent re-sending shall be retained by or on behalf of the company as proof of sending. Provided that the member shall

provide the updated email address to the company and for that company will provide an advance opportunity at least once in a financial year to the member to register his e-mail address and changes therein and such request may be made by only those members who have not got their email id recorded or to update a fresh email id. Notice will also be simultaneously updated in the website of the company. By Advertisement A document or notice advertised in a newspaper circulating in the neighbourhood of the Registered Office shall be deemed to be duly served or sent on the day on which the advertisement appears on or to every Member who has no registered address in India and has not supplied to the Company an address within India for the serving of documents on sending the notices to him. Explanatory Statement of material facts under Section 102 need not be advertised but it will be mentioned in the advertisement that the Statement has been forwarded to the Members. On personal representatives etc. A document or notice may be served or given by the Company on or to the person entitled to a share in consequence of the death or insolvency of a Member by sending it through the post in prepaid letter addressed to them by name or by the title of representative of the deceased or assignee of the insolvent or by any like description at the address (if any) in India supplied for the purpose by the persons claimed to be entitled or until such an address has been so supplied by serving the document or notice in any manner in which the same might have been given if the death or insolvency had not occurred. To whom documents or notices must be served or given Documents or notices of every General Meeting shall be served or given in same manner as herein before or to (a) every member of the company legal representative of any deceased member or the assignee of an insolvent member (b) the auditor or auditors of the company and (c) every director of the company. Members bound by documents or notices served on or given to previous holders Every person who by operation of law transfer or other means whatsoever shall become entitled to any share shall be bound by every document or notice in respect of such share which previously to his name and address being entered in the Register of Members shall have been duly served on or given to the person from whom he derives his title to such shares. Documents or notice by Company and signature thereto Any document or notice to be served or given by the Company may be signed by a director or key managerial personnel or an officer of the company duly authorised by the Board in this behalf. Service of document or notice by Member All documents or notices to be served or given by Members on or to the Company or any officer thereof shall be served or given by sending it to the Company or Officer at the Office by post or through electronic mode under a certificate of posting or by registered post or through email. 158. Secrecy (a) Every Director Manager Auditor Treasurer Trustee member of a committee officer servant agent accountant or other person employed in the business of the Company shall if so required by the Directors before entering upon his duties sign a declaration pledging himself to observe strict secrecy respecting all transactions and affairs of the Company with the customers and the state of the accounts

			with individuals and in matters relating thereto and shall by such declaration pledge himself not to reveal any of the matters which may come to his knowledge in the discharge of his duties except when required so to do by the Directors or by law or by the person to whom such matters relate and except so far as may be necessary in order to comply with any of the provisions in these presents contained. (b) No Member shall be entitled to visit or inspect any work of the Company without the permission of the Directors or to require discovery of or any information respecting any details of the Company's trading or any matter which is or maybe in the nature of a trade secret mystery of trade secret process or any other matter which may relate to the conduct of the business of the Company and which in the opinion of the Directors it would be in expedient in the interest of the Company to disclose. 159. Copies of Memorandum and Articles of Association to be sent by the Company Copies of the Memorandum and Articles of Association of the Company and other documents referred to in Section 17 of the Act shall be sent by the Company to every Member at his request within seven days of the request on payment of such fees as may be prescribed.
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Subscriber Details

S. No.	Subscriber Details				
	*Name, Address, Description and Occupation	DIN / PAN / Passport number	*Place	DSC	Dated
1	PFC Consulting Limited having R/o First Floor, Urjanidhi, 1, Barakhamba Lane, Connaught Place, New Delhi - 110001 Through its Authorised representative Sachin Arora S/o Prem Lal Arora R/o F-5, 1903, Super tech, Eco, Village, 1, Noida, Gautam Buddha Nagar, Uttar Pradesh-201301 Occupation-Service	A*G*A*4*4*	Delhi	Sachin Arora Digitally signed by Sachin Arora Date: 2025.02.06 18:02:53 +05'30'	06/02/2025
2	SHRI SANJAY KUMAR NAYAK S/o Jagabandhu Nayak R/o K713, Jalvayu Tower, Sector-56, Gurgaon, Haryana - 122011, Occupation - Service (As Nominee of PFC Consulting Limited)	0*1*7*9*	Delhi	Sanjay Kumar Nayak Digitally signed by Sanjay Kumar Nayak Date: 2025.02.06 18:04:11 +05'30'	06/02/2025
3	SHRI RAKESH MOHAN S/o Lakshman Singh R/o Flat No 364, Sunehari Bagh Apartment, Sector-13 Rohini, Rohini sector-14, North West Delhi, Delhi - 110085 Occupation - Service (As Nominee of PFC Consulting Limited)	0*6*4*2*	Delhi	Rakesh Mohan Digitally signed by Rakesh Mohan Date: 2025.02.06 18:04:52 +05'30'	06/02/2025
4	SHRI NEERAJ SINGH S/o Dayashankar Singh R/o C-703 F-2, The Crescent Apartment	0*6*3*9*	Delhi	Neeraj Singh Digitally signed by Neeraj Singh Date: 2025.02.06 18:05:38 +05'30'	06/02/2025

	nt, Sector-50, Noida, Gautam Budha Nagar, Uttar Pradesh - 201301 Occupation - Service (As Nominee of PFC Consulting Limited)				
5	SHRI RISHAB JAIN S/o Naveen Jain R/o T-11, First Floor, Green Park Extension, Green Park Market, New Delhi - 110016 Occupation - Service (As Nominee of PFC Consulting Limited)	0*4*5*6*	Delhi	Rishab Jain Digitally signed by Rishab Jain Date: 2025.02.06 18:09:26 +05'30'	06/02/2025
6	SHRI SACHIN SHUKLA S/o Raj Kumar Shukla R/o 4th Floor, House No 6, H1 Block, Good Earth City Center, South City II, Gurgaon - 122018, Haryana, India, Occupation - Service (As Nominee of PFC Consulting Limited)	0*6*3*6*	Delhi	Sachin Shukla Digitally signed by Sachin Shukla Date: 2025.02.06 18:10:18 +05'30'	06/02/2025
7	SHRI NAVEEN KUMAR S/o Jagdish Chander R/o F-024, Assotech Windsor Court Sector 78, Noida, Uttar Pradesh, India 201301 Occupation - Service (As Nominee of PFC Consulting Limited)	1*4*7*5*	Delhi	Naveen Kumar Digitally signed by Naveen Kumar Date: 2025.02.07 10:19:54 +05'30'	06/02/2025

Signed before me						
Name Prefix (ACA/FCA/ACS/ FCS/ACMA/ FCMA)	*Name of the witness	*Address, Description and Occupation	*DIN / PAN / Passport number / Membership	*Place	DSC	Dated
FCS	Nitin Kochhar	Flat No. 608, Sixth Floor, Pragati Tower - 26, Rajendra Place, New Delhi - 110008	6*3*	Delhi	NITIN KOCHHAR Digitally signed by NITIN KOCHHAR Date: 2025.02.07 15:35:28 +05'30'	06/02/2025

PFC CONSULTING LIMITED

(A wholly owned subsidiary of PFC Limited)

Regd. Office: First Floor, "Urjanidhi", 1, Barakhamba Lane, Connaught Place, New Delhi – 110001 (INDIA), Fax: 011-23443990

GLOBAL INVITATION (THROUGH E-BIDDING ONLY)

FOR SELECTION OF TRANSMISSION SERVICE PROVIDER ON BUILD, OWN, OPERATE AND TRANSFER (BOOT) BASIS FOR INTER-STATE TRANSMISSION PROJECTS

PFC Consulting Limited, a wholly owned subsidiary of Power Finance Corporation Limited (A Government of India Undertaking), invites proposals for setting up of transmission projects on Build, Own, Operate and Transfer (BOOT) basis following single stage two envelope process of "Request for Proposal" (RFP).

Interested bidders may refer to the RFP notification and RFP documents available on the website <https://www.mstcecommerce.com> and <https://www.pfcclindia.com>.

The Bidders may obtain the RFP documents on all working days between 10:30 hrs (IST) and 16:00 hrs (IST) from 04.03.2025 to one working day prior to bid submission for the projects mentioned below on payment of a non-refundable fee of Rs. 5,00,000/- or USD 7,000 plus applicable GST @18% from 9th Floor, Wing – A, Statesman House, Connaught Place, New Delhi - 110001, Tel.: 91-11-23443996; Fax: 91-11-23443990; e-mail: pfccl.itp@pfcindia.com. The RFP documents can also be downloaded from <https://www.mstcecommerce.com> and <https://www.pfcclindia.com>, however, in such case, interested party can submit Response to RFP only on submission of non-refundable fee of Rs. 5,00,000/- or USD 7,000 plus applicable GST @18% separately. The survey report and clarification to RFP documents shall be issued to those bidders, who have obtained/ purchased RFP documents by paying requisite fee at least one working day prior to bid submission date. Bidders should regularly visit website to keep themselves updated regarding clarifications/ amendments/ time extensions etc., if any. The important timelines in this regard are as follows:

S. No.	Name of Transmission Scheme	Last Date for seeking clarifications (dd/mm/yyyy)	Last Date for submission of response to RFP (dd/mm/yyyy)	Date of opening of Response to RFP (dd/mm/yyyy)
1.	Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)	24/03/2025	06/05/2025 up to 15:00 hrs. (IST)	06/05/2025 up to 15:30 hrs. (IST)

Note: PFC Consulting Limited reserves the right to cancel or modify the process without assigning any reason and without any liability. This is not an offer.

Bid Process Coordinator

An Initiative of

Initiative Partner

PFC CONSULTING LTD.

(A wholly owned subsidiary of PFC Ltd.)
(A Govt. of India Undertaking)



Ministry of Power
Government of India



Central Electricity Authority

Size: 12x12

पीएफसी कंसल्टिंग लिमिटेड

(पीएफसी लिमिटेड की पूर्ण स्वामित्व वाली सहायक कंपनी)

पंजीकृत कार्यालय: प्रथम तल, "ऊर्जानिधि" 1, बाराखम्बा लेन, कनाट प्लेस, नई दिल्ली-110001 (भारत) फ़ैक्स: 011-23443990

वैश्विक आमंत्रण (केवल ई-निविदा के माध्यम से)

अन्तर्राष्ट्रीय पारेषण परियोजनाओं के लिए निर्माण, स्वामित्व, प्रचालन और स्थानांतरण (BOOT) आधार पर पारेषण सेवा प्रदाता के चयन हेतु

पीएफसी कंसल्टिंग लिमिटेड, पावर फाइनेंस कॉर्पोरेशन लिमिटेड (भारत सरकार का उपक्रम) की पूर्ण स्वामित्ववादी सहायक कंपनी एकल चरण दो लिफाफा प्रक्रिया वाले "प्रस्ताव हेतु अनुरोध" (आरएफपी) का पालन करते हुए निर्माण, स्वामित्व, प्रचालन एवं स्थानांतरण (BOOT) आधार पर ट्रांसमिशन परियोजना की स्थापना के लिए प्रस्ताव आमंत्रित करता है।

इच्छुक बोलीदाता वेबसाइट <https://www.mstcecommerce.com> और <https://www.pfcclindia.com> पर उपलब्ध आरएफपी अधिसूचना तथा आरएफपी दस्तावेज देख सकते हैं।

निविदादाता अ-प्रतिदेय शुल्क रु. 5,00,000/- या यूएसडी (यूएस डॉलर) 7,000 प्लस 18 प्रतिशत की दर से लागू जीएसटी का भुगतान करके आरएफपी दस्तावेज 04.03.2025 से निम्नलिखित परियोजनाओं के लिए निविदा जमा करने से एक कार्यदिवस पूर्व तक सभी कार्यदिवसों में 10.30 बजे (आईएसटी) से 16.00 बजे (आईएसटी) के बीच 9वां तल, विंग-ए, स्टेट्समैन हाउस, बाराखम्बा रोड, कनाट प्लेस, नई दिल्ली-110001, फोन: 91-11-23443996 फ़ैक्स: 91-11-23443990, ई-मेल: pfccl.itp@pfcindia.com से प्राप्त कर सकते हैं। आरएफपी दस्तावेज <https://www.mstcecommerce.com> तथा <https://www.pfcclindia.com> से भी डाउनलोड किए जा सकते हैं, यद्यपि, ऐसे मामले में इच्छुक पार्टियों को आरएफपी के उत्तर के साथ अलग से अ-प्रतिदेय शुल्क रु. 5,00,000/- या यूएसडी (यूएस डॉलर) 7,000 प्लस 18 प्रतिशत की दर से लागू जीएसटी का जमा करके आरएफपी के उत्तर जमा कर सकती है। आरएफपी दस्तावेज के लिए सर्वेक्षण रिपोर्ट एवं स्पष्टीकरण उन बोलीदाताओं को जारी किये जायेंगे जिन्होंने उपरोक्त परियोजना हेतु आरएफपी को निविदा जमा करने की तिथि से कम से कम एक कार्यदिवस पूर्व आवश्यक शुल्क का भुगतान कर आरएफपी दस्तावेज प्राप्त/खरीदा था। स्पष्टीकरण/संशोधन/समय विस्तार यदि होगा, आदि के संबंध में स्वयं को अद्यतन रखने के लिए निविदादाता नियमित रूप से वेबसाइट देखते रहें। इस संबंध में महत्वपूर्ण तिथियां निम्नानुसार हैं:

क्र. स.	पारेषण योजना का नाम	स्पष्टीकरण प्राप्त करने की अंतिम तिथि दि.दि./मा.मा./व.व.	आरएफपी का उत्तर जमा करने की अंतिम तिथि दि.दि./मा.मा./व.व.	आरएफपी हेतु उत्तर खोलने की तिथि दि.दि./मा.मा./व.व.
1.	काकीनाडा क्षेत्र में प्रस्तावित ग्रीन हाइड्रोजन / ग्रीन अमोनिया परियोजनाओं के लिए पारेषण प्रणाली (चरण-I)	24/03/2025	06/05/2025 को 15:00 बजे (आईएसटी) तक	06/05/2025 को 15:30 बजे (आईएसटी) तक

नोट: पीएफसी कंसल्टिंग लिमिटेड बिना कोई कारण बताए और बिना किसी दायित्व के निविदा प्रक्रिया को निरस्त या संशोधित करने का अधिकार रखता है। यह कोई प्रस्ताव नहीं है।

बोली प्रक्रिया समन्वयक

पहलकर्ता

अग्रणी भागीदार

PFC CONSULTING LTD.



विद्युत मंत्रालय
भारत सरकार



केन्द्रीय विद्युत प्राधिकरण

(पीएफसी लिमिटेड की पूर्ण स्वामित्ववादी सहायक कंपनी)
(भारत सरकार का एक उपक्रम)

Size: 12x12

SINGLE STAGE REQUEST FOR PROPOSAL DOCUMENT

FOR

**SELECTION OF BIDDER AS TRANSMISSION SERVICE PROVIDER THROUGH TARIFF
BASED COMPETITIVE BIDDING PROCESS**

TO

ESTABLISH INTER-STATE TRANSMISSION SYSTEM

FOR

**TRANSMISSION SYSTEM FOR PROPOSED GREEN HYDROGEN / GREEN
AMMONIA PROJECTS IN KAKINADA AREA (PHASE-I)**

ISSUED BY



**Registered Office:
1st Floor, "Urjanidhi", 1, Barakhamba Lane,
Connaught Place, New Delhi-110001**

March 04, 2025

PFC CONSULTING LIMITED
(A wholly owned subsidiary of Power Finance Corporation Limited)

Corporate Office:
9th Floor, A-Wing, Statesman House
Connaught Place, New Delhi-110001

Request for Proposal Document for selection of Bidder as Transmission Service Provider through tariff based competitive bidding process to establish Inter-State Transmission System for “Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)” is issued by PFC Consulting Limited.

This RFP document is issued to -

M/s. _____

General Manager
PFC Consulting Limited
9th Floor, A-Wing, Statesman House
Connaught Place, New Delhi-110001

Email: pfcl.itp@pfcindia.com

Place: New Delhi

Date:

REQUEST FOR PROPOSAL NOTIFICATION

PFC CONSULTING LIMITED

(A wholly owned subsidiary of Power Finance Corporation Limited)

Corporate Office:

9th Floor, A-Wing, Statesman House

Connaught Place, New Delhi-110001

1. The Government of India, Ministry of Power, vide its gazette notification no C CG-DL-E-01012025-259785 dated December 26, 2024 has notified PFC Consulting Limited (PFCCL) to be the Bid Process Coordinator (BPC) for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish Inter-State transmission system for **“Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)”** through tariff based competitive bidding process.
2. PFC Consulting Limited (PFCCL) (hereinafter referred to as BPC) hereby invites all prospective Bidders for issue of Request for Proposal (RFP) for selection of Bidder as Transmission Service Provider (TSP) on the basis of international competitive bidding in accordance with the “Tariff Based Competitive Bidding Guidelines for Transmission Service” and “Guidelines for Encouraging Competition in Development of Transmission Projects” issued by Government of India, Ministry of Power under section – 63 of The Electricity Act, 2003 and as amended from time to time. The responsibility of the TSP would be to establish the following Inter-State Transmission System – **“Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)”** (hereinafter referred to as 'Project') on build, own, operate & transfer basis and to provide transmission service:

Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)		
S No.	Name of Transmission Element	Scheduled COD in months from Effective Date
1.	Establishment of Kakinada 765/400 kV, 3x1500 MVA substation (GIS) alongwith 240 MVAR bus reactor. • 3x1500 MVA, 765/400 kV ICT (10x500 MVA including 1 spare unit) • 765 kV ICT bay – 3 Nos. (GIS) • 400 kV ICT bay – 3 Nos. (GIS) • 765 kV line bays – 4 Nos. (GIS) (at Kakinada for termination of LILO of Srikakulam – Vemagiri 765 kV D/c line) • 765 kV, 240 MVAR Bus Reactor – 1 No. (4x80 MVARinc. 1 switchable spare unit for both bus reactor and line reactor) • 765 kV Bus Reactor bays – 1 No. (GIS) Future Space Provisions: • 765/400 kV, 1500 MVA, ICTs – 3 Nos. • 765 kV ICT bays – 3 Nos. • 400 kV ICT bays – 3 Nos. • 765 kV line bays – 8 Nos. (with provision for SLR) • 400 kV line bays – 12 Nos. (with provision for SLR) • 400 kV Bus Sectionalizer : 1 set	24 Months

2.	LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation (~20 km) {with 240 MVar SLR at Kakinada GH end on Srikakulam – Kakinada section} 765 kV, 240 MVar SLR at Kakinada– 2 Nos. (6x80 MVar switchable units)	
3.	± 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV GIS S/s with control switching arrangement for proposed 1x240 MVar bus reactor - Space provision for 2nd ± 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV S/s 400 kV bay – 1 No. (GIS) *	
Note: i. * 2 Nos. of additional 400 kV GIS bays for diameter completion shall be provided at Kakinada with future element as future Line		

3. The TSP shall ensure that design; construction and testing of all equipment, facilities, components and systems of the Project shall be in accordance with the provisions of the Transmission Service Agreement and applicable Rules/ Regulations, Orders and Guidelines issued by the Central Government.
4. **Transmission License:** The TSP shall obtain the Transmission License from the Commission.
5. **Bidding Process:** The Transmission Service Provider shall be selected through tariff based competitive bidding process for the Project based on meeting stipulated Qualification Requirements prescribed in Clause 2.1 of Section 2 of RFP and the lowest Quoted Transmission Charges discovered from Final Offers quoted during the e-reverse bidding. The selection of the TSP shall be subject to it obtaining Transmission License from the Commission, which, after expiry, may be further extended by such period as deemed appropriate by the Commission under powers vested with it to amend the conditions of the Transmission License.

The entire bidding process shall be conducted on electronic platform created by MSTC Limited.

The Bid shall be a single stage two envelope bid comprising the Technical Bid and the Financial Bid. The Bidders shall submit the Bid online through the electronic bidding platform. In addition to the online submission, the Bidder with lowest Final Offer will be required to submit original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14 before issuance of Lol. There shall be no physical submission of the Financial Bid.

The Technical Bid shall be opened first and the Financial Bid of only the bidder who have qualified in the Technical Bid shall be opened. The Financial Bid will comprise of two rounds. In the first round the Initial Offer of the responsive bids would be opened and Quoted Transmission Charges of Initial Offer shall be ranked on the basis of ascending order. The Bidders, in the first fifty per cent of the ranking (with any fraction rounded off to higher integer) or four Bidders, whichever is higher, shall qualify for participating in the electronic reverse auction stage and submit their Final Offer.

6. The objective of the bidding process is to select a Successful Bidder pursuant to this RFP, who shall acquire one hundred percent (100%) of the equity shares of **KAKINADA I TRANSMISSION LIMITED** along with all its related assets and liabilities as per the provisions of the Share Purchase Agreement, at the Acquisition Price to be intimated by the BPC, twenty (20) days prior to the Bid Deadline.

The **KAKINADA I TRANSMISSION LIMITED**, of which one hundred percent (100%) equity shares will be acquired by the Selected Bidder, shall be responsible as the TSP, for ensuring that it undertakes ownership, financing, development, design, engineering, procurement, construction, commissioning, operation and maintenance of the Project, and to provide Transmission Service as per the terms of the RFP Project Documents.

The TSP shall ensure transfer of all project assets along with substation land, right of way and clearances to CTU or its successors or an agency as decided by the Central Government after 35 years from COD of project at zero cost and free from any encumbrance and liability. The transfer shall be completed within 90 days after 35 years from COD of project failing which CTU shall be entitled to take over the project assets Suo moto.

7. **Commencement of Transmission Service:** The Bidder shall have to commence Transmission Service in accordance with the provisions of the Transmission Service Agreement.
8. **Transmission Charges:** The Transmission Charges shall be payable by the Designated ISTS Customers in Indian Rupees through the CTU as per Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations as amended from time to time. Bidders shall quote the Transmission Charges as per the pre-specified structure, as mentioned in the RFP.
9. **Issue of RFP document:** The detailed terms and conditions for qualification and selection of the Transmission Service Provider for the Project and for submission of Bid are indicated in the RFP document. All those interested in purchasing the RFP document may respond in writing to **General Manager, Tel. +91 11 23443996, Fax +91 11 23443990, Email: pfcccl.itp@pfccindia.com** at the address given in para 12 below with a non-refundable fee of **Rs. 5,00,000/- (Rupees Five Lakh Only) or US\$ 7000/- (US Dollars Seven Thousand Only)** plus 18% GST, to be paid via electronic transfer to the following Bank Account:

Bank Account Name : PFC Consulting Limited
Account No. : 000705036117
Bank Name : ICICI Bank
IFSC : ICIC0000007
Branch : Connaught Place, New Delhi-110001

latest by **May 05, 2025**. Immediately after issuance of RFP document, the Bidder shall submit the Pre-Award Integrity Pact in the format as prescribed in **Annexure B**, which shall be applicable for and during the bidding process, duly signed on each page by any whole-time Director / Authorized Signatory, duly witnessed by two persons, and shall be submitted by the Bidder in two (2) originals in a separate envelope, duly superscripted with Pre-Award Integrity Pact. The Bidder shall submit the Pre-Award Integrity Pact on non-judicial stamp paper of Rs. 100/- each duly purchased from the National Capital Territory of Delhi. In case the Bidder is in a consortium, the Pre-Award Integrity Pact shall be signed and submitted by each member of the Consortium separately.

The RFP document shall be issued to the Bidders on any working day from **March 04, 2025 to May 05, 2025, between 10:30 hours (IST) to 16:00 hours (IST)**. The BPC, on written request and against payment of the above mentioned fee by any Bidder shall promptly dispatch the RFP document to such Bidder by registered mail/ air mail. BPC shall, under no circumstances, be held responsible for late delivery or loss of documents so mailed.

10. **Receipt and opening of Bid:** The Bid must be uploaded online through the electronic bidding platform on or before **15:00 hours (IST) on May 06, 2025**. Technical Bid will be opened by the

Bid Opening Committee on the same day at 15:30 hours (IST) in the office of Central Electricity Authority, in the online presence of Bidders' representatives who wish to attend. If the Bid Deadline is a public holiday at the place of submission of Bid, it shall be opened on the next working day at the same time and venue. In addition to the online submission, the Bidder with lowest Final Offer will be required to submit original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14 before issuance of Lol. Bidders meeting the Qualification Requirements, subject to evaluation as specified in Clause 3.2 to 3.4 shall be declared as "Qualified Bidders" and eligible for opening of Initial Offer.

11. The RFP document is not transferable. BPC reserves the right to reject all Bid and/or annul the process of tariff based competitive bidding for selection of Bidder as TSP to execute the Project without assigning any reason. BPC shall not bear any liability, whatsoever, in this regard.

12. Nodal person for enquiries and clarifications

All correspondence and clarification in respect of RFP document shall be addressed to:

General Manager
PFC Consulting Limited
9th Floor, A-Wing, Statesman House
Connaught Place, New Delhi - 110001, India
Tel. + 91-11-23443996
Fax + 91-11-23443990
Email: pfcl.itp@pfcindia.com

DISCLAIMER

1. This Request for Proposal (RFP) document is not an agreement or offer by the BPC to the prospective Bidders or to any other party. The purpose of this RFP document is to provide interested parties with information to assist the formulation of their Bid. The RFP document is based on material and information available in public domain.
2. This RFP, along with its Annexures, is not transferable and the information contained therein are to be used only by the person to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors). In the event that the recipient does not continue with its involvement in the Project in accordance with this RFP, this RFP must be kept confidential.
3. While this RFP has been prepared in good faith, neither the BPC nor its employees or advisors/consultants make any representation or warranty expressed or implied as to the accuracy, reliability or completeness of the information contained in this RFP. The Bidders shall satisfy themselves, on receipt of the RFP document, that the RFP document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any Bidder within ten (10) days from the date of issue of this RFP document on or before the date & time mentioned in this RFP, it shall be considered that the issued document, complete in all respects, has been received by the Bidders.

This bidding process is in accordance with the Bidding Guidelines issued by Ministry of Power, Government of India under Section 63 of the Electricity Act, 2003. Revisions or amendments in these Bidding Guidelines may cause the BPC to modify, amend or supplement this RFP document, including the RFP Project Documents to be in conformance with the Bidding Guidelines.

4. This RFP document includes statements, which reflect various assumptions arrived at by BPC in order to give a reflection of current status in the RFP. These assumptions should not be entirely relied upon by Bidders in making their own assessments. This RFP document does not purport to contain all the information each Bidder may require and may not be appropriate for all persons. It is not possible for BPC to consider the investment objectives, financial situation and particular needs of each party who reads or uses this RFP document. Certain Bidders may have a better knowledge of the Project than the others. Each Bidder should conduct its own investigations and analysis and should check the accuracy, reliability and completeness of the information in this RFP document and obtain independent advice from appropriate sources.
5. Neither BPC nor their employees or consultants make any representation or warranty as to the accuracy, reliability or completeness of the information in this RFP document.
6. Neither BPC, its employees nor its consultants will have any liability to any Bidder or any other person under the law of contract, tort, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this RFP document, any matter deemed to form part of this RFP document, the award of the Project, the information supplied by or on behalf of BPC or its employees, any consultants or otherwise arising in any way from the qualification process for the said Project.
7. By participating in the bidding process, each of the Bidder shall have acknowledged and accepted that it has not been induced to enter into such agreement by any representation or warranty, expressed or implied, or relied upon any such representation or warranty by or on behalf of BPC or any person working in the bidding process.
8. BPC may in its absolute discretion, but without being under any obligation to do so, update, amend

or supplement this RFP document. Such updations, amendments or supplements, if any, will however be circulated to the Bidders not later than 15 days prior to the last date for submission of Bid.

9. Each Bidder unconditionally agrees, understands and accepts that the BPC reserves the rights to accept or reject any or all Bids without giving any reason. Neither the BPC nor its advisers shall entertain any claim of any nature, whatsoever, including without limitations, any claim seeking expenses in relation to the preparation of Bids.
10. This RFP may be withdrawn or cancelled by the BPC at any time without assigning any reasons thereof. BPC further reserves the right, at its complete discretion to reject any or all of the Bids without assigning any reasons whatsoever.

Upon finalization of the RFP Project Documents after incorporating the amendments envisaged in Clause 2.4 of this RFP, all the finalized RFP Project Documents shall be provided by BPC to the Bidders at least fifteen (15) days prior to the Bid Deadline.

The Transmission Service Agreement and Share Purchase Agreement shall be signed in required number of originals so as to ensure that one (1) original is retained by each party to the Agreement(s) on the date of transfer of SPV.

Note: Kindly check 2.15.2. (b) point from SBDs

2.15.2 Within ten (10) days of the issue of the Letter of Intent, the Selected Bidder shall:

- a) Provide the Contract Performance Guarantee in favour of the Nodal Agency as per the provisions of Clause 2.12;
- b) Execute the Share Purchase Agreement and the Transmission Service Agreement;
- c) acquire, for the Acquisition Price, one hundred percent (100%) equity shareholding of **KAKINADA I TRANSMISSION LIMITED** from PFC Consulting Limited, who shall sell to the Selected Bidder, the equity shareholding of **KAKINADA I TRANSMISSION LIMITED**, along with all its related assets and liabilities;

Stamp duties payable on purchase of one hundred percent (100%) of the equity shareholding of **KAKINADA I TRANSMISSION LIMITED**, along with all its related assets and liabilities, shall also be borne by the Selected Bidder.

Provided further that, if for any reason attributable to the BPC, the above activities are not completed by the Selected Bidder within the above period of ten (10) days as mentioned in this Clause, such period of ten (10) days shall be extended, on a day for day basis till the end of the Bid validity period.

2.15.3 After the date of acquisition of the equity shareholding of **KAKINADA I TRANSMISSION LIMITED**, along with all its related assets and liabilities, by the Selected Bidder,

- i. the authority of the BPC in respect of this Bid Process shall forthwith cease and any actions to be taken thereafter will be undertaken by the Nodal Agency,
- ii. all rights and obligations of **KAKINADA I TRANSMISSION LIMITED**, shall be of the TSP,
- iii. any decisions taken by the BPC prior to the Effective Date shall continue to be binding on the Nodal Agency and
- iv. contractual obligations undertaken by the BPC shall continue to be fulfilled by the TSP.
- v. Further, the TSP shall execute the Agreement(s) required, if any, under Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations as amended from time to time.

2.15.4 Within five (5) working days of the issue of the acquisition of the SPV by the Successful Bidder, the TSP shall apply to the Commission for grant of Transmission License and make an application to the Commission for the adoption of Transmission Charges, as required under Section – 63 of The Electricity Act 2003.

- 2.15.5 If the Selected Bidder / TSP fails or refuses to comply with any of its obligations under Clauses 2.15.2, 2.15.3 and 2.15.4, and provided that the other parties are willing to execute the Share Purchase Agreement and PFC Consulting Limited is willing to sell the entire equity shareholding of **KAKINADA I TRANSMISSION LIMITED**, along with all its related assets and liabilities, to the Selected Bidder, such failure or refusal on the part of the Selected Bidder shall constitute sufficient grounds for cancellation of the Letter of Intent. In such cases, the BPC / its authorized representative(s) shall be entitled to invoke the Bid Bond of the Selected Bidder.
- 2.15.6 If the TSP fails to obtain the Transmission License from the Commission, it will constitute sufficient grounds for annulment of award of the Project.
- 2.15.7 The annulment of award, as provided in Clauses 2.15.5 and 2.15.6 of this RFP, will be done by the Government on the recommendations of National Committee on Transmission. However, before recommending so, National Committee on Transmission will give an opportunity to the Selected Bidder / TSP to present their view point.
- 2.15.8 The annulment of the award, under Clause 2.15.5 or 2.15.6 of this RFP, shall be sufficient grounds for blacklisting the bidder, whose award has been annulled, for a period of five years or more, as decided by the National Committee on Transmission, provided that the blacklisting shall be done only after giving the bidder an opportunity for showing cause.

2.16 Confidentiality

- 2.16.1 The parties undertake to hold in confidence this RFP and RFP Project Documents and not to disclose the terms and conditions of the transaction contemplated hereby to third parties, except:

- a) to their professional advisors;
- b) to their officers, contractors, employees, agents or representatives, financiers, who need to have access to such information for the proper performance of their activities;
- c) disclosures required under Law, without the prior written consent of the other parties of the concerned agreements.

Provided that the TSP agrees and acknowledges that the Nodal Agency may at any time, disclose the terms and conditions of the RFP and RFP Project Documents to any person, to the extent stipulated under the Law or the Bidding Guidelines.

2.17 Right of the BPC to reject any Bid

BPC reserves the right to reject all or any of the Bids/ or cancel the RFP without assigning any reasons whatsoever and without any liability.

- 2.18 Non submission and/or submission of incomplete data/ information required under the provisions of RFP shall not be construed as waiver on the part of BPC of the obligation of the Bidder to furnish the said data / information unless the waiver is in writing.

2.19 Fraudulent and Corrupt Practices

- 2.19.1. The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bid process and subsequent to the issue of the Lol Notwithstanding anything to the contrary contained herein, or in the Lol, the BPC shall reject a

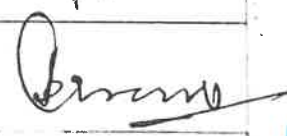
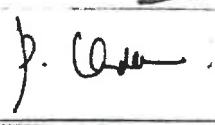
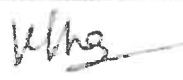
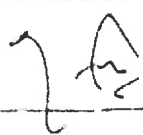
Date: June 11, 2026

CERTIFICATE BY THE BID EVALUATION COMMITTEE

Sub.: Selection of Successful Bidder as Transmission Service Provider to establish "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)".

It is hereby certified that:

1. The entire bid process has been carried out in accordance with the "Tariff based Competitive Bidding Guidelines for Transmission Service" and "Guidelines for encouraging competition in development of the Transmission Projects" issued by Ministry of Power, Govt. of India under Section 63 of the Electricity Act, 2003 and as amended from time to time.
2. 'Power Grid Corporation of India Limited' emerged as the Successful Bidder after the conclusion of e-reverse bidding process with the lowest Quoted Transmission Charges of Rs.1,799.74 million per annum.
3. The quoted tariff is lower than the Levelised Tariff calculated based on CERC norms considering the Capital Cost for the Project "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)" as assessed by Cost Committee. The quoted tariff discovered through e-reverse bidding process is acceptable.

Name of Committee Member	Signature
Sh. Amit Jog, General Manager, State Bank of India, Commercial Clients Group Regional Office-II, New Delhi - Chairman	
Sh. T Sudeevan Kumar, Chief Engineer (Projects), APTRANSCO - Member	
Smt. P. Vasundhara, Chief Engineer, 400kV Construction, TGTRANSCO - Member	
Sh. Ganeswara Rao Jada, Director, PSPA-I Division, CEA - Member	
Smt. Kavita Jha, Director, PSETD Division, CEA - Member	
Sh. Sachin Shukla, Chairman, Kakinada I Transmission Limited, New Delhi - Convener Member	

Ref. No. 04/26-27/ITP-99/RFP

June 12, 2026

To,

Mr. Pankaj Pandey,

Executive Director (TBCB)

Power Grid Corporation of India Limited,

"Saudamini" Plot No 2, Sector 29,

Gurgaon-122001

E-mail: ppandey@powergrid.in

Sub.: Inter-State Transmission Scheme "Transmission system for proposed Green Hydrogen /Green Ammonia projects in Kakinada area (Phase-I)"- Letter of Intent

Dear Sir,

We refer to:

1. The Request for Proposal document dated **March 04, 2025** issued to '**Power Grid Corporation of India Limited**' as regards participation in the international competitive bidding process for Transmission Scheme for "**Transmission system for proposed Green Hydrogen /Green Ammonia projects in Kakinada area (Phase-I)**", and as amended till the bid deadline including all correspondence/ clarifications / amendments exchanged between '**Power Grid Corporation of India Limited**' and PFC Consulting Limited in regard thereto (hereinafter collectively referred to as the "**Final RFP**");
2. The Offer of '**Power Grid Corporation of India Limited**' by way of a Technical Bid pursuant to (1) above submitted on **May 08, 2026** in response to the Final RFP.
3. The Offer of '**Power Grid Corporation of India Limited**' by way of Financial Bid-Initial Offer submitted on **May 08, 2026** in response to the Final RFP.
4. The offer of '**Power Grid Corporation of India Limited**' by way of a Financial Bid-Final Offer Submitted during e-Reverse Auction process concluded on **June 06, 2026** in response to the Final RFP.
5. The Technical Bid as at S. No. (2) above and the Financial Bid as at S. No. (3) & (4) above, hereinafter collectively referred to as the "**Bid**".

This is to inform you that the process of evaluating bids received pursuant to the Final RFP, including the Bid, has been concluded. We are pleased to inform you that your proposal and offer received by way of the "**Bid**" has been accepted and '**Power Grid Corporation of India Limited**' is hereby declared as the Successful Bidder as per Clause 3.6.1 of the Final RFP for the above project and consequently, this Letter of Intent (hereinafter referred to as the "**LoI**") is being issued.

This LoI is based on the Final RFP and you are requested to please comply with the following:

पंजीकृत कार्यालय : प्रथम तल, "उर्जानिधि", 1 बाराखम्बा लेन, कनॉट प्लेस, नई दिल्ली-110001

Regd. Office : First Floor, "Urjanidhi", 1, Barakhamba Lane, Connaught Place, New Delhi-110001

कंपनी मुख्यालय : नौवाँ तल (ए विंग), स्टेट्समैन हाउस, कनॉट प्लेस, नई दिल्ली - 110001 दूरभाष : 011 - 23443900 फैक्स : 011 - 23443990

Corporate Office : 9th Floor (A Wing), Statesman House, Connaught Place, New Delhi - 110001 Phone : 011 - 23443900 Fax : 011 - 23443990

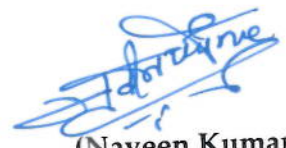
वैबसाईट / Website : www.pfcclindia.com 99 CIN : U74140DL2008GOI175858

- a) Acknowledging its issuance and unconditionally accepting its contents and recording "Accepted unconditionally" under the signature of your authorized signatory on each page of the duplicate copy of this letter attached herewith and returning the same to PFC Consulting Limited within seven (07) days of the date of issuance of LoI. This LoI is issued to you in duplicate.
- b) Completion of various activities as stipulated in the Final RFP including in particular Clause 2.15.2, Clause 2.15.3 and Clause 2.15.4 of the Final RFP, within the timelines as prescribed therein.

It may be noted that PFC Consulting Limited has the rights available to them under the Final RFP, including rights under Clause 2.15.5 and Clause 3.6.3 thereof, upon your failure to comply with the aforementioned conditions.

As you are aware, the issuance and contents of this LoI are based on the Bid submitted by you as per the Final RFP including the Transmission charges and other details regarding the Scheduled COD as contained therein. The Quoted Transmission Charges as submitted by you and the Scheduled COD of each transmission element and the Project as agreed by you in your Bid, as per Annexure 21 and Format-1 of Annexure 8 respectively of the Final RFP is annexed herewith as **Schedule-A** and incorporated herein by way of reference.

Yours sincerely,
For PFC Consulting Limited


(Naveen Kumar)
General Manager

Enclosures:

1. **Schedule A** – Quoted Transmission Charges and the Scheduled COD of each Transmission Element and the Project submitted in your Bid, as per Annexure 21 and Format-1 of Annexure 8 respectively of the Final RFP

Copy to:

1. **Chairman and Managing Director, Power Finance Corporation Limited, "Urjanidhi", 1, Barakhamba Lane, Connaught Lane, New Delhi – 110 001**
2. **Director (Transmission), Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi-110001**
3. **Chief Engineer (PSPA-I) and Member Secretary (NCT), Central Electricity Authority, 3rd Floor, Sewa Bhawan, R.K. Puram, New Delhi – 110066**
4. **Chief Operating Officer (COO), Central Transmission Utility of India Limited (CTUIL), 5th-10th Floor, Ircon International Tower-1, Sector-32, Gurugram-122001**
5. **Secretary, Central Electricity Regulatory Commission, 6th, 7th & 8th Floors, World Trade Center, Tower-B, Nauroji Nagar, New Delhi – 110029**

1. **Quoted Transmission Charges as per Annexure-21-Format For Financial Bid**

Quoted Transmission Charges: Rs.1,799.74 Million Per Annum



2. Scheduled COD of each Transmission Element and the Project as per Format 1 of Annexure-8 of RFP

S. No.	Name of the Transmission Element	Scheduled COD as per Gazette Notification	% of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring the commercial operation (COD) of the respective Element
1.	Establishment of Kakinada 765/400 kV, 3x1500 MVA substation (GIS) alongwith 240 MVar bus reactor.	30 months	100%	All the elements are interdependent and therefore shall be commissioned simultaneously
2.	LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation {with 240 MVar SLR at Kakinada GH end on Srikakulam – Kakinada section			
3.	± 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV GIS S/s with control switching arrangement for proposed 1x240 MVar bus reactor			

Scheduled COD for the Project: 30 months


Ref. 04/26-27/ITP-99/RFP

25.06.2026

To
Mr. Pankaj Pandey, ED (TBCB)
Power Grid Corporation of India Limited,
"Saudamini" Plot No 2, Sector 29,
Gurgaon-122001

E-mail ppandey@powergrid.in

Sub: Inter-State Transmission Scheme "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)" – Regarding extension of Letter of Intent (LoI).

Dear Sir,

This is with reference to Letter of Intent (LoI) issued on 12.06.2026 for establishment of subject transmission scheme. The Clause No. 2.15.2 of the RFP document stipulates that within ten (10) days of the issuance of the LoI, the selected bidder shall complete all the activities including the acquisition of SPV.

As the SPV is being transferred on 29.06.2026, the last date for completion of various activities under Clause No. 2.15.2 of the RFP document is extended from 22.06.2026 (10 days from LoI) to 29.06.2026.

Thanking you,

Yours faithfully,



(Naveen Phougat)
General Manager

पंजीकृत कार्यालय : प्रथम तल, "उर्जानिधि", 1 बाराखम्बा लेन, कनॉट प्लेस, नई दिल्ली-110001

Regd. Office : First Floor, "Urjanidhi", 1, Barakhamba Lane, Connaught Place, New Delhi-110001

कंपनी मुख्यालय : नौवाँ तल (ए विंग), स्टैट्समैन हाउस, कनॉट प्लेस, नई दिल्ली - 110001 दूरभाष : 011 - 23443900 फैक्स : 011 - 23443990

Corporate Office : 9th Floor (A Wing), Statesman House, Connaught Place, New Delhi - 110001 Phone : 011 - 23443900 Fax : 011 - 23443990

वेबसाइट / Website : www.pfcclindia.co.in 103 CIN : U74140DL2008GOI175858

TRANSMISSION SERVICE AGREEMENT

FOR

DEVELOPMENT AND OPERATION OF INTER-STATE TRANSMISSION SYSTEM

**FOR TRANSMISSION OF ELECTRICITY THROUGH TARIFF BASED COMPETITIVE
BIDDING FOR**

**TRANSMISSION SYSTEM FOR PROPOSED GREEN HYDROGEN / GREEN
AMMONIA PROJECTS IN KAKINADA AREA (PHASE-I)**

BETWEEN

**CENTRAL TRANSMISSION UTILITY OF INDIA LIMITED
(NODAL AGENCY)**

AND

KAKINADA I TRANSMISSION LIMITED

29th June, 2026



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Handwritten signature

Central Transmission Utility of India Limited

2



Kakinada I Transmission Limited



Certificate No. G0A2026F4623



GRN No. 152752614

Stamp Duty Paid : ₹ 101
(Rs. Only)

Penalty : ₹ 0

(Rs. Zero Only)

Deponent

Name: Central transmission Utility of india ltd

H.No/Floor : 2

Sector/Ward : 29

Landmark : Na

City/Village : Gurugram

District : Gurugram

State : Haryana

Phone : 98*****10



Purpose : Article 5 General Agreement to be submitted at Concerned office

THIS TRANSMISISON SERVICE AGREEMENT (hereinafter referred to as "TSA" or "Agreement" or "the Agreement" or "this Agreement") is made on the 29th [Insert day] of June [Insert month] of Two Thousand and Twenty Six.

BETWEEN:

The **CENTRAL TRANSMISSION UTILITY OF INDIA LIMITED**, a company incorporated under the Companies Act, 2013, having its registered office at **Plot No.2, Sector 29, Gurugram, Haryana 122001, India** & Correspondence address at **Floor No. 5-10, Tower 1, Plot No. 16, IRCON International Tower, Institutional Area, Sector 32, Gurugram, Haryana – 122001, India**, acting as a Nodal Agency (referred to as the "Nodal Agency"), which expression shall unless repugnant to the context or meaning thereof include its successors, and permitted assigns) as Party of the one part;

AND

KAKINADA I TRANSMISSION LIMITED incorporated under the Companies Act, 1956/ Companies Act, 2013 (as the case may be), having its registered office at **1st Floor, Urjanidhi, 1, Barakhamba Lane, Connaught Place, New Delhi-110001** (herein after referred to as "Transmission Service Provider" or "TSP" or "ISTS Licensee", which expression shall unless repugnant to the context or meaning thereof include its successors, and permitted assigns) as Party of the other part;

("Nodal Agency" and "TSP" are individually referred to as "Party" and collectively as the "Parties")



Central Transmission Utility of India Limited

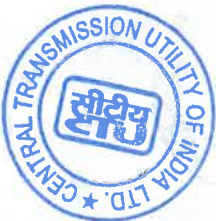
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AND WHEREAS:

- A) In accordance with the Bidding Guidelines, the Bid Process Coordinator (hereinafter referred to as BPC) had initiated a competitive e-reverse bidding process through issue of RFP for selecting a Successful Bidder to build, own, operate and transfer the Project comprising of the Elements mentioned in Schedule 1 (hereinafter referred to as the Project)
- B) Pursuant to the said e-reverse bidding process, the BPC has identified the Successful Bidder, who will be responsible to set up the Project on build, own, operate and transfer basis to provide Transmission Service in accordance with the terms of this Agreement and the Transmission License.
- C) The Selected Bidder have submitted the Contract Performance Guarantee and acquired one hundred percent (100%) of the equity shareholding of **KAKINADA I TRANSMISSION LIMITED**, along with all its related assets and liabilities in terms of the provisions of the Share Purchase Agreement.
- D) The TSP has agreed to make an application for a Transmission License to the Commission for setting up the Project on build, own, operate and transfer basis.
- E) The TSP has further agreed to make an application to the Commission for the adoption of the Transmission Charges under Section 63 of the Electricity Act, 2003, along with a certification from the Bid Evaluation Committee in accordance with the Bidding Guidelines issued by Ministry of Power, Government of India.
- F) The TSP has agreed to execute the agreement(s) required, if any, under Sharing Regulations within fifteen (15) days from the date of grant of Transmission License from the Commission.
- G) The TSP agrees to the terms and conditions laid down under Sharing Regulations, for making available the ISTS and charge the Transmission Charges in accordance with the terms and conditions of Sharing Regulations.
- H) The billing, collection and disbursement of the Transmission Charges by the CTU to the ISTS Licensee shall be governed as per Sharing Regulations.
- I) The terms and conditions stipulated in the Transmission License issued by the Commission to the TSP shall be applicable to this Agreement and the TSP agrees to comply with these terms and conditions. In case of inconsistency between the Transmission License terms & conditions and the conditions of this Agreement, the conditions stipulated in the Transmission License granted by the Commission shall prevail.



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NOW, THEREFORE, IN CONSIDERATION OF THE PREMISES AND MUTUAL AGREEMENTS, COVENANTS AND CONDITIONS SET FORTH HEREIN, IT IS HEREBY AGREED BY AND BETWEEN THE PARTIES HERETO AS FOLLOWS:

ARTICLE: 1

1. DEFINITIONS AND INTERPRETATIONS

1.1 Definitions:

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

The words/expressions when used in this Agreement shall have the respective meanings as specified below:

"Acquisition Price" shall have the same meaning as defined in the Share Purchase Agreement;

"Act" or **"Electricity Act"** or **"Electricity Act 2003"** shall mean the Electricity Act, 2003 and any amendments made to the same or any succeeding enactment thereof;

"Affiliate" shall mean a company that either directly or indirectly

- i. controls or
- ii. is controlled by or
- iii. is under common control with

a Bidding Company (in the case of a single company) or a Member (in the case of a Consortium) and **"control"** means ownership by one entity of at least twenty six percent (26%) of the voting rights of the other entity;

"Availability" in relation to the Project or in relation to any Element of the Project, for a given period shall mean the time in hours during that period the Project is capable to transmit electricity at its Rated Voltage and shall be expressed in percentage of total hours in the given period and shall be calculated as per the procedure contained in **Appendix –IV to Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024**, attached herewith in Schedule 6;



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"Bid" shall mean technical bid and financial bid submitted by the Bidder, in response to the RFP, in accordance with the terms and conditions of the RFP;

"Bid Deadline" shall mean the last date and time for submission of the Bid in response to RFP, as specified in the RFP;

"Bidding Company" shall refer to such single company that has made a Response to RFP for the Project;

"Bidding Consortium / Consortium" shall refer to a group of companies that has collectively made a Response to RFP for the Project;

"Bid Documents" or "Bidding Documents" shall mean the RFP, along with all attachments thereto or clarifications thereof;

"Bidding Guidelines" shall mean the "Tariff Based Competitive Bidding Guidelines for Transmission Service" and "Guidelines for Encouraging Competition in Development of Transmission Projects" issued by Government of India, Ministry of Power under Section – 63 of the Electricity Act as amended from time to time;

"Bid Process Coordinator" or "BPC" shall mean a person or its authorized representative as notified by the Government of India, responsible for carrying out the process for selection of Bidder who will acquire Transmission Service Provider;

"Bill" shall mean any bill raised by the CTU on the DICs to recover the Transmission Charges pursuant to the Sharing Regulations;

"Business Day" shall mean a day other than Sunday or a statutory holiday, on which the banks remain open for business in the State in which the Nodal Agency's registered office is located and the concerned TSP are located;

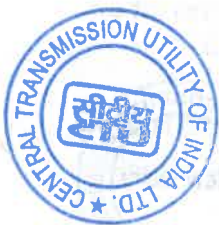
"CEA" shall mean the Central Electricity Authority constituted under Section -70 of the Electricity Act;

"Change in law" shall have the meaning ascribed thereto in Article 12;

"Commercial Operation Date" or "COD" shall mean the date as per Article 6.2;

"Commission" or "CERC" shall mean the Central Electricity Regulatory Commission referred to in sub-section (1) of Section 76 of the Electricity Act, 2003 or its successors and assigns;

"Competent Court of Law" shall mean the Supreme Court or any High Court, or any tribunal or any similar judicial or quasi-judicial body in India that has jurisdiction to adjudicate upon issues relating to the Project;



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"Connection Agreement" shall mean the agreement between the CTU or STU or any other concerned parties and the TSP, setting out the terms relating to the connection of the Project to the Inter-connection Facilities and use of the Inter State Transmission System as per the provisions of the IEGC, as the case may be;

"Consultation Period" shall mean the period of sixty (60) days or such longer period as the Parties may agree, commencing from the date of issue of a TSP's Preliminary Notice or a Nodal Agency's Preliminary Termination Notice, as provided in Article 13 of this Agreement, for consultation between the Parties to mitigate the consequence of the relevant event having regard to all the circumstances;

"Consents, Clearances and Permits" shall mean all authorizations, licenses, approvals, registrations, permits, waivers, privileges, acknowledgements, agreements, or concessions required to be obtained from or provided by any concerned authority for the development, execution and operation of Project including without any limitation for the construction, ownership, operation and maintenance of the Transmission Lines and/or sub-stations;

"Construction Period" shall mean the period from (and including) the Effective Date of the Transmission Service Agreement up to (but not including) the COD of the Element of the Project in relation to an Element and up to (but not including) the COD of the Project in relation to the Project;

"Contractors" shall mean the engineering, procurement, construction, operation & maintenance contractors, surveyors, advisors, consultants, designers, suppliers to the TSP and each of their respective sub-contractors (and each of their respective successors and permitted assigns) in their respective capacities as such;

"Contract Performance Guarantee" shall mean the irrevocable unconditional bank guarantee, or insurance surety bond or Payment on Order Instrument submitted and to be submitted by the TSP or by the Selected Bidder on behalf of the TSP to the Nodal Agency from a bank mentioned in Annexure 17 of the RFP, in the form attached here to as Schedule 8 (for bank guarantee) or Schedule-8A (for insurance surety bond issued by any of the insurance companies authorized by Insurance Regulatory and Development Authority of India), or Schedule-8B (for Payment on Order Instrument issued by PFC/REC/IREDA) in accordance with Article 3 of this Agreement and which shall include the additional bank guarantee or insurance surety bond or Payment on Order Instrument furnished by the TSP under this Agreement;

"Contract Year", for the purpose of payment of Transmission Charges, shall mean the period beginning on the COD, and ending on the immediately succeeding



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March 31 and thereafter each period of 12 months beginning on April 1 and ending on March 31 provided that the last Contract Year shall end on the last day of the term of the TSA;

"CTU" or **"Central Transmission Utility"** shall have same meaning as defined in the Electricity Act, 2003;

"Day" shall mean a day starting at 0000 hours and ending at 2400 hours;

"D/C" shall mean Double Circuit;

"Designated ISTS Customers" or **"DICs"** shall have the meaning as described in the Sharing Regulations;

"Dispute" shall mean any dispute or difference of any kind between the Parties, in connection with or arising out of this Agreement including any issue on the interpretation and scope of the terms of this Agreement as provided in Article 16;

"Effective Date" for the purposes of this Agreement, shall have the same meaning as per Article 2.1 of this Agreement;

"Electrical Inspector" shall mean a person appointed as such by the Government under sub-section (1) of Section 162 of the Electricity Act 2003 and also includes Chief Electrical Inspector;

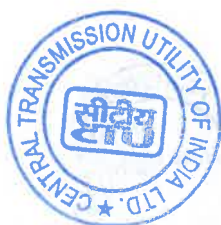
"Electricity Rules 2005" shall mean the rules framed pursuant to the Electricity Act 2003 and as amended from time to time;

"Element" shall mean each Transmission Line or each circuit of the Transmission Lines (where there are more than one circuit) or each bay of Sub-station or switching station or HVDC terminal or inverter station of the Project, including ICTs, Reactors, SVC, FSC, etc. forming part of the ISTS, which will be owned, operated and maintained by the concerned ISTS Licensee, and which has a separate Scheduled COD as per Schedule 2 of this Agreement and has a separate percentage for recovery of Transmission Charges on achieving COD as per Schedule 5 of this Agreement;

"Event of Default" shall mean the events as defined in Article 13 of this Agreement;

"Expiry Date" shall be the date which is thirty five (35) years from the COD of the Project;

"Financial Closure" shall mean the first Business Day on which funds are made available to the TSP pursuant to the Financing Agreements;



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"Financially Evaluated Entity" shall mean the company which has been evaluated for the satisfaction of the financial requirement set forth in the RFP;

"Financing Agreements" shall mean the agreements pursuant to which the TSP is to finance the Project including the loan agreements, security documents, notes, indentures, security agreements, letters of credit and other documents, as may be amended, modified, or replaced from time to time, but without in anyway increasing the liabilities of the Designated ISTS Customers / Nodal Agency;

"Financial Year" shall mean a period of twelve months at midnight Indian Standard Time (IST) between 1st April & 31st March;

"Force Majeure" and **"Force Majeure Event"** shall have the meaning assigned thereto in Article 11;

"GOI" shall mean Government of India;

"Grid Code" / "IEGC" shall mean the Grid Code specified by the Central Commission under Clause (h) of sub-section (1) of Section 79 of the Electricity Act;

"Independent Engineer" shall mean an agency/ company, appointed by Nodal Agency in accordance with the Guidelines for Encouraging Competition in Development of Transmission Projects.

"Indian Governmental Instrumentality" shall mean Government of India, Government of any State in India or any ministry, department, board, authority, agency, corporation, commission under the direct or indirect control of Government of India or any State Government or both, any political sub-division of any of them including any court or Commission or tribunal or judicial or quasi-judicial body in India but excluding the CTU, TSP and the Designated ISTS Customers;

"Insurances" shall mean the insurance cover to be obtained and maintained by the TSP in accordance with Article 9 of this Agreement;

"Interconnection Facilities" shall mean the facilities as may be set up for transmission of electricity through the use of the Project, on either one or both side of generating station's / CTU's / STU's / ISTS Licensee's / Designated ISTS Customer's substations (as the case may be) which shall include, without limitation, all other transmission lines, gantries, sub-stations and associated equipment's not forming part of the Project;

"ISTS Licensee" shall be the TSP under this Agreement, consequent to having been awarded a Transmission License by the CERC and shall be referred to as the TSP or the ISTS Licensee, as the context may require in this Agreement;



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“Law” or “Laws” in relation to this Agreement, shall mean all laws including electricity laws in force in India and any statute, ordinance, rule, regulation, notification, order or code, or any interpretation of any of them by an Indian Governmental Instrumentality having force of law and shall include all rules, regulations, decisions and orders of the Commission;

“Lead Member of the Bidding Consortium” or “Lead Member” shall mean a company who commits at least 26% equity stake in the Project, meets the technical requirement as specified in the RFP and so designated by other Member(s) in Bidding Consortium;

“Lenders” means the banks, financial institutions, multilateral funding agencies, non-banking financial companies registered with the Reserve Bank of India (RBI), insurance companies registered with the Insurance Regulatory & Development Authority (IRDA), pension funds regulated by the Pension Fund Regulatory & Development Authority (PFRDA), mutual funds registered with Securities & Exchange Board of India (SEBI), etc., including their successors and assigns, who have agreed on or before COD of the Project to provide the TSP with the debt financing described in the capital structure schedule, and any successor banks or financial institutions to whom their interests under the Financing Agreements may be transferred or assigned;

Provided that, such assignment or transfer shall not relieve the TSP of its obligations to the Nodal Agency under this Agreement in any manner and shall also does not lead to an increase in the liability of the Nodal Agency;

“Lenders Representative” shall mean the person notified by the Lender(s) in writing as being the representative of the Lender(s) or the Security Trustee and such person may from time to time be replaced by the Lender(s) pursuant to the Financing Agreements by written notice to the TSP;

“Letter of Intent” or “LOI” shall have the same meaning as in the RFP;

“Member in a Bidding Consortium / Member” shall mean each company in the Bidding Consortium;

“Month” shall mean a period of thirty (30) days from (and excluding) the date of the event;

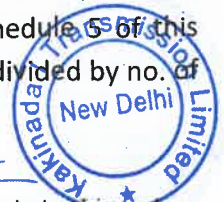
“Monthly Transmission Charges” for any Element of the Project, after COD of the Element till COD of the Project, and for the Project after COD of the Project, shall mean the amount of Transmission Charges as specified in Schedule 5 of this Agreement multiplied by no. of days in the relevant month and divided by no. of days in the year;



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“National Load Despatch Centre” shall mean the centre established as per sub-section (1) of Section 26 of the Electricity Act 2003;

“Nodal Agency” shall mean CTU, which shall execute and implement the Transmission Service Agreement (TSA);

Provided that while taking major decisions, CTU shall consult CEA on technical matters and any other matter it feels necessary.

“Notification” shall mean any notification, issued in the Gazette of India;

“Operating Period” for any Element of the Project shall mean the period from (and including) the COD of such Element of the Project, up to (and including) the Expiry Date and for the Project, shall mean the period from (and including) the COD of the Project, up to (and including) the Expiry Date;

“Parent Company” shall mean an entity that holds at least twenty six percent (26%) of the paid - up equity capital directly or indirectly in the Bidding Company or in the Member in a Bidding Consortium, as the case may be;

“Payment on Order Instrument” shall mean Letter of Undertaking from Indian Renewable Energy Development Agency Limited (IREDA) or Power Finance Corporation Limited (PFC) or REC Limited (REC) [the three non-banking financial institutions under Ministry of New & Renewable Energy (MNRE)/ Ministry of Power (MoP), to pay in case situation of default of Transmission Service Provider (TSP) in terms of tender conditions/Power Purchase Agreement (PPA) arises. Such Letter (s) will have same effect as that of a Bank Guarantee issued by any public any public sector bank. Such “Payment on Order instrument” would have terms and conditions similar to that of any Bank Guarantee given by any public sector bank and would promise to pay the Nodal Agency on demand within stipulated time. TSPs can seek such Letter(s) by offering due security to the above mentioned three non-banking financial institutions mentioned above (IREDA, PFC & REC). Nodal Agency shall not accept the instrument of ‘Letter of Undertaking’ as described above or in any other form, from any other non-banking financial institutions or bank, except IREDA, PFC & REC.

“Preliminary Termination Notice” shall mean a Nodal Agency’s Preliminary Termination Notice as defined in Article 13 of this Agreement;

“Project” shall mean **“Transmission system for proposed Green Hydrogen / Green Ammonia projects In Kakinada area (Phase-I)”**, as detailed in Schedule 1 of this Agreement;



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"Project Assets" shall mean all physical and other assets relating to and forming part of the Project including:

- (a) rights over the Site for substations, ROW for transmission lines;
- (b) tangible & intangible assets such as civil works and equipment including foundations, embankments, pavements, electrical systems, communication systems, relief centres, administrative offices, Sub-stations, software, tower and sub-stations designs etc;
- (c) project facilities situated on the Site;
- (d) all rights of the TSP under the project agreements;
- (e) financial assets, such as receivables, security deposits etc;
- (f) insurance proceeds; and
- (g) Applicable Permits and authorisations relating to or in respect of the Transmission System;"

"Project Execution Plan" shall mean the plan referred to in Article 3.1.3(c) hereof;

"Prudent Utility Practices" shall mean the practices, methods and standards that are generally accepted internationally from time to time by electric transmission utilities for the purpose of ensuring the safe, efficient and economic design, construction, commissioning, operation, repair and maintenance of the Project and which practices, methods and standards shall be adjusted as necessary, to take account of:

- (i) operation, repair and maintenance guidelines given by the manufacturers to be incorporated in the Project,
- (ii) the requirements of Law, and
- (iii) the physical conditions at the Site;
- (iv) the safety of operating personnel and human beings;

"Rated Voltage" shall mean voltage at which the Transmission System is designed to operate or such lower voltage at which the line is charged, for the time being, in consultation with the Central Transmission Utility;

"Rebate" shall have the meaning as ascribed to in Article 10.3 of this Agreement,



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"RFP" shall mean Request For Proposal dated **March 04, 2025** along with all schedules, annexures and RFP Project Documents attached thereto, issued by the BPC for tariff based competitive bidding process for selection of Bidder as TSP to execute the Project, including any modifications, amendments or alterations thereto;

"RFP Project Documents" shall mean the following documents to be entered into in respect of the Project, by the Parties to the respective agreements:

- a. Transmission Service Agreement,
- b. Share Purchase Agreement,
- c. Agreement(s) required under Sharing Regulations and
- d. Any other agreement as may be required;

"RLDC" shall mean the relevant Regional Load Dispatch Centre as defined in the Electricity Act, 2003, in the region(s) in which the Project is located;

"RPC" shall mean the relevant Regional Power Committee established by the Government of India for the specific Region(s) in accordance with the Electricity Act, 2003 for facilitating integrated operation of the Power System in that Region;

"Scheduled COD" in relation to an Element(s) shall mean the date(s) as mentioned in Schedule 2 as against such Element(s) and in relation to the Project, shall mean the date as mentioned in Schedule 2 as against such Project, subject to the provisions of Article 4.4 of this Agreement, or such date as may be mutually agreed among the Parties;

"Scheduled Outage" shall mean the final outage plan as approved by the RPC as per the provisions of the Grid Code;

"Selected Bid" shall mean the technical Bid and the Final Offer of the Selected Bidder submitted during e-reverse bidding, which shall be downloaded and attached in Schedule 7 on or prior to the Effective Date;

"Share Purchase Agreement" shall mean the agreement amongst **PFC Consulting Limited (PFCCL), KAKINADA I TRANSMISSION LIMITED** and the Successful Bidder for the purchase of one hundred (100%) per cent of the shareholding of the **KAKINADA I TRANSMISSION LIMITED** for the Acquisition Price, by the Successful Bidder on the terms and conditions as contained therein;



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"Sharing Regulations" shall mean the Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2020 and as amended from time to time;

"Site" in relation to a substation, switching station or HVDC terminal or inverter station, shall mean the land and other places upon which such station / terminal is to be established;

"SLDC" shall mean the State Load Despatch Centre established as per sub-section (1) of Section 31 of the Electricity Act 2003;

"STU" or "State Transmission Utility" shall be the Board or the Government company, specified as such by the State Government under sub-section (1) of Section 39 of the Electricity Act 2003;

"Successful Bidder" or "Selected Bidder" shall mean the Bidder selected pursuant to the RFP and who has to acquire one hundred percent (100%) equity shares of **KAKINADA I TRANSMISSION LIMITED**, along with all its related assets and liabilities, which will be responsible as the TSP to establish the Project on build, own, operate and transfer basis as per the terms of the TSA and other RFP Project Documents;

"TSP's Preliminary Notice" shall mean a notice issued by the TSP in pursuant to the provisions of Article 13.3 of this Agreement;

"Target Availability" shall have the meaning as ascribed hereto in Article 8.2 of this Agreement;

"Technically Evaluated Entity" shall mean the company which has been evaluated for the satisfaction of the technical requirement set forth in RFP;

"Termination Notice" shall mean a Nodal Agency's Termination Notice given by the Nodal Agency to the TSP pursuant to the provisions of Articles 3.3.2, 3.3.4, 4.4.2, 5.8, 13.2 and 13.3 of this Agreement for the termination of this Agreement;

"Term of Agreement" for the purposes of this Agreement shall have the meaning ascribed thereto in Article 2.2 of this Agreement;

"Transmission Charges" shall mean the Final Offer of the Selected Bidder during the e-reverse bidding and adopted by the Commission, payable to the TSP as per Sharing Regulations;

"Transmission License" shall mean the license granted by the Commission in accordance with the relevant regulations for grant of such license issued under the Electricity Act;

"Transmission Service" shall mean making the Project available as per the terms and conditions of this Agreement and Sharing Regulations;

"Unscheduled Outage" shall mean an interruption resulting in reduction of the Availability of the Element(s) / Project (as the case may be) that is not a result of a Scheduled Outage or a Force Majeure Event.

"Ultimate Parent Company" shall mean an entity which owns at least twenty six percent (26%) equity in the Bidding Company or Member of a Consortium, (as the case may be) and in the Technically Evaluated Entity and / or Financially Evaluated Entity (as the case may be) and such Bidding Company or Member of a Consortium, (as the case may be) and the Technically Evaluated Entity and / or Financially Evaluated Entity (as the case may be) shall be under the direct control or indirectly under the common control of such entity;

1.2 Interpretation:

Save where the contrary is indicated, any reference in this Agreement to:

"Agreement" shall be construed as including a reference to its Schedules, Appendices and Annexures;

"Rupee", "Rupees" and "Rs." shall denote lawful currency of India;

"crore" shall mean a reference to ten million (10,000,000) and a **"lakh"** shall mean a reference to one tenth of a million (1,00,000);

"encumbrance" shall be construed as a reference to a mortgage, charge, pledge, lien or other encumbrance securing any obligation of any person or any other type of preferential arrangement (including, without limitation, title transfer and retention arrangements) having a similar effect;

"holding company" of a company or corporation shall be construed as a reference to any company or corporation of which the other company or corporation is a subsidiary;

"indebtedness" shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;

"person" shall have the meaning as defined in Section 2 (49) of the Act;

"subsidiary" of a company or corporation (the holding company) shall be construed as a reference to any company or corporation:

- (i) which is controlled, directly or indirectly, by the holding company, or



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- (ii) more than half of the issued share capital of which is beneficially owned, directly or indirectly, by the holding company, or
- (iii) which is a subsidiary of another subsidiary of the holding company,

for these purposes, a company or corporation shall be treated as being controlled by another if that other company or corporation is able to direct its affairs and/or to control the composition of its board of directors or equivalent body;

"winding-up", "dissolution", "insolvency", or "reorganization" in the context of a company or corporation shall have the same meaning as defined in the Companies Act, 1956/ Companies Act, 2013 (as the case may be).

- 1.2.1 Words importing the singular shall include the plural and vice versa.
- 1.2.2 This Agreement itself or any other agreement or document shall be construed as a reference to this or to such other agreement or document as it may have been, or may from time to time be, amended, varied, novated, replaced or supplemented.
- 1.2.3 A Law shall be construed as a reference to such Law including its amendments or re-enactments from time to time.
- 1.2.4 A time of day shall, save as otherwise provided in any agreement or document be construed as a reference to Indian Standard Time.
- 1.2.5 Different parts of this Agreement are to be taken as mutually explanatory and supplementary to each other and if there is any inconsistency between or among the parts of this Agreement, they shall be interpreted in a harmonious manner so as to give effect to each part.
- 1.2.6 The tables of contents and any headings or sub-headings in this Agreement have been inserted for ease of reference only and shall not affect the interpretation of this Agreement.
- 1.2.7 All interest payable under this Agreement shall accrue from day to day and be calculated on the basis of a year of three hundred and sixty five (365) days.
- 1.2.8 The words "hereof" or "herein", if and when used in this Agreement shall mean a reference to this Agreement.
- 1.2.9 The contents of Schedule 7 shall be referred to for ascertaining accuracy and correctness of the representations made by the Selected Bidder in Article 17.2.1 hereof.



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ARTICLE: 2

2. EFFECTIVENESS AND TERM OF AGREEMENT

2.1 Effective Date:

This Agreement shall be effective from later of the dates of the following events:

- a. The Selected Bidder, on behalf of the TSP, has provided the Contract Performance Guarantee, as per terms of Article 3.1 of this Agreement; and
- b. The Selected Bidder has acquired for the Acquisition Price, one hundred percent (100%) of the equity shareholding of **PFC Consulting Limited** in **KAKINADA I TRANSMISSION LIMITED** along with all its related assets and liabilities as per the provisions of the Share Purchase Agreement. and
- c. The Agreement is executed and delivered by the Parties;

2.2 Term and Termination:

- 2.2.1 Subject to Article 2.2.3 and Article 2.4, this Agreement shall continue to be effective in relation to the Project until the Expiry Date, when it shall automatically terminate.
- 2.2.2 Post the Expiry Date of this Agreement, the TSP shall ensure transfer of Project Assets to CTU or its successors or an agency as decided by the Central Government at zero cost and free from any encumbrance and liability. The transfer shall be completed within 90 days of expiry of this Agreement failing which CTU shall be entitled to take over the Project Assets Suo moto.
- 2.2.3 This Agreement shall terminate before the Expiry Date in accordance with Article 13 or Article 3.3.2 or Article 3.3.4.

2.3 Conditions prior to the expiry of the Transmission License

In order to continue the Project beyond the expiry of the Transmission License, the TSP shall be obligated to make an application to the Commission at least two (2) years before the date of expiry of the Transmission License, seeking the Commission's approval for the extension of the term of the Transmission License up to the Expiry Date.

- 2.3.1 The TSP shall timely comply with all the requirements that may be laid down by the Commission for extension of the term of the Transmission License beyond the initial term of twenty-five (25) years & upto the Expiry Date and the TSP shall keep the Nodal Agency fully informed about the progress on its application for extension of the term of the Transmission License.

2.4 Survival:

The expiry or termination of this Agreement shall not affect any accrued rights, obligations/ roles and liabilities of the Parties under this Agreement, including the



right to receive liquidated damages as per the terms of this Agreement, nor shall it effect the survival of any continuing obligations/ roles for which this Agreement provides, either expressly or by necessary implication, which are to survive after the Expiry Date or termination including those under Articles 3.3.3, 3.3.5, Article 9.3 (Application of Insurance Proceeds), Article 11 (Force Majeure), Article 13 (Events of Default and Termination), Article 14 (Liability & Indemnification), Article 16 (Governing Law & Dispute Resolution), Article 19 (Miscellaneous).

2.5 Applicability of the provisions of this Agreement

- 2.5.1 For the purpose of Availability, Target Availability and the computation of Availability, Incentive, Penalty, the provisions provided in this Agreement shall apply and any future modifications in the relevant Rules and Regulations shall not be applicable for this Project.
- 2.5.2 For the purposes of this Agreement for ISTS systems developed under the tariff based competitive bidding framework, the provisions relating to the definitions (Availability and COD), Article 3 (Contract Performance Guarantee and Conditions Subsequent), Article 5 (Construction of the Project), Article 6 (Connection and Commissioning of the Project), Article 8 (Target Availability and calculation of Availability), Article 11 (Force Majeure), Article 12 (Change in Law), Article 13 (Event of Default), Article 14 (Indemnification), Article 15 (Assignment and Charges), Articles 16.1, 16.2 and 16.4 (Governing Laws and Dispute Resolution) and Article 17 (representation and warranties of the ISTS Licensee) of this agreement shall supersede the corresponding provisions under Sharing Regulations.



ARTICLE: 3

3. CONDITIONS SUBSEQUENT

3.1 Satisfaction of conditions subsequent by the TSP

3.1.1 Within ten (10) days from the date of issue of Letter of Intent, the Selected Bidder, shall:

- a. Provide the Contract Performance Guarantee, and
- b. Acquire, for the Acquisition Price, one hundred percent (100%) equity shareholding of **KAKINADA I TRANSMISSION LIMITED** from **PFC Consulting Limited**, who shall sell to the Selected Bidder, the equity shareholding of **KAKINADA I TRANSMISSION LIMITED**, along with all its related assets and liabilities.
- c. Execute this Agreement;

The TSP shall, within five (5) working days from the date of acquisition of SPV by the Selected Bidder, undertake to apply to the Commission for the grant of Transmission License and for the adoption of tariff as required under section-63 of the Electricity Act.

The Selected Bidder, on behalf of the TSP, will provide to the **Central Transmission Utility of India Limited** (being the Nodal Agency) the Contract Performance Guarantee for an amount of **Rs.37.25 Crore (Rupees Thirty Seven Crore Twenty Five Lakh Only)**.

3.1.2 The Contract Performance Guarantee shall be initially valid for a period up to three (3) months after the Scheduled COD of the Project and shall be extended from time to time to be valid for a period up to three (3) months after the COD of the Project. In case the validity of the Contract Performance Guarantee is expiring before the validity specified in this Article, the TSP shall, at least thirty (30) days before the expiry of the Contract Performance Guarantee, replace the Contract Performance Guarantee with another Contract Performance Guarantee or extend the validity of the existing Contract Performance Guarantee until the validity period specified in this Article.

3.1.3 The TSP agrees and undertakes to duly perform and complete the following activities within six (6) months from the Effective Date (except for c) below), unless such completion is affected due to any Force Majeure Event, or if any of the activities is specifically waived in writing by the Nodal Agency:

- a. To obtain the Transmission License for the Project from the Commission;
- b. To obtain the order for adoption of Transmission Charges by the Commission, as required under Section 63 of the Electricity Act 2003;



- c. To submit to the Nodal Agency, CEA & Independent Engineer, the Project Execution Plan, immediately after award of contract(s) and maximum within one hundred and twenty (120) days from the Effective Date. Also, an approved copy each of Manufacturing Quality Plan (MQP) and Field Quality Plan (FQP) would be submitted to Independent Engineer & Nodal Agency in the same time period. The TSP's Project Execution Plan should be in conformity with the Scheduled COD as specified in Schedule 2 of this Agreement, and shall bring out clearly the organization structure, time plan and methodology for executing the Project, award of major contracts, designing, engineering, procurement, shipping, construction, testing and commissioning to commercial operation;
- d. To submit to the Nodal Agency, CEA & Independent Engineer a detailed bar (GANTT) chart of the Project outlining each activity (taking longer than one Month), linkages as well as durations;
- e. To submit to the Nodal Agency, CEA & Independent Engineer detailed specifications of conductor meeting the functional specifications specified in RFP;
- f. To achieve Financial Closure;
- g. To provide an irrevocable letter to the Lenders duly accepting and acknowledging the rights provided to the Lenders under the provisions of Article 15.3 of this Agreement and all other RFP Project Documents;
- h. To award the Engineering, Procurement and Construction contract ("EPC contract") for the design and construction of the Project and shall have given to such Contractor an irrevocable notice to proceed; and
- i. To sign the Agreement(s) required, if any, under Sharing Regulations.

3.2 Recognition of Lenders' Rights by the Nodal Agency

- 3.2.1 The Nodal Agency hereby accepts and acknowledges the rights provided to the Lenders as per Article 15.3 of this Agreement and all other RFP Project Documents.

3.3 Consequences of non-fulfilment of conditions subsequent

- 3.3.1 If any of the conditions specified in Article 3.1.3 is not duly fulfilled by the TSP even within three (3) Months after the time specified therein, then on and from the expiry of such period and until the TSP has satisfied all the conditions specified in Article 3.1.3, the TSP shall, on a monthly basis, be liable to furnish to **Central Transmission Utility of India Limited (being the Nodal Agency)** additional Contract Performance Guarantee of **Rs.3.73 Crore (Rupees Three Crore Seventy Three Lakh Only)** within two (2) Business Days of expiry of every such Month. Such additional Contract Performance Guarantee shall be provided to **Central Transmission Utility of India Limited (being the Nodal Agency)** in the



manner provided in Article 3.1.1 and shall become part of the Contract Performance Guarantee and all the provisions of this Agreement shall be construed accordingly. **Central Transmission Utility of India Limited (being the Nodal Agency)** shall be entitled to hold and / or invoke the Contract Performance Guarantee, including such additional Contract Performance Guarantee, in accordance with the provisions of this Agreement.

3.3.2 Subject to Article 3.3.4, if:

- (i) the fulfilment of any of the conditions specified in Article 3.1.3 is delayed beyond nine (9) Months from the Effective Date and the TSP fails to furnish additional Contract Performance Guarantee to the Nodal Agency in accordance with Article 3.3.1 hereof; or
- (ii) the TSP furnishes additional Performance Guarantee to the Nodal Agency in accordance with Article 3.3.1 hereof but fails to fulfil the conditions specified in Article 3.1.3 within a period of twelve (12) months from the Effective Date,

the Nodal Agency shall have the right to terminate this Agreement, by giving a Termination Notice to the TSP, in writing, of at least seven (7) days, with a copy to CEA and the Lenders' Representative in order to enable the Lenders to exercise right of substitution in accordance with Article 15.3 of this Agreement.

3.3.3 If the Nodal Agency elects to terminate this Agreement as per the provisions of Article 3.3.2, the TSP shall be liable to pay to the Nodal Agency an amount of **Rs.37.25 Crore (Rupees Thirty Seven Crore Twenty Five Lakh Only)** as liquidated damages. The Nodal Agency shall be entitled to recover this amount of damages by invoking the Contract Performance Guarantee to the extent of liquidated damages, which shall be required by the Nodal Agency, and the balance shall be returned to TSP, if any.

It is clarified for removal of doubt that this Article shall survive the termination of this Agreement.

3.3.4 In case of inability of the TSP to fulfil the conditions specified in Article 3.1.3 due to any Force Majeure Event, the time period for fulfilment of the condition subsequent as mentioned in Article 3.1.3, may be extended for a period of such Force Majeure Event. Alternatively, if deemed necessary, this Agreement may be terminated by the Nodal Agency by giving a Termination Notice to the TSP, in writing, of at least seven (7) days, with a copy to CEA and the Lenders' Representative in order to enable the Lenders to exercise right of substitution in accordance with Article 15.3 of this Agreement and the Contract Performance Guarantee shall be returned as per the provisions of Article 6.5.1.

Provided, that due to the provisions of this Article 3.3.4, any increase in the time period for completion of conditions subsequent mentioned under Article 3.1.3, shall lead to an equal increase in the time period for the Scheduled COD. If the Scheduled COD is extended beyond a period of one hundred eighty (180) days due to the provisions of this Article 3.3.4, the TSP will be allowed to recover the interest cost



during construction corresponding to the period exceeding one hundred eighty (180) days by adjustment in the Transmission Charges in accordance with Schedule 9.

- 3.3.5 Upon termination of this Agreement as per Articles 3.3.2 and 3.3.4, the Nodal Agency may take steps to bid out the Project again.
- 3.3.6 The Nodal agency, on the failure of the TSP to fulfil its obligations, if it considers that there are sufficient grounds for so doing, apart from invoking the Contract Performance Guarantee under para 3.3.3 may also initiate proceedings for blacklisting the TSP as per provisions of Article 13.2 of TSA.

3.4 Progress Reports

The TSP shall notify the Nodal Agency and CEA in writing at least once a Month on the progress made in satisfying the conditions subsequent in Articles 3.1.3.



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Central Transmission Utility of India Limited

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Kakinada I Transmission Limited

ARTICLE: 4

4. DEVELOPMENT OF THE PROJECT

4.1 TSP's obligations in development of the Project:

Subject to the terms and conditions of this Agreement, the TSP at its own cost and expense shall observe, comply with, perform, undertake and be responsible:

- a. for procuring and maintaining in full force and effect all Consents, Clearances and Permits, required in accordance with Law for development of the Project;
- b. for financing, constructing, owning and commissioning each of the Element of the Project for the scope of work set out in Schedule 1 of this Agreement in accordance with:
 - i. the Electricity Act and the Rules made thereof;
 - ii. the Grid Code;
 - iii. the CEA Regulations applicable, and as amended from time to time, for Transmission Lines and sub-stations:
 - the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007;
 - Central Electricity Authority (Technical Standards for construction of Electrical Plants and Electric Lines) Regulation, 2010;
 - Central Electricity Authority (Grid Standard) Regulations, 2010;
 - Central Electricity Authority (Safety requirements for construction, operation and maintenance of Electrical Plants and Electrical Lines) Regulation, 2011;
 - Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulation, 2010;
 - Central Electricity Authority (Technical Standards for Communication System in Power System Operation) Regulations, 2020.
 - iv. Safety/ security Guidelines laid down by the Government;
 - v. Prudent Utility Practices, relevant Indian Standards and the Law;



Transmission Service Agreement

not later than the Scheduled COD as per Schedule 2 of this Agreement;

- c. for entering into a Connection Agreement with the concerned parties in accordance with the Grid Code.
- d. for owning the Project throughout the term of this Agreement free and clear of any encumbrances except those expressly permitted under Article 15 of this Agreement;
- e. to co-ordinate and liaise with concerned agencies and provide on a timely basis relevant information with regard to the specifications of the Project that may be required for interconnecting the Project with the Interconnection Facilities;
- f. for providing all assistance to the Arbitrators as they may require for the performance of their duties and responsibilities;
- g. to provide to the Nodal Agency and CEA, on a monthly basis, progress reports with regard to the Project and its execution (in accordance with prescribed form) to enable the CEA to monitor and co-ordinate the development of the Project matching with the Interconnection Facilities;
- h. to comply with Ministry of Power order No. 25-11/6/2018 – PG dated 02.07.2020 as well as other Guidelines issued by Govt. of India pertaining to this;
- i. to procure the products associated with the Transmission System as per provisions of Public Procurement (Preference to Make in India) orders issued by Ministry of Power vide orders No. P45021/2/2017-PP (BE-II)-Part (4) Vol.II dated 19.07.2024 for transmission sector, as amended from time to time read with Department for Promotion of Industry and Internal Trade (DPIIT) orders in this regard (Procuring Entity as defined in above orders shall deemed to have included Selected Bidder and/ or TSP).

Also, to comply with Department of Expenditure, Ministry of Finance vide OM No. F.7/10/2021-PPD (1) dated 23.02.2023, as amended from time to time, regarding public procurement from a bidder of a country, which shares land border with India;

- j. to submit to Nodal Agency information in the prescribed format [To be devised by Nodal Agency] for ensuring compliance to Article 4.1(a) above.



- k. to comply with all its obligations undertaken in this Agreement.

4.2 Roles of the Nodal Agency in implementation of the Project:

- 4.2.1 Subject to the terms and conditions of this Agreement, the Nodal Agency shall be the holder and administrator of this Agreement and shall inter alia:
- a. appoint an Independent Engineer within 90 days of the Effective Date
 - b. provide letters of recommendation to the concerned Indian Governmental Instrumentality, as may be requested by the TSP from time to time, for obtaining the Consents, Clearances and Permits required for the Project;
 - c. coordinate among TSP and upstream/downstream entities in respect of Interconnection Facilities; and
 - d. monitor the implementation of the Agreement and take appropriate action for breach thereof including revocation of guarantees, cancellation of Agreement, blacklisting etc
 - e. provide all assistance to the Arbitrators as required for the performance of their duties and responsibilities; and
 - f. perform any other responsibility (ies) as specified in this Agreement.

4.3 Time for Commencement and Completion:

- a. The TSP shall take all necessary steps to commence work on the Project from the Effective Date of the Agreement and shall achieve Scheduled COD of the Project in accordance with the time schedule specified in Schedule 2 of this Agreement;
- b. The COD of each Element of the Project shall occur no later than the Scheduled COD or within such extended time to which the TSP shall be entitled under Article 4.4 hereto.

4.4 Extension of time:

- 4.4.1 In the event that the TSP is unable to perform its obligations for the reasons solely attributable to the Nodal Agency, the Scheduled COD shall be extended, by a 'day to day' basis, subject to the provisions of Article 13.



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4.4.2 In the event that an Element or the Project cannot be commissioned by its Scheduled COD on account of any Force Majeure Event as per Article 11, the Scheduled COD shall be extended, by a 'day to day' basis for a period of such Force Majeure Event. Alternatively, if deemed necessary, the Nodal Agency may terminate the Agreement as per the provisions of Article 13.4 by giving a Termination Notice to the TSP, in writing, of at least seven (7) days, with a copy to CEA and the Lenders' Representative in order to enable the Lenders to exercise right of substitution in accordance with Article 15.3 of this Agreement.

4.4.3 If the Parties have not agreed, within thirty (30) days after the affected Party's performance has ceased to be affected by the relevant circumstance, on how long the Scheduled COD should be deferred by, any Party may raise the Dispute to be resolved in accordance with Article 16.

4.5 Metering Arrangements:

4.5.1 The TSP shall comply with all the provisions of the IEGC and the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 as amended from time to time, with regard to the metering arrangements for the Project. The TSP shall fully cooperate with the CTU / STU / RLDC and extend all necessary assistance in taking meter readings.

4.6 Interconnection Facilities:

4.6.1 Subject to the terms and conditions of this Agreement, the TSP shall be responsible for connecting the Project with the interconnection point(s) specified in Schedule 1 of this Agreement. The Interconnection Facilities shall be developed as per the scope of work and responsibilities assigned in Schedule 1 of this Agreement. The Nodal Agency shall be responsible for coordinating to make available the Interconnection Facilities.

4.6.2 In order to remove any doubts, it is made clear that the obligation of the TSP within the scope of the project is to construct the Project as per Schedule-1 of this Agreement and in particular to connect it to the Interconnection Facilities as specified in this Agreement.



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Central Transmission Utility of India Limited



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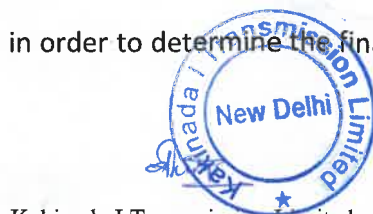
Kakinada I Transmission Limited

ARTICLE: 5

5. CONSTRUCTION OF THE PROJECT

5.1 TSP's Construction Responsibilities:

- 5.1.1 The TSP, at its own cost and expense, shall be responsible for designing, constructing, erecting, testing and commissioning each Element of the Project by the Scheduled COD in accordance with the Regulations and other applicable Laws specified in Article 4.1 of this Agreement.
- 5.1.2 The TSP acknowledges and agrees that it shall not be relieved from any of its obligations under this Agreement or be entitled to any extension of time or any compensation whatsoever by reason of the unsuitability of the Site or Transmission Line route(s).
- 5.1.3 The TSP shall be responsible for obtaining all Consents, Clearances and Permits related but not limited to road / rail / river / canal / power line / crossings, Power and Telecom Coordination Committee (PTCC), defence, civil aviation, right of way / way-leaves and environmental & forest clearances from relevant authorities required for developing, financing, constructing, maintaining/ renewing all such Consents, Clearances and Permits in order to carry out its obligations under this Agreement in general and shall furnish to the Nodal Agency such copy/ies of each Consents, Clearances and Permits, on demand. Nodal Agency shall provide letters of recommendation to the concerned Indian Governmental Instrumentality, as may be requested by the TSP from time to time, for obtaining the Consents, Clearances and Permits required for the Project.
- 5.1.4 The TSP shall be responsible for:
- a) **Acquisition of land for location specific substations, switching stations or HVDC terminal or inverter stations. Also, the actual location of Greenfield substations (Switching Stations or HVDC Terminal or Inverter Stations) in the scope of TSP:**
 - **For Generation Pooling Substation shall not be beyond 3 Km radius of the location proposed by BPC in their survey report.**
 - **For Load Serving Substation within the scope of TSP shall not be beyond 5 Km radius of the location proposed by the BPC in their Survey Report.**
 - **For an Intermediate Substation shall not be beyond 10 Km radius of the location proposed by the BPC in their Survey Report.**
 - b) final selection of Site including its geo-technical investigation
 - c) Survey and geo-technical investigation of line route in order to determine the final route of the Transmission Lines;



- d) Seeking access to the Site and other places where the Project is being executed, at its own risk and costs, including payment of any crop, tree compensation or any other compensation as may be required.

5.1.5 In case the Project involves any resettlement and rehabilitation, the resettlement and rehabilitation package will be implemented by the State Government authorities, for which the costs is to be borne by the TSP and no changes would be allowed in the Transmission Charges on account of any variation in the resettlement and rehabilitation cost. The TSP shall provide assistance on best endeavour basis, in implementation of the resettlement and rehabilitation package, if execution of such package is in the interest of expeditious implementation of the Project and is beneficial to the Project affected persons.

5.2 Appointing Contractors:

- 5.2.1 The TSP shall conform to the requirements as provided in this Agreement while appointing Contractor(s) for procurement of goods & services.
- 5.2.2 The appointment of such Contractor(s) shall neither relieve the TSP of any of its obligations under this Agreement nor make the Nodal Agency liable for the performance of such Contractor(s).

5.3 Monthly Progress Reporting:

The TSP shall provide to the CEA, Nodal Agency & Independent Engineer, on a monthly basis, progress reports along with likely completion date of each Element with regard to the Project and its execution (in accordance with prescribed form). The Nodal Agency/ CEA shall monitor the development of the Project for its timely completion for improving and augmenting the electricity system as a part of its statutory responsibility.

5.4 Quality of Workmanship:

The TSP shall ensure that the Project is designed, built and completed in a good workmanship using sound engineering and construction practices, and using only materials and equipment that are new and manufactured as per the MQP and following approved FQP for erection, testing & commissioning and complying with Indian /International Standards such that, the useful life of the Project will be at least thirty five (35) years from the COD of the Project.

The TSP shall ensure that all major substation equipment / component (e.g. transformers, reactors, Circuit Breakers, Instrument Transformers (IT), Surge Arresters (SA), Protection relays, clamps & connectors etc.), equipment in terminal stations of HVDC installations including Thyristor/ IGBT valves, Converter Transformers, smoothing reactors, Transformer bushings and wall bushings, GIS bus



ducts, towers and gantry structures and transmission towers or poles and line materials (conductors, earthwire, OPGW, insulator, accessories for conductors, OPGW & earthwires, hardware fittings for insulators, aviation lights etc), facilities and system shall be designed, constructed and tested (Type test, Routine tests, Factory Acceptance Test (FAT)) in accordance with relevant CEA Regulations and Indian Standards. In case Indian Standards for any particular equipment/ system/ process is not available, IEC/ IEEE or equivalent International Standards and Codes shall be followed.

5.5 Progress Monitoring & Quality Assurance:

- 5.5.1 The Project Execution Plan submitted by the TSP in accordance with Article 3.1.3 c) shall comprise of detailed schedule of all the equipment/items /materials required for the Project, right from procurement of raw material till the dispatch from works and receipt at the site. Further, it should also include various stages of the construction schedule up to the commissioning of the Project.
- 5.5.2 Nodal Agency, CEA & Independent Engineer shall have access at all reasonable times to the Site and to the Manufacturer's works and to all such places where the Project is being executed.
- 5.5.3 Independent Engineer shall ensure conformity of the conductor specifications with the functional specifications specified in RFP.
- 5.5.4 The Independent Engineer shall monitor the following during construction of the Project:
- a) Quality of equipment, material, foundation, structures and workmanship etc. as laid down in Article 5.4 and 6.1.4 of the TSA. Specifically, quality of Sub-station equipment, transmission line material and workmanship etc. would be checked in accordance with the Article 5.4.
 - b) Progress in the activities specified in Condition Subsequent
 - c) Verification of readiness of the elements including the statutory clearances & completion of civil works, fixing of all components and finalisation of punch points (if any) prior to charging of the elements
 - d) Progress of construction of substation and Transmission Lines
- 5.5.5 The progress shall be reviewed by the Independent Engineer against the Project Execution Plan. The Independent Engineer shall prepare its report on monthly basis and submit the same to Nodal Agency highlighting the progress achieved till the end of respective month vis-à-vis milestone activities, areas of concern, if any, which may result in delay in the timely completion of the Project. Based on the progress, Nodal



Agency and/ or CEA shall issue written instructions to the TSP to take corrective measures, as may be prudent for the timely completion of the Project. In case of any deficiency, the Nodal Agency would be at liberty to take action in accordance with the procedure of this Agreement.

- 5.5.6 For any delay in commissioning any critical Element(s), as identified in Schedule 1 & Schedule 2 of this Agreement, beyond a period of 45 days shall lead to a sequestration of 10% of the Contract Performance Guarantee.

5.6 Site regulations and Construction Documents

The TSP shall abide by the Safety Rules and Procedures as mentioned in Schedule 3 of this Agreement

The TSP shall retain at the Site and make available for inspection at all reasonable times, copies of the Consents, Clearances and Permits, construction drawings and other documents related to construction.

5.7 Supervision of work:

The TSP shall provide all necessary superintendence for execution of the Project and its supervisory personnel shall be available to provide full-time superintendence for execution of the Project. The TSP shall provide skilled personnel who are experienced in their respective fields.

5.8 Remedial Measures:

The TSP shall take all necessary actions for remedying the shortfall in achievement of timely progress in execution of the Project, if any, as intimated by the Independent Engineer and/ or CEA and/ or the Nodal Agency. However, such intimation by the Independent Engineer and/ or CEA and/ or the Nodal Agency and the subsequent effect of such remedial measures carried out by the TSP shall not relieve the TSP of its obligations in the Agreement. Independent Engineer and/ or CEA and/ or the Nodal Agency may carry out random inspections during the Project execution, as and when deemed necessary by it. If the shortfalls as intimated to the TSP are not remedied to the satisfaction of the CEA and/ or the Nodal Agency, this Agreement may be terminated by the Nodal Agency by giving a Termination Notice to the TSP, in writing, of at least seven (7) days, with a copy to CEA and the Lenders' Representative in order to enable the Lenders to exercise right of substitution in accordance with Article 15.3 of this Agreement.



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ARTICLE: 6

6. CONNECTION AND COMMISSIONING OF THE PROJECT

6.1 Connection with the Inter-Connection Facilities:

6.1.1 The TSP shall give the RLDC(s), CTU, / STU, as the case may be, and any other agencies as required, at least sixty (60) days advance written notice of the date on which it intends to connect an Element of the Project, which date shall not be earlier than its Scheduled COD or Schedule COD extended as per Article 4.4.1 & 4.4.2 of this Agreement, unless mutually agreed to by Parties. Further, any preponing of COD of any element prior to Scheduled COD must be approved by the Nodal Agency.

6.1.2 The RLDC / SLDC (as the case may be) or the CTU / STU (as the case may be), for reasonable cause, including non-availability of Interconnection Facilities as per Article 4.2, can defer the connection for up to fifteen (15) days from the date notified by the TSP pursuant to Article 6.1.1, if it notifies to the TSP in writing, before the date of connection, of the reason for the deferral and when the connection is to be rescheduled. However, no such deferment on one or more occasions would be for more than an aggregate period of thirty (30) days. Further, the Scheduled COD would be extended as required, for all such deferments on "day to day" basis.

6.1.3 Subject to Articles 6.1.1 and 6.1.2, any Element of Project may be connected with the Interconnection Facilities when:

- a. it has been completed in accordance with this Agreement and the Connection Agreement;
- b. it meets the Grid Code, Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 as amended from time to time and all other Indian legal requirements, and
- c. The TSP has obtained the approval in writing of the Electrical Inspector certifying that the Element is ready from the point of view of safety of supply and can be connected with the Interconnection Facilities.
- d. It has satisfactorily met all the testing requirements as per Articles 6.1.4.

6.1.4 Site Acceptance Test (SAT)/ pre-commissioning tests of all major substation equipment, component, system, facilities shall be successfully carried out before commissioning. The Type tests, FAT and SAT reports should be available at the substation / terminal station of HVDC installations for ready reference of operation and maintenance staff and has to be made available to the Independent Engineer



appointed for quality monitoring or their authorised representatives, as and when they wish to examine the same.

6.2 Commercial Operation:

- 6.2.1 An Element of the Project shall be declared to have achieved COD twenty four (24) hours following the connection of the Element with the Interconnection Facilities pursuant to Article 6.1 or seven (7) days after the date on which it is declared by the TSP to be ready for charging but is not able to be charged for reasons not attributable to the TSP subject to Article 6.1.2.

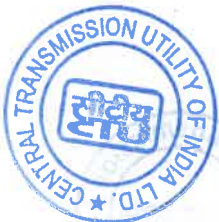
Provided that an Element shall be declared to have achieved COD only after all the Element(s), if any, which are pre-required to have achieved COD as defined in Schedule 2 of this Agreement, have been declared to have achieved their respective COD.

- 6.2.2 Once any Element of the Project has been declared to have achieved deemed COD as per Article 6.2.1 above, such Element of the Project shall be deemed to have Availability equal to the Target Availability till the actual charging of the Element and to this extent, TSP shall be eligible for the Monthly Transmission Charges applicable for such Element.

6.3 Compensation for Direct Non Natural Force Majeure Event or Indirect Non Natural Force Majeure Event or Natural Force Majeure Event (affecting the Nodal Agency)

- 6.3.1 If the TSP is otherwise ready to connect the Element(s) of the Project and has given due notice, as per provisions of Article 6.1.1, to the concerned agencies of the date of intention to connect the Element(s) of the Project, where such date is not before the Scheduled COD, but is not able to connect the Element(s) of the Project by the said date specified in the notice, due to Direct Non Natural Force Majeure Event or Indirect Non Natural Force Majeure Event or Natural Force Majeure Event affecting the Nodal Agency, provided such Direct Non Natural Force Majeure Event or Indirect Non Natural Force Majeure Event or Natural Force Majeure Event affecting the Nodal Agency has continued for a period of more than three (3) continuous or non-continuous Months, the TSP shall, until the effects of the Direct Non Natural Force Majeure Event or of Indirect Non Natural Force Majeure Event or Natural Force Majeure Event affecting the Nodal Agency no longer prevent the TSP from connecting the Element(s) of the Project, be deemed to have achieved COD relevant to that date and to this extent, be deemed to have been providing Transmission Service with effect from the date notified, and shall be treated as follows:

- a. In case of delay due to Direct Non Natural Force Majeure Event, TSP is entitled for Transmission Charges calculated on Target Availability for the period of such events in excess of three (3) continuous or non-continuous



Transmission Service Agreement

Months in the manner provided in (c) below.

- b. In case of delay due to Indirect Non Natural Force Majeure Event or Natural Force Majeure Event affecting the Nodal Agency, TSP is entitled for payment for debt service which is due under the Financing Agreements, subject to a maximum of Transmission Charges calculated on Target Availability, for the period of such events in excess of three (3) continuous or non-continuous Months in the manner provided in (c) below.
- c. In case of delay due to Direct Non Natural Force Majeure Event or Indirect Non Natural Force Majeure Event or Natural Force Majeure Event affecting the Nodal Agency, the TSP is entitled for payments mentioned in (a) and (b) above, after commencement of Transmission Service, in the form of an increase in Transmission Charges. These amounts shall be paid from the date, being the later of a) the date of cessation of such Indirect Non Natural Force Majeure Event or Natural Force Majeure Event affecting the Nodal Agency and b) the completion of sixty (60) days from the receipt of the Financing Agreements by the Nodal Agency from the TSP.

Provided such increase in Transmission Charges shall be so as to put the TSP in the same economic position as the TSP would have been in case the TSP had been paid amounts mentioned in (a) and (b) above in a situation where the Force Majeure Event had not occurred.

For the avoidance of doubt, it is clarified that the charges payable under this Article 6.3.1 shall be recovered as per Sharing Regulations.

6.4 Liquidated Damages for Delay in achieving COD of Project:

- 6.4.1 If the TSP fails to achieve COD of any Element of the Project or the Project, by the Element's / Project's Scheduled COD or such Scheduled COD as extended under Articles 4.4.1 and 4.4.3, then the TSP shall pay to the Nodal Agency, a sum equivalent to 3.33% of Monthly Transmission Charges applicable for the Element of the Project [in case where no Elements have been defined, to be on the Project as a whole] / Project, for each day of delay up to sixty (60) days of delay and beyond that time limit, at the rate of five percent (5%) of the Monthly Transmission Charges applicable to such Element / Project, as liquidated damages for such delay and not



as penalty, without prejudice to any rights of the Nodal Agency under the Agreement.

- 6.4.2 The TSP's maximum liability under this Article 6.4 shall be limited to the amount of liquidated damages calculated in accordance with Article 6.4.1 for and up to six (6) months of delay for the Element or the Project.

Provided that, in case of failure of the TSP to achieve COD of the Element of the Project even after the expiry of six (6) months from its Scheduled COD, the provisions of Article 13 shall apply.

- 6.4.3 The TSP shall make payment to the Nodal Agency of the liquidated damages calculated pursuant to Article 6.4.1 within ten (10) days of the earlier of:

- a. the date on which the applicable Element achieves COD; or
- b. the date of termination of this Agreement.

The payment of such damages shall not relieve the TSP from its obligations to complete the Project or from any other obligation and liabilities under the Agreement.

- 6.4.4 If the TSP fails to pay the amount of liquidated damages to the Nodal Agency within the said period of ten (10) days, the Nodal Agency shall be entitled to recover the said amount of the liquidated damages by invoking the Contract Performance Guarantee. If the then existing Contract Performance Guarantee is for an amount which is less than the amount of the liquidated damages payable by the TSP to the Nodal Agency under this Article 6.3 and the TSP fails to make payment of the balance amount of the liquidated damages not covered by the Contract Performance Guarantee, then such balance amount shall be deducted from the Transmission Charges payable to the TSP. The right of the Nodal Agency to encash the Contract Performance Guarantee is without prejudice to the other rights of the Nodal Agency under this Agreement.

- 6.4.5 For avoidance of doubt, it is clarified that amount payable by TSP under this Article is over and above the penalty payable by TSP under Article 5.5.6 of this Agreement.

6.5 Return of Contract Performance Guarantee

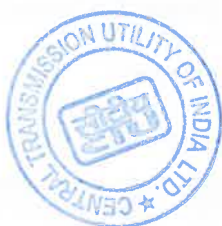
- 6.5.1 The Contract Performance Guarantee as submitted by TSP in accordance with Article 3.1.1 shall be released by the Nodal Agency within three (3) months from the COD of the Project. In the event of delay in achieving Scheduled COD of any of the Elements by the TSP (otherwise than due to reasons as mentioned in Article 3.1.3 or Article 11) and consequent part invocation of the Contract Performance Guarantee by the Nodal Agency, Nodal Agency shall release the Contract Performance



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Guarantee, if any remaining unadjusted, after the satisfactory completion by the TSP of all the requirements regarding achieving the Scheduled COD of the remaining Elements of the Project. It is clarified that the Nodal Agency shall also return / release the Contract Performance Guarantee in the event of (i) applicability of Article 3.3.2 to the extent the Contract Performance Guarantee is valid for an amount in excess of **Rs.37.25 Crore (Rupees Thirty Seven Crore Twenty Five Lakh Only)**, or (ii) termination of this Agreement by the Nodal Agency as mentioned under Article 3.3.4 of this Agreement.

6.5.2 The release of the Contract Performance Guarantee shall be without prejudice to other rights of the Nodal Agency under this Agreement.



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ARTICLE: 7

7. OPERATION AND MAINTENANCE OF THE PROJECT

7.1 Operation and Maintenance of the Project:

The TSP shall be responsible for ensuring that the Project is operated and maintained in accordance with the regulations made by the Commission and CEA from time to time and provisions of the Act.



ARTICLE: 8

8. AVAILABILITY OF THE PROJECT

8.1 Calculation of Availability of the Project:

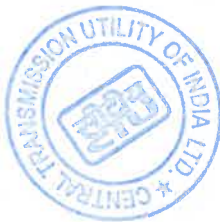
Calculation of Availability for the Elements and for the Project, as the case may be, shall be as per **Appendix –IV to Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024**, as applicable on the Bid Deadline and as appended in Schedule 6 of this Agreement.

8.2 Target Availability:

The Target Availability of each Element and the Project shall be **98%**.

Payment of monthly Transmission charges based on actual availability will be calculated as per para 1.2 of Schedule 4 of this Agreement.

If the availability of any Element or the Project is below the Target Availability, for six consecutive months in a Contract Year, the DIC(s) or the Nodal Agency may issue a show cause notice to the TSP, asking them to show cause as to why the Transmission Service Agreement be not terminated, and if no satisfactory cause is shown it may terminate the Agreement. If the Nodal Agency is of the opinion that the transmission system is of critical importance, it may carry out or cause to carry the operation and maintenance of transmission system at the risk and cost of TSP.



ARTICLE: 9

9. INSURANCES

9.1 Insurance:

9.1.1 The TSP shall effect and maintain or cause to be effected and maintained during the Construction Period and the Operating Period, adequate Insurances against such risks, with such deductibles including but not limited to any third party liability and endorsements and co-beneficiary/insured, as may be necessary under

- a. any of the Financing Agreements,
- b. the Laws, and
- c. in accordance with Prudent Utility Practices.

The Insurances shall be taken effective from a date prior to the date of the Financial Closure till the Expiry Date.

9.2 Evidence of Insurance cover:

9.2.1 The TSP shall furnish to the Nodal Agency copies of certificates and policies of the Insurances, as and when the Nodal Agency may seek from the TSP as per the terms of Article 9.1

9.3 Application of Insurance Proceeds:

9.3.1 Save as expressly provided in this Agreement, the policies of Insurances and the Financing Agreements, the proceeds of any insurance claim made due to loss or damage to the Project or any part of the Project shall be first applied to reinstatement, replacement or renewal of such loss or damage.

9.3.2 If a Natural Force Majeure Event renders the Project no longer economically and technically viable and the insurers under the Insurances make payment on a "total loss" or equivalent basis, the portion of the proceeds of such Insurance available to the TSP (after making admissible payments to the Lenders as per the Financing Agreements) shall be allocated only to the TSP. Nodal Agency and / or concerned Designated ISTS Customers shall have no claim on such proceeds of the Insurance.

9.3.3 Subject to the requirements of the Lenders under the Financing Agreements, any dispute or difference between the Parties as to whether the Project is no longer economically and technically viable due to a Force Majeure Event or whether that event was adequately covered in accordance with this Agreement by the Insurances shall be determined in accordance with Article 16.

9.4 Effect on liability of the Nodal Agency / Designated ISTS Customers

9.4.1 The Nodal Agency and / or the Designated ISTS Customers shall have no financial obligations or liability whatsoever towards the TSP in respect of this Article 9.



ARTICLE: 10

10. BILLING AND PAYMENT OF TRANSMISSION CHARGES

10.1 Subject to provisions of this Article 10, the Monthly Transmission Charges shall be paid to the TSP, in Indian Rupees, on monthly basis as per the provisions of the Sharing Regulations, from the date on which an Element(s) has achieved COD until the Expiry Date of this Agreement, unless terminated earlier and in line with the provisions of Schedule 4 of this Agreement.

10.2 Calculation of Monthly Transmission Charges:

The Monthly Transmission Charges for each Contract Year including Incentive & Penalty payment shall be calculated in accordance with the provisions of Schedule 4 of this Agreement.

10.3 Rebate & Late Payment Surcharge:

The rebate and late payment surcharge shall be governed as per Sharing Regulations.

10.4 Disputed Bills, Default in payment by the Designated ISTS Customers & Annual Reconciliation:

Any Disputed Bill, Default in payment by the Designated ISTS Customers & Annual Reconciliation shall be governed as per Sharing Regulations.



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ARTICLE: 11

11. FORCE MAJEURE

11.1 Definitions

11.1.1 The following terms shall have the meanings given hereunder.

11.2 Affected Party

11.2.1 An Affected Party means any Party whose performance has been affected by an event of Force Majeure.

11.2.2 Any event of Force Majeure shall be deemed to be an event of Force Majeure affecting the TSP only if the Force Majeure event affects and results in, late delivery of machinery and equipment for the Project or construction, completion, commissioning of the Project by Scheduled COD and/or operation thereafter;

11.3 Force Majeure

A 'Force Majeure' means any event or circumstance or combination of events and circumstances including those stated below that wholly or partly prevents or unavoidably delays an Affected Party in the performance of its obligations/ roles under this Agreement, but only if and to the extent that such events or circumstances are not within the reasonable control, directly or indirectly, of the Affected Party and could not have been avoided if the Affected Party had taken reasonable care or complied with Prudent Utility Practices:

a) Natural Force Majeure Events:

- i. act of God, including, but not limited to drought, fire and explosion (to the extent originating from a source external to the Site), earthquake, volcanic eruption, landslide, flood, cyclone, typhoon, tornado, or exceptionally adverse weather conditions, which are in excess of the statistical measures for the last hundred (100) years; and
- ii. epidemic/ pandemic notified by Indian Governmental Instrumentality.

b) Non-Natural Force Majeure Events:

- i. Direct Non-Natural Force Majeure Events
 - Nationalization or compulsory acquisition by any Indian Governmental Instrumentality of any material assets or rights of the Affected Party; or
 - the unlawful, unreasonable or discriminatory revocation, or



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refusal to renew, any Consents, Clearances and Permits required by the Affected Party to perform their obligations/ roles under the RFP Project Documents or any unlawful, unreasonable or discriminatory refusal to grant any other Consents, Clearances and Permits required for the development/ operation of the Project, provided that a Competent Court of Law declares the revocation or refusal to be unlawful, unreasonable and discriminatory and strikes the same down; or

- any other unlawful, unreasonable or discriminatory action on the part of an Indian Governmental Instrumentality which is directed against the Project, provided that a Competent Court of Law declares the action to be unlawful, unreasonable and discriminatory and strikes the same down.

ii. Indirect Non - Natural Force Majeure Events

- act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, riot, insurrection, terrorist or military action; or
- radio active contamination or ionising radiation originating from a source in India or resulting from any other Indirect Non Natural Force Majeure Event mentioned above, excluding circumstances where the source or cause of contamination or radiation is brought or has been brought into or near the Site by the Affected Party or those employed or engaged by the Affected Party; or
- industry-wide strikes and labour disturbances, having a nationwide impact in India.

11.4 Force Majeure Exclusions

11.4.1 Force Majeure shall not include (i) any event or circumstance which is within the reasonable control of the Parties and (ii) the following conditions, except to the extent that they are consequences of an event of Force Majeure:

- (a) Unavailability, late delivery, or changes in cost of the machinery, equipment, materials, spare parts etc. for the Project;
- (b) Delay in the performance of any Contractors or their agents;
- (c) Non-performance resulting from normal wear and tear typically experienced in transmission materials and equipment;



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- (d) Strikes or labour disturbance at the facilities of the Affected Party;
- (e) Insufficiency of finances or funds or the Agreement becoming onerous to perform; and
- (f) Non-performance caused by, or connected with, the Affected Party's:
 - i. negligent or intentional acts, errors or omissions;
 - ii. failure to comply with an Indian Law; or
 - iii. breach of, or default under this Agreement or any Project Documents.
- (g) Any error or omission in the survey report provided by BPC during the bidding process.

11.5 Notification of Force Majeure Event

- 11.5.1 The Affected Party shall give notice to the other Party of any event of Force Majeure as soon as reasonably practicable, but not later than seven (7) days after the date on which such Party knew or should reasonably have known of the commencement of the event of Force Majeure. If an event of Force Majeure results in a breakdown of communications rendering it unreasonable to give notice within the applicable time limit specified herein, then the Party claiming Force Majeure shall give such notice as soon as reasonably practicable after reinstatement of communications, but not later than one (1) day after such reinstatement.

Provided that, such notice shall be a pre-condition to the Affected Party's entitlement to claim relief under this Agreement. Such notice shall include full particulars of the event of Force Majeure, its effects on the Party claiming relief and the remedial measures proposed. The Affected Party shall give the other Party regular reports on the progress of those remedial measures and such other information as the other Party may reasonably request about the Force Majeure.

- 11.5.2 The Affected Party shall give notice to the other Party of (i) the cessation of the relevant event of Force Majeure; and (ii) the cessation of the effects of such event of Force Majeure on the performance of its rights or obligations/ roles under this Agreement, as soon as practicable after becoming aware of each of these cessations.

11.6 Duty to perform and duty to mitigate

To the extent not prevented by a Force Majeure Event, the Affected Party shall continue to perform its obligations/ roles as provided in this Agreement. The Affected Party shall use its reasonable efforts to mitigate the effect of any event of Force Majeure as soon as practicable.



11.7 Available Relief for a Force Majeure Event

Subject to this Article 11,

- (a) no Party shall be in breach of its obligations/ roles pursuant to this Agreement to the extent that the performance of its obligations/ roles was prevented, hindered or delayed due to a Force Majeure Event;
- (b) each Party shall be entitled to claim relief for a Force Majeure Event affecting its performance in relation to its obligations/ roles under Articles 3.3.4, 4.4.2 and 6.3.1 of this Agreement.
- (c) For the avoidance of doubt, it is clarified that the computation of Availability of the Element(s) under outage due to Force Majeure Event, as per Article 11.3 affecting the TSP shall be as per Appendix –IV to Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 as on Bid Deadline. For the event(s) for which the Element(s) is/are deemed to be available as per Appendix –IV to Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024, then the Transmission Charges, as applicable to such Element(s), shall be payable as per Schedule 4, for the duration of such event(s).
- (d) For so long as the TSP is claiming relief due to any Force Majeure Event under this Agreement, the Nodal Agency may, if it so desires, from time to time on one (1) day notice, inspect the Project and the TSP shall provide the Nodal Agency's personnel with access to the Project to carry out such inspections.
- (e) For avoidance of doubt, the TSP acknowledges that for extension of Scheduled COD a period up to one hundred eighty (180) days due to Force Majeure event, no compensation on the grounds such as interest cost, incident expenditure, opportunity cost will be made to the TSP. However, if Scheduled COD is extended beyond a period of one hundred eighty (180) days due to Force Majeure event, the TSP will be allowed to recover the interest cost during construction corresponding to the period exceeding one hundred eighty (180) days by adjustment in the Transmission Charges in accordance with Schedule 9.



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ARTICLE: 12

12. CHANGE IN LAW

12.1 Change in Law

12.1.1 Change in Law means the occurrence of any of the following after the Bid Deadline resulting into any additional recurring / non-recurring expenditure by the TSP or any savings of the TSP:

- the enactment, coming into effect, adoption, promulgation, amendment, modification or repeal (without re-enactment or consolidation) in India, of any Law, including rules and regulations framed pursuant to such Law, subject to the provisions under Article 12.1.2;
- a change in the interpretation or application of any Law by any Indian Governmental Instrumentality having the legal power to interpret or apply such Law, or any Competent Court of Law;
- the imposition of a requirement for obtaining any Consents, Clearances and Permits which was not required earlier;
- a change in the terms and conditions prescribed for obtaining any Consents, Clearances and Permits or the inclusion of any new terms or conditions for obtaining such Consents, Clearances and Permits;
- any change in the licensing regulations of the Commission, under which the Transmission License for the Project was granted if made applicable by such Commission to the TSP;
- change in wind zone; or
- any change in tax or introduction of any tax made applicable for providing Transmission Service by the TSP as per the terms of this Agreement.

12.1.2 Notwithstanding anything contained in this Agreement, Change in Law shall not cover any change:

- a) Taxes on corporate income; and
- b) Withholding tax on income or dividends distributed to the shareholders of the TSP.




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12.2 Relief for Change in Law

12.2.1 During Construction Period, the impact of increase/decrease in the cost of the Project on the Transmission Charges shall be governed by the formula given in Schedule 9 of this Agreement.

12.2.2 During the Operation Period:

During the operation period, if as a result of Change in Law, the TSP suffers or is benefited from a change in costs or revenue, the aggregate financial effect of which exceeds 0.30% (zero point three percent) of the Annual Transmission Charges in aggregate for a Contract Year, the TSP may notify so to the Nodal Agency and propose amendments to this Agreement so as to place the TSP in the same financial position as it would have enjoyed had there been no such Change in Law resulting in change in costs or revenue as aforesaid.

12.2.3 For any claims made under Articles 12.2.1 and 12.2.2 above, the TSP shall provide to the Nodal Agency documentary proof of such increase / decrease in cost of the Project / revenue for establishing the impact of such Change in Law.

In cases where Change in Law results in decrease of cost and it comes to the notice of Nodal Agency that TSP has not informed Nodal Agency about such decrease in cost, Nodal Agency may initiate appropriate claim.

12.3 Notification of Change in Law:

12.3.1 If the TSP is affected by a Change in Law in accordance with Article 12.1 and wishes to claim relief for such Change in Law under this Article 12, it shall give notice to Nodal Agency of such Change in Law as soon as reasonably practicable after becoming aware of the same.

12.3.2 The TSP shall also be obliged to serve a notice to the Nodal Agency even when it is beneficially affected by a Change in Law.

12.3.3 Any notice served pursuant to Articles 12.3.1 and 12.3.2 shall provide, amongst other things, precise details of the Change in Law and its estimated impact on the TSP.

12.4 Payment on account of Change in Law

12.4.1 The payment for Change in Law shall be through a separate Bill. However, in case of any change in Monthly Transmission Charges by reason of Change in Law, as determined in accordance with this Agreement, the Bills to be raised by the Nodal Agency after such change in Transmission Charges shall appropriately reflect the changed Monthly Transmission Charges.



ARTICLE: 13

13. EVENTS OF DEFAULT AND TERMINATION

13.1 TSP's Event of Default

The occurrence and continuation of any of the following events shall constitute a TSP Event of Default, unless any such TSP Event of Default occurs as a result of any non-fulfilment of its obligations as prescribed under this Agreement by the Nodal Agency or a Force Majeure Event:

- a. After having taken up the construction of the Project, the abandonment by the TSP or the TSP's Contractors of the construction of the Project for a continuous period of two (2) months and such default is not rectified within thirty (30) days from the receipt of notice from the Nodal Agency in this regard;
- b. The failure to commission any Element of the Project by the date falling six (6) months after its Scheduled COD unless extended by Nodal Agency as per provisions of this Agreement;
- c. If the TSP:
 - i. assigns, mortgages or charges or purports to assign, mortgage or charge any of its assets or rights related to the Project in contravention of the provisions of this Agreement; or
 - ii. transfers or novates any of its obligations pursuant to this Agreement, in a manner contrary to the provisions of this Agreement;

Except where such transfer is in pursuance of a Law and

- it does not affect the ability of the transferee to perform, and such transferee has the financial and technical capability to perform, its obligations under this Agreement;
- is to a transferee who assumes such obligations under the Project and this Agreement remains effective with respect to the transferee;

d. If:

- i. The TSP becomes voluntarily or involuntarily the subject of any bankruptcy or insolvency or winding up proceedings and such



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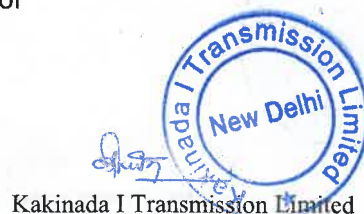
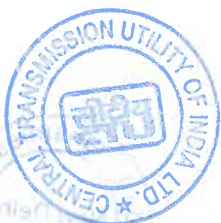
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proceedings remain uncontested for a period of thirty (30) days;
or

- ii. any winding up or bankruptcy or insolvency order is passed against the TSP; or
- iii. the TSP goes into liquidation or dissolution or a receiver or any similar officer is appointed over all or substantially all of its assets or official liquidator is appointed to manage its affairs, pursuant to Law,

Provided that a dissolution or liquidation of the TSP will not be a TSP's Event of Default, where such dissolution or liquidation of the TSP is for the purpose of a merger, consolidation or reorganization with the prior approval of the Commission as per the provisions of Central Electricity Regulatory Commission (Procedure, terms and Conditions for grant of Transmission License and other related matters) Regulations, 2006 or as amended from time to time; or

- e. Failure on the part of the TSP to comply with the provisions of Article 19.1 of this Agreement; or
- f. the TSP repudiates this Agreement and does not rectify such breach even within a period of thirty (30) days from a notice from the Nodal Agency in this regard; or
- g. after Commercial Operation Date of the Project, the TSP fails to achieve monthly Target Availability of 98% for a period of six (6) consecutive months or within a non-consecutive period of six (6) months within any continuous aggregate period of eighteen(18) months except where the Availability is affected by Force Majeure Events as per Article 11; or
- h. any of the representations and warranties made by the TSP in Article 17 of this Agreement being found to be untrue or inaccurate. Further, in addition to the above, any of the undertakings submitted by the Selected Bidder at the time of submission of the Bid being found to be breached or inaccurate, including but not limited to undertakings from its Parent Company / Affiliates related to the minimum equity obligation; or
- i. the TSP fails to complete / fulfil all the activities / conditions within the specified period as per Article 3; or



- j. except for the reasons solely attributable to Nodal Agency, the TSP is in material breach of any of its obligations under this Agreement and such material breach is not rectified by the TSP within thirty (30) days of receipt of notice in this regard from the Nodal Agency; or
- k. the TSP fails to take the possession of the land required for location specific substations, switching stations or HVDC terminal or inverter stations and / or fails to pay the requisite price to the parties and / or any State Government authority from whom the land is acquired, within twelve (12) months from the Effective Date.

13.2 Termination Procedure for TSP Event of Default

- a. Upon the occurrence and continuance of any TSP's Event of Default under Article 13.1 the Nodal Agency may serve notice on the TSP, with a copy to the CEA and the Lenders' Representative, of their intention to terminate this Agreement (a "Nodal Agency's Preliminary Termination Notice"), which shall specify in reasonable detail, the circumstances giving rise to such Nodal Agency's Preliminary Termination Notice.
- b. Following the issue of a Nodal Agency's Preliminary Termination Notice, the Consultation Period shall apply and would be for the Parties to discuss as to what steps shall be taken with a view to mitigate the consequences of the relevant Event of Default having regard to all the circumstances.
- c. During the Consultation Period, the Parties shall, save as otherwise provided in this Agreement, continue to perform their respective obligations/ roles under this Agreement, and the TSP shall not remove any material, equipment or any part of the Project, without prior consent of the Nodal Agency.

Following the expiry of the Consultation Period, unless the Parties shall have otherwise agreed to the contrary or the circumstances giving rise to Nodal Agency's Preliminary Termination Notice shall have ceased to exist or shall have been remedied, this Agreement may be terminated by the Nodal Agency by giving a Termination Notice to the TSP, in writing, of at least seven (7) days, with a copy to CEA and the Lenders' Representative in order to enable the Lenders to exercise right of substitution in accordance with Article 15.3 of this Agreement.

Further, the Nodal Agency may also initiate proceedings to blacklist the TSP & its Affiliates from participation in any RFP issued by BPCs for a period of 5 years.



13.3 Procedure for Nodal Agency's non-fulfilment of Role

- a. Upon the Nodal Agency not being able to fulfil its role under Article 4.2, the TSP may serve notice on the Nodal Agency, with a copy to CEA and the Lenders' Representative (a "TSP's Preliminary Notice"), which notice shall specify in reasonable detail the circumstances giving rise to such non-fulfilment of role by the Nodal Agency.
- b. Following the issue of a TSP's Preliminary Notice, the Consultation Period shall apply.
- c. The Consultation Period would be for the Parties to discuss as to what steps shall be taken with a view to mitigate the consequences of the relevant non-fulfilment of role by the Nodal Agency including giving time extension to TSP, having regard to all the circumstances.
- d. During the Consultation Period, both Parties shall, save as otherwise provided in this Agreement, continue to perform their respective obligations/ roles under this Agreement.

13.4 Termination due to Force Majeure

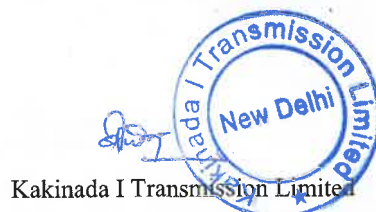
13.4.1 In case the Parties could not reach an agreement pursuant to Articles 3.3.4 and 4.4.2 of this Agreement and the Force Majeure Event or its effects continue to be present, the Nodal Agency shall have the right to cause termination of the Agreement. In case of such termination, the Contract Performance Guarantee shall be returned to the TSP as per the provisions of Article 6.5.1.

13.4.2 In case of termination of this Agreement, the TSP shall provide to the Nodal Agency the full names and addresses of its Contractors as well as complete designs, design drawings, manufacturing drawings, material specifications and technical information, as required by the Nodal Agency within thirty (30) days of Termination Notice.

13.5 Termination or amendment due to non-requirement of any Element or Project during construction

13.5.1 In case any Element or Project, which is under construction, is no longer required due to any reason whatsoever, the Nodal Agency may issue a notice to this effect to the TSP.

13.5.2 Nodal agency may also issue notice to the TSP seeking their response to the proposed termination/ amendment (as the case may be) of the Agreement. The Nodal Agency shall issue copy of such notice to Lenders. In the notice, Nodal Agency



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shall also include an assessment of the physical progress made by TSP in the Element/ Project (as the case may be) that is no longer required.

13.5.3 The TSP shall neither carry out further investment nor carry out any work on the Element/ Project (as the case may be) that is no longer required after delivery of the notice.

13.5.4 After taking into account the comments of the TSP, the Nodal Agency may terminate the Agreement or amend it if both Parties agree to the amendment.

13.6 Revocation of the Transmission License

13.6.1 The Commission may, as per the provisions of the Electricity Act, 2003, revoke the Transmission License of the ISTS Licensee. Further, in such a case, the Agreement shall be deemed to have been terminated.

13.7 Termination Payment

13.7.1 If Agreement is terminated on account of Force Majeure Events, non-requirement of any Element or Project during Construction, Nodal Agency's non-fulfilment of Role & TSP's Event of Default, the TSP shall be entitled for Termination Payment equivalent to valuation of Project Assets. Upon payment, the Nodal Agency shall take over the Project Assets.



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ARTICLE: 14

14. LIABILITY AND INDEMNIFICATION

14.1 Indemnity

14.1.1 The TSP shall indemnify, defend and hold the Nodal Agency harmless against:

- (a) any and all third party claims, actions, suits or proceedings against the Nodal Agency for any loss of or damage to property of such third party, or death or injury to such third party, arising out of a breach by the TSP of any of its obligations under this Agreement, except to the extent that any such claim, action, suit or proceeding has arisen due to a negligent act or omission, breach of this Agreement or non-fulfilment of statutory duty on the part of Nodal Agency; and
- (b) any and all losses, damages, costs and expenses including legal costs, fines, penalties and interest actually suffered or incurred by the Nodal Agency from third party claims arising by reason of:
 - i. a breach by the TSP of any of its obligations under this Agreement, (provided that this Article 14 shall not apply to such breaches by the TSP, for which specific remedies have been provided for under this Agreement) except to the extent that any such losses, damages, costs and expenses including legal costs, fines, penalties and interest (together to constitute "Indemnifiable Losses") has arisen due to a negligent act or omission, breach of this Agreement or non-fulfilment of statutory duty on the part of the Nodal Agency, or
 - ii. any of the representations and warranties of the TSP under this Agreement being found to be inaccurate or untrue.

14.1.2 The Nodal Agency shall, in accordance with the Regulations framed by CERC in this regard, indemnify, defend and hold the TSP harmless against:

- (a) any and all third party claims, actions, suits or proceedings against the TSP, for any loss of or damage to property of such third party, or death or injury to such third party, arising out of any material breach by the Nodal Agency of any of their roles under this Agreement, except to the extent that any such claim, action, suit or proceeding has arisen due to a negligent act or omission, breach of this Agreement or breach of statutory duty on the part of the TSP, its Contractors, servants or agents; and
- (b) any and all losses, damages, costs and expenses including legal costs, fines, penalties and interest ("Indemnifiable Losses") actually suffered or incurred



by the TSP from third party claims arising by reason of:

- i. any material breach by the Nodal Agency of any of its roles under this Agreement (provided that, this Article 14 shall not apply to such breaches by the Nodal Agency, for which specific remedies have been provided for under this Agreement), except to the extent that any such Indemnifiable Losses have arisen due to a negligent act or omission, breach of this Agreement or breach of statutory duty on the part of the TSP, its Contractors, servants or agents or
- ii. any of the representations and warranties of the Nodal Agency under this Agreement being found to be inaccurate or untrue.

14.2 Patent Indemnity:

14.2.1

- (a) The TSP shall, subject to the Nodal Agency's compliance with Article 14.2.1 (b), indemnify and hold harmless the Nodal Agency and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Nodal Agency may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Agreement by reason of the setting up of the Project by the TSP.

Such indemnity shall not cover any use of the Project or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Agreement, any infringement resulting from the misuse of the Project or any part thereof, or any products produced in association or combination with any other equipment, plant or materials not supplied by the TSP, pursuant to the Agreement.

- (b) If any proceedings are brought or any claim is made against the Nodal Agency arising out of the matters referred to in Article 14.2.1(a), the Nodal Agency shall promptly give the TSP a notice thereof, and the TSP shall at its own expense take necessary steps and attend such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. The TSP shall promptly notify the Nodal Agency of all actions taken in such proceedings or claims.

- (c) If the TSP fails to notify the Nodal Agency within twenty-eight (28) days after receipt of such notice from the Nodal Agency under Article 14.2.1(b) above,



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that it intends to attend any such proceedings or claim, then the Nodal Agency shall be free to attend the same on their own behalf at the cost of the TSP. Unless the TSP has so failed to notify the Nodal Agency within the twenty eight (28) days period, the Nodal Agency shall make no admission that may be prejudicial to the defence of any such proceedings or claims.

- (d) The Nodal Agency shall, at the TSP's request, afford all available assistance to the TSP in attending to such proceedings or claim, and shall be reimbursed by the TSP for all reasonable expenses incurred in so doing.

14.2.2

- (a) The Nodal Agency, in accordance with the Regulations framed by CERC in this regard, subject to the TSP's compliance with Article 14.2.2(b) shall indemnify and hold harmless the TSP and its employees, officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs and expenses of whatsoever nature, including attorney's fees and expenses, which the TSP may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Agreement by reason of the setting up of the Project by the TSP.
- (b) If any proceedings are brought or any claim is made against the TSP arising out of the matters referred to in Article 14.2.2 (a) the TSP shall promptly give the Nodal Agency a notice thereof, and the Nodal Agency shall at its own expense take necessary steps and attend such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. The Nodal Agency shall promptly notify the TSP of all actions taken in such proceedings or claims.
- (c) If the Nodal Agency fails to notify the TSP within twenty-eight (28) days after receipt of such notice from the TSP under Article 14.2.2(b) above, that it intends to attend any such proceedings or claim, then the TSP shall be free to attend the same on its own behalf at the cost of the Nodal Agency. Unless the Nodal Agency has so failed to notify the TSP within the twenty (28) days period, the TSP shall make no admission that may be prejudicial to the defence of any such proceedings or claim.
- (d) The TSP shall, at the Nodal Agency request, afford all available assistance to the Nodal Agency in attending to such proceedings or claim, and shall be reimbursed by the Nodal Agency for all reasonable expenses incurred in so doing.



14.3 Monetary Limitation of liability

14.3.1 A Party ("Indemnifying Party") shall be liable to indemnify the other Party ("Indemnified Party") under this Article 14 for any indemnity claims made in a Contract Year only up to an amount of **Rs.2.48 Crore (Rupees Two Crore Forty Eight Lakh Only)**.

14.4 Procedure for claiming indemnity

14.4.1 Where the Indemnified Party is entitled to indemnification from the Indemnifying Party pursuant to Articles 14.1 or 14.2 the Indemnified Party shall promptly notify the Indemnifying Party of such claim, proceeding, action or suit referred to in Articles 14.1 or 14.2 in respect of which it is entitled to be indemnified. Such notice shall be given as soon as reasonably practicable after the Indemnified Party becomes aware of such claim, proceeding, action or suit. The Indemnifying Party shall be liable to settle the indemnification claim within thirty (30) days of receipt of the above notice.

Provided however that, if:

- i. the Parties choose to contest, defend or litigate such claim, action, suit or proceedings in accordance with Article 14.4.3 below; and
- ii. the claim amount is not required to be paid/deposited to such third party pending the resolution of the Dispute,

the Indemnifying Party shall become liable to pay the claim amount to the Indemnified Party or to the third party, as the case may be, promptly following the resolution of the Dispute, if such Dispute is not settled in favour of the Indemnified Party.

14.4.2 The Indemnified Party may contest, defend and litigate a claim, action, suit or proceeding for which it is entitled to be indemnified under Articles 14.1 or 14.2 and the Indemnifying Party shall reimburse to the Indemnified Party all reasonable costs and expenses incurred by the Indemnified Party. However, such Indemnified Party shall not settle or compromise such claim, action, suit or proceedings without first getting the consent of the Indemnifying Party, which consent shall not be unreasonably withheld or delayed.

14.4.3 An Indemnifying Party may, at its own expense, assume control of the defence of any proceedings brought against the Indemnified Party if it acknowledges its obligation to indemnify such Indemnified Party, gives such Indemnified Party prompt notice of its intention to assume control of the defence, and employs an independent legal counsel at its own cost that is reasonably satisfactory to the Indemnified Party.

14.5 Limitation on Liability



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- 14.5.1 Except as expressly provided in this Agreement, neither the TSP nor the Nodal Agency nor their respective officers, directors, agents, employees or Affiliates (including, officers, directors, agents or employees of such Affiliates), shall be liable or responsible to the other Party or its Affiliates including its officers, directors, agents, employees, successors, insurers or permitted assigns for incidental, indirect or consequential, punitive or exemplary damages, connected with or resulting from performance or non-performance of this Agreement, or anything done in connection herewith, including claims in the nature of lost revenues, income or profits (other than payments expressly required and properly due under this Agreement), any increased expense of, reduction in or loss of transmission capacity or equipment used therefore, irrespective of whether such claims are based upon breach of warranty, tort (including negligence, whether of the Nodal Agency, the TSP or others), strict liability, contract, breach of statutory duty, operation of law or otherwise.
- 14.5.2 The Nodal Agency shall have no recourse against any officer, director or shareholder of the TSP or any Affiliate of the TSP or any of its officers, directors or shareholders for such claims excluded under this Article. The TSP shall also have no recourse against any officer, director or shareholder of the Nodal Agency, or any Affiliate of the Nodal Agency or any of its officers, directors or shareholders for such claims excluded under this Article.

14.6 Duty to Mitigate

The party entitled to the benefit of an indemnity under this Article 14 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the Party fails to take such measures, the other Party's liabilities shall be correspondingly reduced.



ARTICLE: 15

15. ASSIGNMENTS AND CHARGES

15.1 Assignments:

15.1.1 This Agreement shall be binding upon, and inure to the benefit of the Parties and their respective successors and permitted assigns. This Agreement shall not be assigned by any Party, except as provided in Article 15.3.

15.2 Permitted Charges:

15.2.1 Neither Party shall create or permit to subsist any encumbrance over all or any of its rights and benefits under this Agreement.

15.2.2 However, the TSP may create any encumbrance over all or part of the receivables, or the Project Assets of the Project in favour of the Lenders or the Lenders' Representative on their behalf, as security for amounts payable under the Financing Agreements and any other amounts agreed by the Parties.

Provided that:

- i. the Lenders or the Lenders' Representative on their behalf shall have entered into the Financing Agreements and agreed in writing to the provisions of this Agreement; and
- ii. any encumbrance granted by the TSP in accordance with this Article 15.2.2 shall contain provisions pursuant to which the Lenders or the Lender's Representative on their behalf agrees unconditionally with the TSP to release from such encumbrances upon payment by the TSP to the Lenders of all amounts due under the Financing Agreements.

15.2.3 Article 15.2.1 does not apply to:

- a. liens arising by operation of law (or by an agreement evidencing the same) in the ordinary course of the TSP developing and operating the Project;
- b. pledges of goods, the related documents of title and / or other related documents, arising or created in the ordinary course of the TSP developing and operating the Project; or
- c. security arising out of retention of title provisions in relation to goods acquired in the ordinary course of the TSP developing and operating the Project.




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15.3 Substitution Rights of the Lenders

- 15.3.1 The TSP would need to operate and maintain the Project under the provisions of this Agreement and cannot assign the Transmission License or transfer the Project or part thereof to any person by sale, lease, exchange or otherwise, without the prior approval of the Nodal Agency.
- 15.3.2 However, in the case of default by the TSP in debt repayments or in the case of default by the TSP as per Article 13 of this Agreement during the debt repayments, the Commission may, on an application from the Lenders, assign the Transmission License to the nominee of the Lenders subject to the fulfilment of the qualification requirements and provisions of the Central Electricity Regulatory Commission (Procedure, terms and Conditions for grant of Transmission License and other related matters) Regulations, 2006 and as amended from time to time.



ARTICLE: 16

16. GOVERNING LAW AND DISPUTE RESOLUTION

16.1 Governing Law:

This Agreement shall be governed by and construed in accordance with the Laws of India. Any legal proceedings in respect of any matters, claims or disputes under this Agreement shall be under the jurisdiction of appropriate courts in Delhi.

16.2 Amicable Settlement:

16.2.1 Either Party is entitled to raise any claim, dispute or difference of whatever nature arising under, out of or in connection with this Agreement, including its existence or validity or termination or whether during the execution of the Project or after its completion and whether prior to or after the abandonment of the Project or termination or breach of the Agreement by giving a written notice to the other Party, which shall contain:

- (i) a description of the Dispute;
- (ii) the grounds for such Dispute; and
- (iii) all written material in support of its claim.

16.2.2 The other Party shall, within thirty (30) days of issue of notice issued under Article 16.2.1, furnish:

- (i) counter-claim and defences, if any, regarding the Dispute; and
- (ii) all written material in support of its defences and counter-claim.

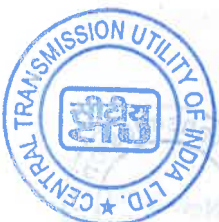
16.2.3 Within thirty (30) days of issue of notice by the Party pursuant to Article 16.2.1, if the other Party does not furnish any counter claim or defense under Article 16.2.2, or thirty (30) days from the date of furnishing counter claims or defence by the other Party, both the Parties to the Dispute shall meet to settle such Dispute amicably. If the Parties fail to resolve the Dispute amicably within thirty (30) days from the later of the dates mentioned in this Article 16.2.3, the Dispute shall be referred for dispute resolution in accordance with Article 16.3.

16.3 Dispute Resolution:

All Disputes shall be adjudicated by the Commission.

16.4 Parties to Perform Obligations:

Notwithstanding the existence of any Dispute and difference referred to the Commission as provided in Article 16.3 and save as the Commission may otherwise direct by a final or interim order, the Parties hereto shall continue to perform their respective obligations/ roles (which are not in dispute) under this Agreement.



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ARTICLE: 17

17. REPRESENTATION AND WARRANTIES

17.1 Representation and warranties of the Nodal Agency

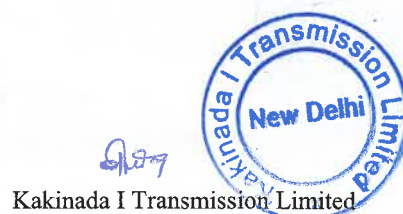
17.1.1 The Nodal Agency hereby represents and warrants to and agrees with the TSP as follows and acknowledges and confirms that the TSP is relying on such representations and warranties in connection with the transactions described in this Agreement:

- a. It has all requisite powers and authority to execute and consummate this Agreement;
- b. This Agreement is enforceable against the Nodal Agency in accordance with its terms;
- c. The consummation of the transactions contemplated by this Agreement on the part of Nodal Agency will not violate any provision of nor constitute a default under, nor give rise to a power to cancel any charter, mortgage, deed of trust or lien, lease, agreement, license, permit, evidence of indebtedness, restriction, or other contract to which the Nodal Agency is a Party or to which the Nodal Agency is bound, which violation, default or power has not been waived;

17.2 Representation and Warranties of the TSP:

17.2.1 The TSP hereby represents and warrants to and agrees with the Nodal Agency as follows and acknowledges and confirms that the Nodal Agency is relying on such representations and warranties in connection with the transactions described in this Agreement:

- a. It has all requisite powers and has been duly authorized to execute and consummate this Agreement;
- b. This Agreement is enforceable against it, in accordance with its terms;
- c. The consummation of the transactions contemplated by this Agreement on the part of the TSP will not violate any provision of nor constitute a default under, nor give rise to a power to cancel any charter, mortgage, deed of trust or lien, lease, agreement, license, permit, evidence of indebtedness, restriction, or other contract to which the TSP is a Party or to which the TSP is bound which violation, default or power has not been waived;



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- d. The TSP is not insolvent and no insolvency proceedings have been instituted, nor threatened or pending by or against the TSP;
- e. There are no actions, suits, claims, proceedings or investigations pending or, to the best of the TSP's knowledge, threatened in writing against the TSP at law, in equity, or otherwise, and whether civil or criminal in nature, before or by, any court, commission, arbitrator or governmental agency or authority, and there are no outstanding judgments, decrees or orders of any such courts, commission, arbitrator or governmental agencies or authorities, which materially adversely affect its ability to execute the Project or to comply with its obligations under this Agreement.

17.2.2 The TSP makes all the representations and warranties above to be valid as on the Effective Date of this Agreement.



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ARTICLE: 18

18. INDEPENDENT ENGINEER

18.1 Appointment of Independent Engineer

The Nodal Agency shall appoint an agency/ company as Independent Engineer as per framework provided in the Guidelines for Encouraging Competition in Development of Transmission Projects for selection of Independent Engineer.

18.2 Roles and functions of Independent Engineer

The role and functions of the Independent Engineer shall include the following:

- a. Progress Monitoring as required under this Agreement;
- b. Ensuring Quality as required under this Agreement;
- c. determining, as required under the Agreement, the costs of any works or services and/or their reasonableness during construction phase;
- d. determining, as required under the Agreement, the period or any extension thereof, for performing any duty or obligation during construction phase;
- e. determining, as required under the Agreement, the valuation of the Project Assets.
- f. Assisting the Parties in resolution of Disputes and
- g. Undertaking all other duties and functions in accordance with the Agreement.

18.3 Remuneration of Independent Engineer

The fee and charges of the Independent Engineer shall be paid by the Nodal Agency as per terms & conditions of appointment.

18.4 Termination of appointment

18.4.1 The Nodal Agency may, in its discretion, terminate the appointment of the Independent Engineer at any time, but only after appointment of another Independent Engineer.

18.4.2 If the TSP has reason to believe that the Independent Engineer is not discharging its duties and functions in a fair, efficient and diligent manner, it may make a written representation to the Nodal Agency and seek termination of the appointment of the Independent Engineer. Upon receipt of such representation, the Nodal Agency shall



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hold a tripartite meeting with the TSP and Independent Engineer for an amicable resolution, and the decision of Nodal agency is final. In the event that the appointment of the Independent Engineer is terminated hereunder, the Nodal Agency shall appoint forthwith another Independent Engineer..

18.5 Authorised signatories

The Nodal Agency shall require the Independent Engineer to designate and notify to the Nodal Agency up to 2 (two) persons employed in its firm to sign for and on behalf of the Independent Engineer, and any communication or document required to be signed by the Independent Engineer shall be valid and effective only if signed by any of the designated persons; provided that the Independent Engineer may, by notice in writing, substitute any of the designated persons by any of its employees.



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ARTICLE: 19

19. MISCELLANEOUS PROVISIONS

19.1 Equity Lock-in Commitment:

19.1.1 The aggregate equity share holding of the Selected Bidder in the issued and paid up equity share capital of **KAKINADA I TRANSMISSION LIMITED** shall not be less than Fifty one percent (51%) up to a period of one (1) year after COD of the Project.

Provided that, in case the Lead Member or Bidding Company is holding equity through Affiliate/s, Ultimate Parent Company or Parent Company, such restriction as specified above shall apply to such entities.

Provided further, that in case the Selected Bidder is a Bidding Consortium, the Lead Member shall continue to hold equity of at least twenty six percent (26%) upto a period of one (1) year after COD of the Project and any Member of such Bidding Consortium shall be allowed to divest its equity as long as the other remaining Members (which shall always include the Lead Member) hold the minimum equity specified above.

19.1.2 If equity is held by the Affiliates, Parent Company or Ultimate Parent Company of the Selected Bidder, then, subject to the second proviso to Article 19.1.1, such Affiliate, Parent Company or Ultimate Parent Company shall be eligible to transfer its shareholding in **KAKINADA I TRANSMISSION LIMITED** to another Affiliate or to the Parent Company / Ultimate Parent Company of the Selected Bidder. If any such shareholding entity, qualifying as an Affiliate / Parent Company / Ultimate Parent Company, is likely to cease to meet the criteria to qualify as an Affiliate / Parent Company / Ultimate Parent Company, the shares held by such entity shall be transferred to another Affiliate / Parent Company / Ultimate Parent Company of the Selected Bidder.

19.1.3 Subject to Article 19.1.1, all transfer(s) of shareholding of **KAKINADA I TRANSMISSION LIMITED** by any of the entities referred to in Article 19.1.1 and 19.1.2 above, shall be after prior written intimation to the Nodal Agency.

19.1.4 For computation of effective Equity holding, the Equity holding of the Selected Bidder or its Ultimate Parent Company in such Affiliate(s) or Parent Company and the equity holding of such Affiliate(s) or Ultimate Parent Company in **KAKINADA I TRANSMISSION LIMITED** shall be computed in accordance with the example given below:

If the Parent Company or the Ultimate Parent Company of the Selected Bidder A



directly holds thirty percent (30%) of the equity in **KAKINADA I TRANSMISSION LIMITED**, then holding of Selected Bidder A in **KAKINADA I TRANSMISSION LIMITED** shall be thirty percent (30%);

If Selected Bidder A holds thirty percent (30%) equity of the Affiliate and the Affiliate holds fifty percent (50%) equity in **KAKINADA I TRANSMISSION LIMITED**, then, for the purposes of ascertaining the minimum equity/equity lock-in requirements specified above, the effective holding of Bidder A in **KAKINADA I TRANSMISSION LIMITED** shall be fifteen percent (15%), (i.e., 30% x 50%)

19.1.5 The provisions as contained in this Article 19.1 shall override the terms of the consortium agreement submitted as part of the Bid.

19.1.6 The TSP shall be responsible to report to Nodal Agency, within thirty (30) days from the occurrence of any event that would result in any change in its equity holding structure from that which existed as on the date of signing of the Share Purchase Agreement. In such cases, the Nodal Agency would reserve the right to ascertain the equity holding structure and to call for all such required documents / information / clarifications as may be required.

19.2 Commitment of maintaining Qualification Requirement

19.2.1 The Selected Bidder will be required to continue to maintain compliance with the Qualification Requirements, as stipulated in RFP Document, till the COD of the Project. Where the Technically Evaluated Entity and/or the Financially Evaluated Entity is not the Bidding Company or a Member in a Bidding Consortium, as the case may be, the Bidding Company or Member shall continue to be an Affiliate of the Technically Evaluated Entity and/or Financially Evaluated Entity till the COD of the Project.

19.2.2 Failure to comply with the aforesaid provisions shall be dealt in the same manner as TSP's Event of Default as under Article 13 of this Agreement.

19.3 Language:

19.3.1 All agreements, correspondence and communications between the Parties relating to this Agreement and all other documentation to be prepared and supplied under the Agreement shall be written in English, and the Agreement shall be construed and interpreted in accordance with English language.

19.3.2 If any of the agreements, correspondence, communications or documents are prepared in any language other than English, the English translation of such agreements, correspondence, communications or documents shall prevail in matters of interpretation.



19.4 Affirmation

The TSP and the Nodal Agency, each affirm that:

1. neither it nor its respective directors, employees, or agents has paid or undertaken to pay or shall in the future pay any unlawful commission, bribe, pay-off or kick-back; and
2. it has not in any other manner paid any sums, whether in Indian currency or foreign currency and whether in India or abroad to the other Party to procure this Agreement, and the TSP and the Nodal Agency hereby undertake not to engage in any similar acts during the Term of Agreement.

19.5 Severability

The invalidity or enforceability, for any reason, of any part of this Agreement shall not prejudice or affect the validity or enforceability of the remainder of this Agreement, unless the part held invalid or unenforceable is fundamental to this Agreement.

19.6 Counterparts

This Agreement may be executed in one or more counterparts, each of which shall be deemed an original and all of which collectively shall be deemed one and the same Agreement.

19.7 Breach of Obligations/ Roles

The Parties acknowledge that a breach of any of the obligations/ roles contained herein would result in injuries. The Parties further acknowledge that the amount of the liquidated damages or the method of calculating the liquidated damages specified in this Agreement is a genuine and reasonable pre-estimate of the damages that may be suffered by the non-defaulting Party in each case specified under this Agreement

19.8 Restriction of Shareholders / Owners Liability

19.8.1 Parties expressly agree and acknowledge that none of the shareholders of the Parties hereto shall be liable to the other Parties for any of the contractual obligations of the concerned Party under this Agreement.

19.8.2 Further, the financial liabilities of the shareholder(s) of each Party to this Agreement shall be restricted to the extent provided in the Indian Companies Act, 1956 / Companies Act, 2013 (as the case may be).



19.9 Taxes and Duties:

- 19.9.1 The TSP shall bear and promptly pay all statutory taxes, duties, levies and cess, assessed/levied on the TSP, its Contractors or their employees that are required to be paid by the TSP as per the Law in relation to the execution of the Project and for providing Transmission Service as per the terms of this Agreement.
- 19.9.2 The Nodal Agency shall be indemnified and held harmless by the TSP against any claims that may be made against the Nodal Agency in relation to the matters set out in Article 19.9.1.
- 19.9.3 The Nodal Agency shall not be liable for any payment of, taxes, duties, levies, cess whatsoever for discharging any obligation of the TSP by the Nodal Agency on behalf of TSP or its personnel, provided the TSP has consented in writing to the Nodal Agency for such work, for which consent shall not be unreasonably withheld.

19.10 No Consequential or Indirect Losses

The liability of the TSP shall be limited to that explicitly provided in this Agreement.

Provided that, notwithstanding anything contained in this Agreement, under no event shall the Nodal Agency or the TSP claim from one another any indirect or consequential losses or damages.

19.11 Discretion:

Except where this Agreement expressly requires a Party to act fairly or reasonably, a Party may exercise any discretion given to it under this Agreement in any way it deems fit.

19.12 Confidentiality

- 19.12.1 The Parties undertake to hold in confidence this Agreement and RFP Project Documents and not to disclose the terms and conditions of the transaction contemplated hereby to third parties, except:

- (a) to their professional advisors;
- (b) to their officers, contractors, employees, agents or representatives, financiers, who need to have access to such information for the proper performance of their activities; or
- (c) disclosures required under Law,

without the prior written consent of the other Parties.



Provided that, the TSP agrees and acknowledges that the Nodal Agency, may, at any time, disclose the terms and conditions of the Agreement and the RFP Project Documents to any person, to the extent stipulated under the Law and the Competitive Bidding Guidelines.

19.13 Order of priority in application:

Save as provided in Article 2.5, in case of inconsistencies between the terms and conditions stipulated in Transmission License issued by the Commission to the TSP, agreement(s) executed between the Parties, applicable Law including rules and regulations framed thereunder, the order of priority as between them shall be the order in which they are placed below:

- terms and conditions of Transmission License;
- applicable Law, rules and regulations framed thereunder;
- this Agreement;
- Agreement(s), if any, under Sharing Regulations.

19.14 Independent Entity:

19.14.1 The TSP shall be an independent entity performing its obligations pursuant to the Agreement.

19.14.2 Subject to the provisions of the Agreement, the TSP shall be solely responsible for the manner in which its obligations under this Agreement are to be performed. All employees and representatives of the TSP or Contractors engaged by the TSP in connection with the performance of the Agreement shall be under the complete control of the TSP and shall not be deemed to be employees, representatives, Contractors of the Nodal Agency and nothing contained in the Agreement or in any agreement or contract awarded by the TSP shall be construed to create any contractual relationship between any such employees, representatives or Contractors and the Nodal Agency.

19.15 Amendments:

19.15.1 This Agreement may only be amended or supplemented by a written agreement between the Parties.

19.16 Waiver:

19.16.1 No waiver by either Party of any default or breach by the other Party in the performance of any of the provisions of this Agreement shall be effective unless in



[Handwritten signature]



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writing duly executed by an authorised representative of such Party.

- 19.16.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement nor time or other indulgence granted by one Party to the other Parties shall act as a waiver of such breach or acceptance of any variation or the relinquishment of any such right or any other right under this Agreement, which shall remain in full force and effect.

19.17 Relationship of the Parties:

This Agreement shall not be interpreted or construed to create an association, joint venture, or partnership or agency or any such other relationship between the Parties or to impose any partnership obligation or liability upon either Party and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

19.18 Entirety:

- 19.18.1 This Agreement along with its sections, schedules and appendices is intended by the Parties as the final expression of their agreement and is intended also as a complete and exclusive statement of the terms of their agreement.
- 19.18.2 Except as provided in this Agreement, all prior written or oral understandings, offers or other communications of every kind pertaining to this Agreement or the provision of Transmission Service under this Agreement to the Nodal Agency by the TSP shall stand superseded and abrogated.

19.19 Notices:

- 19.19.1 All notices or other communications which are required to be given under this Agreement shall be in writing and in the English language
- 19.19.2 If to the TSP, all notices or communications must be delivered personally or by registered post or facsimile or any other mode duly acknowledged to the addressee below:

Address

Attention

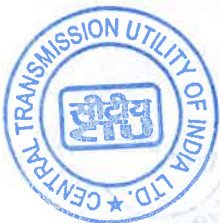
Email

Fax. No.

Telephone No.

CORPORATE
Saudamini, Plot NO2,
Sector-29, Gurugram,
Haryana - 122001
ED(TBCB)
tbc@powergrid.in
-
0124-2823133

BUSINESS
POWERGRID SR-I RHA,
NO. 6-6-8/32 & 395 E, Kavadiguda
Main Road, Secunderabad - 50008
Sh. B. B. Rath (PIC)
bbath@powergrid.in
-
9437575689



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19.19.3 If to the Nodal Agency, all notices or communications must be delivered personally or by registered post or facsimile or any other mode duly acknowledged to the addresses below:

(i) **Central Transmission Utility of India Limited (Nodal Agency)**

Address : 5th to 10th Floor, IRCON International Tower,
Tower No-1, Plot No-16, Sector-32, Gurugram
Haryana: 122003
Attention : Ramachandra, Sr GM
Email : ramachand@powergrid.in
Fax. No. :
Telephone No. : 9910378128

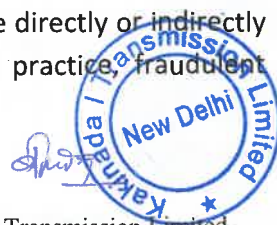
19.19.4 All notices or communications given by facsimile shall be confirmed by sending a copy of the same via post office in an envelope properly addressed to the appropriate Party for delivery by registered mail. All notices shall be deemed validly delivered upon receipt evidenced by an acknowledgement of the recipient, unless the Party delivering the notice can prove in case of delivery through the registered post that the recipient refused to acknowledge the receipt of the notice despite efforts of the postal authorities.

19.19.5 Any Party may by notice of at least fifteen (15) days to the other Party change the address and/or addresses to which such notices and communications to it are to be delivered or mailed.

19.20 Fraudulent and Corrupt Practices

19.20.1 The TSP and its respective officers, employees, agents and advisers shall observe the highest standard of ethics during the subsistence of this Agreement. Notwithstanding anything to the contrary contained in the Agreement, the Nodal Agency may terminate the Agreement without being liable in any manner whatsoever to the TSP, if it determines that the TSP has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bid process. In such an event, the Nodal Agency shall forfeit the Contract Performance Guarantee of the TSP, without prejudice to any other right or remedy that may be available to the Nodal Agency hereunder or subsistence otherwise.

19.20.2 Without prejudice to the rights of the Nodal Agency under Clause 19.20.1 hereinabove and the rights and remedies which the Nodal Agency may have under this Agreement, if a TSP is found by the Nodal Agency to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent



practice, coercive practice, undesirable practice or restrictive practice during the Bid process, or after the issue of Letter of Intent (hereinafter referred to as Lol) or after the execution of the agreement(s) required under Sharing Regulations, the Nodal Agency may terminate the Agreement without being liable in any manner whatsoever to the TSP. Further, the TSP & its Affiliates shall not be eligible to participate in any tender or RFP issued by any BPC for an indefinite period from the date such TSP is found by the Nodal Agency to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.

19.20.3 For the purposes of this Clause 19.20, the following terms shall have the meaning hereinafter respectively assigned to them:

(a) **“corrupt practice”** means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bid process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the BPC who is or has been associated or dealt in any manner, directly or indirectly with the Bid process or the Lol or has dealt with matters concerning the RFP Project Documents or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the BPC, shall be deemed to constitute influencing the actions of a person connected with the Bid Process); or (ii) engaging in any manner whatsoever, whether during the Bid Process or after the issue of the Lol or after the execution of the RFP Project Documents, as the case may be, any person in respect of any matter relating to the Project or the Lol or the RFP Project Documents, who at any time has been or is a legal, financial or technical adviser of the BPC in relation to any matter concerning the Project;

(b) **“fraudulent practice”** means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bid process;

(c) **“coercive practice”** means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person’s participation or action in the Bid process;

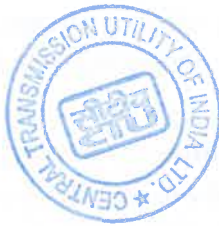
(d) **“undesirable practice”** means (i) establishing contact with any person connected with or employed or engaged by the BPC with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bid process; or (ii) having a Conflict of Interest; and



(e) “**restrictive practice**” means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bid process;

19.21 Compliance with Law:

Despite anything contained in this Agreement but without prejudice to Article 12, if any provision of this Agreement shall be in deviation or inconsistent with or repugnant to the provisions contained in the Electricity Act, 2003, or any rules and regulations made there under, such provision shall be deemed to be amended to the extent required to bring it into compliance with the aforesaid relevant provisions as amended from time to time.



Signature



Transmission Service Agreement

IN WITNESS WHEREOF, THE PARTIES HAVE CAUSED THIS AGREEMENT TO BE EXECUTED BY THEIR DULY AUTHORISED REPRESENTATIVES AS OF THE DATE AND PLACE SET FORTH ABOVE.

1. For and on behalf of TSP

.....

[Signature, Name, Designation and Address]



2. For and on behalf of Central Transmission Utility of India Limited (Nodal Agency)

.....
KAMAL KUMAR JAIN
Senior General Manager
सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
CENTRAL TRANSMISSION UTILITY OF INDIA LIMITED
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड की पूर्ण स्वामित्व कंपनी)
(A wholly owned subsidiary of POWERGRID)
5th-10th Floor, Ircon International Tower-1, Plot No.-15, Sector-32, Gurugram-122003

[Signature, Name, Designation and Address]

WITNESSES:

1. For and on behalf of

: BPC

.....
Nirmala

[Signature]

.....
NIRMALA MEENA, DGM, PFCU

[Insert, Name, Designation and Address of the Witness]

2. For and on behalf of

: Nodal Agency

.....
Deepak

[Signature]

DEEPAK KRISHNAN
Chief Manager

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
CENTRAL TRANSMISSION UTILITY OF INDIA LIMITED
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड की पूर्ण स्वामित्व कंपनी)
(A wholly owned subsidiary of POWERGRID)
5th-10th Floor, Ircon International Tower-1, Plot No.-15, Sector-32, Gurugram-122003

[Insert Name, Designation and Address of the Witness]



SCHEDULES



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Schedule: 1

Project Description and Scope of Project

A. Description of the Transmission Scheme

A meeting was held on 19.10.2023 under the chairmanship of Hon'ble Minister with Green Hydrogen stakeholders/association, wherein it was decided that developers shall share the details of year-wise planned Green Ammonia / Green Methanol capacities and corresponding drawl capacities desired at different locations. It was also decided that this information should be shared with CTU for planning the required substation capacities at these specified locations. MNRE vide letter dated 01.11.2023 has forwarded the consolidated information of the planned projects and drawl requirements of various developers. As per the Communication from MNRE and the meeting held in CEA, about 6000 MW demand has been envisaged for the Green Hydrogen / Green Ammonia projects in Kakinada area. The details of the phased development are as follows:

Year	Cumulative Electricity Demand (MW)
by 2027	1775
by 2028	3275
by 2029	4645
by 2030	6015

In view of the upcoming Green Hydrogen / Green Ammonia projects, transmission system has been identified for delivery of power to the potential Green Hydrogen / Green Ammonia projects. After discussion, CEA and CTU identified transmission system for supply of power at Kakinada to potential Green Hydrogen / Green Ammonia projects.

The Transmission System was discussed in the 33rd CMETS-SR meeting held on 25.07.2024 and 31.07.2024. The scheme was also discussed and agreed in the 52nd SRPC meeting held on 03.08.2024. Further, CTU have received GNA applications for 2000 MW as bulk consumers from different Green Hydrogen / Green Ammonia project developers.

The present transmission scheme shall facilitate integration and supply of power to Green Hydrogen / Green Ammonia projects for meeting their demand for about 3000 MW.

The National Committee on Transmission in its 25th meeting held on 28.11.2024 has recommended the implementation of the subject transmission scheme through TBCB route and has identified the PFCL as BPC for bidding of the transmission scheme.



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Ministry of Power vide Gazette notification dated 26.12.2024 has notified the transmission scheme for implementation through TBCB route.

B. Detailed Scope of Work

Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)		
S No.	Name of Transmission Element	Scheduled COD in months from Effective Date
1.	Establishment of Kakinada 765/400 kV, 3x1500 MVA substation (GIS) alongwith 240 MVar bus reactor. • 3x1500 MVA, 765/400 kV ICT (10x500 MVA including 1 spare unit) • 765 kV ICT bay – 3 Nos. (GIS) • 400 kV ICT bay – 3 Nos. (GIS) • 765 kV line bays – 4 Nos. (GIS) (at Kakinada for termination of LILO of Srikakulam – Vemagiri 765 kV D/c line) • 765 kV, 240 MVar Bus Reactor – 1 No. (4x80 MVarinc. 1 switchable spare unit for both bus reactor and line reactor) • 765 kV Bus Reactor bays – 1 No. (GIS) Future Space Provisions: • 765/400 kV, 1500 MVA, ICTs – 3 Nos. • 765 kV ICT bays – 3 Nos. • 400 kV ICT bays – 3 Nos. • 765 kV line bays – 8 Nos. (with provision for SLR) • 400 kV line bays – 12 Nos. (with provision for SLR) • 400 kV Bus Sectionalizer : 1 set	30 Months (December 29, 2028)
2.	LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation (~20 km) {with 240 MVar SLR at Kakinada GH end on Srikakulam – Kakinada section (~334 km)} • ~20 km • 765 kV, 240 MVar SLR at Kakinada– 2 Nos. (6x80 MVar switchable units)	
3.	• ± 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV GIS S/s with control switching arrangement for proposed 1x240 MVar bus reactor • Space provision for 2nd ± 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV S/s • 400 kV bay – 1 No. (GIS) *	
Note: i. * 2 Nos. of additional 400 kV GIS bays for diameter completion shall be provided at Kakinada with future element as future Line		



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SPECIFIC TECHNICAL REQUIREMENTS FOR TRANSMISSION LINE

The design, routing and construction of transmission lines shall be in accordance with Chapter V, Part A of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, as amended from time to time. Other CEA Regulations/ guidelines as amended up to date and Ministry of Power (MoP) guidelines, as applicable, shall also be followed.

- A.1.0 Selection of tower type shall be made as per CEA Regulations, however, in case lattice type towers are used, the following shall also be applicable:
- A.2.0 Steel section of grade E 250 and/or grade E 350 as per IS 2062, only are permitted for use in towers, extensions, gantry structures and stub setting templates. For towers in snowbound areas, steel sections shall conform to Grade-C of IS-2062.
- A.3.0 Towers shall be designed as per IS-802:2015, however the drag coefficient of the tower shall be as follows: -

Solidity Ratio	Drag Coefficient
Up to 0.05	3.6
0.1	3.4
0.2	2.9
0.3	2.5
0.4	2.2
0.5 and above	2.0

- A.4.0 Transmission Service Provider (TSP) shall adopt any additional loading/ design criteria for ensuring reliability of the line, if so desired and /or deemed necessary.
- A.5.0 Transmission line shall be designed considering wind zones as specified in wind map given in National Building Code 2016, Vol.1. The developer shall also make his own assessment of local wind conditions and frequent occurrences of High Intensity Winds (HIW) due to thunderstorms, dust storms, downburst etc. along the line route and wherever required, higher wind zone than that given in wind map shall be considered for tower design for ensuring reliability of line. Further, for transmission line sections passing within a distance of 50 km from the boundary of two wind zones, higher of the two wind zones shall be considered for design of towers located in such sections.
- A.6.0 Selection of reliability level for design of tower shall be as per CEA Regulation (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, as amended from time to time.
- A.7.0 A) In case of construction of transmission line of Voltage level of 400 kV and above, under crossing of the existing transmission line shall not be allowed. In the case where it is inevitable to under-cross the existing transmission line then TSP shall seek prior approval from Chief Electrical Inspector, CEA with detailed study ensuring that




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all statutory electrical clearances and Electric Field limit of 10 kV/m at 1 m and 1.8 m from ground level is not violated.

B) For power line crossing of 400 kV or above voltage level, large angle and dead end towers (i.e. D/DD/QD) shall be used on either side of power line crossing.

C) For power line crossing of 132 kV and 220 kV (or 230 kV) voltage level, angle towers (B/C/D/DB/DC/DD/QB/QC/QD) shall be used on either side of power line crossing depending upon the merit of the prevailing site condition and line deviation requirement.

D) For power line crossing of 66 kV and below voltage level, suspension/tension towers shall be provided on either side of power line crossing depending upon the merit of the prevailing site condition and line deviation requirement.

E) For crossing of railway tracks, national highways and state highways, the rules/regulations of appropriate authorities shall be followed.

A.8.0 The relevant conductor configuration for 765 kV shall be as follows: -

a. LILO of Vemagiri – Srikakulam 765 kV D/C line at Kakinada substation:

Type of conductor: ACSR / AAAC / AL59

Basic Parameters:

Transmission line	ACSR Conductor specified	Equivalent AAAC conductor based on 53.5% conductivity of Al Alloy	Equivalent minimum size of AL59 conductor based on 59% conductivity of AL Alloy*	Sub-conductor Spacing
765 kV D/C (Hexa Bundle) Transmission Lines	Zebra : Stranding 54/3.18 mm-Al + 7/3.18 mm-Steel, 428 mm ² , Aluminium area, 28.62 mm diameter Maximum DC Resistance at 20°C (Ω/km): 0.06868 Minimum UTS: 130.32 kN	Stranding details: 61/3.19 mm, 487.5 mm ² Aluminium alloy area 28.71 mm diameter Maximum DC Resistance at 20°C (Ω/km): 0.06815 Minimum UTS: 135.6 kN	Stranding details: 61/3.08 mm, 454 mm ² Aluminium alloy area 27.72 mm diameter Maximum DC Resistance at 20°C (Ω/km): 0.0653 Minimum UTS: 108 kN	457 mm

Note:

1. **To select any size above the minimum, the sizes mentioned in the Indian standard IS-398 (part-6) shall be followed.*
2. *The transmission lines shall have to be designed for a maximum operating conductor temperature of 85 deg C.*

A.9.0 The required phase to phase spacing and horizontal spacing for 765 kV line shall be governed by the tower design as well as minimum live metal clearances for 765 kV voltage level under different insulator swing angles. However, the phase to phase spacing for 765 kV line shall not be less than 15 m.

A.10.0 All electrical clearances including minimum live metal clearance, ground clearance and minimum mid span separation between earth wire and conductor as given below shall be considered:

Minimum live metal clearances for 765 kV line:

a) (i) Under stationary conditions

From tower body: For 765 kV D/C: 6.1 m

For 765 kV S/C: 5.6 m

(ii) Under swing conditions

Wind Pressure Condition	Minimum Electrical Clearance
a) Swing angle (25°)	4.4 m
b) Swing angle (55°)	1.3 m

b) Minimum ground clearance for 765 kV line: 18 m

c) Minimum mid span separation between earth-wire and conductor for 765 kV line: 9.0 m

A.11.0 The shielding angle shall not exceed 10 deg for 765 kV D/C transmission line.

A.12.0 The Fault current for design of line shall be 50 kA for 1 sec for 765 kV.

A.13.0 In case of 400 kV and above voltage class lines, at least one out of two earth wires shall be OPGW and second earth wire, if not OPGW, shall be either of Galvanized Standard Steel (GSS) or Aluminum Alloy Conductor Steel Reinforced (AACSR) or any other suitable conductor type depending upon span length and other technical consideration.

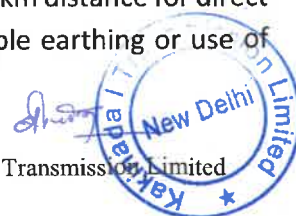
A.14.0 Each tower shall be earthed such that tower footing impedance does not exceed 10 ohms. Pipe type or Counterpoise type earthing shall be provided in accordance with relevant IS. Additional earthing shall be provided on every 7 to 8 km distance for direct earthing of both shield wires. If site condition demands, multiple earthing or use of earthing enhancement compound shall be used.



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- A.15.0 Pile type foundation shall be used for towers located in river or creek bed or on bank of river having scourable strata or in areas where river flow or change in river course is anticipated, based on detailed soil investigation and previous years' maximum flood discharge of the river, maximum velocity of water, highest flood level, scour depth and anticipated change in course of river based on river morphology data of at least past 20 years to ensure availability and reliability of the transmission line.
- A.16.0 Transmission line route shall be finalized, in consultation with appropriate authorities so as to avoid the habitat zones of endangered species and other protected species. Bird diverters, wherever required, shall be provided on the line. In order to optimize the route, use of GATISHAKTI platform shall also be made.
- A.17.0 Wherever, transmission lines are passing through cyclone prone areas i.e., areas up to 60 km from coast following shall also be applicable:
- a) Terrain category-I, with terrain roughness factor (K2) of 1.08 shall be considered for tower design for exposed open terrain with few or no obstruction, which also includes open sea coasts, open stretch of water, desert and flat treeless plains.
 - b) Importance factor for cyclonic region (K4) of 1.3 shall be considered for tower design.
 - c) The number of consecutive spans between the section points/ angle point shall not exceed 10 spans or 3 km instead of conventional practice of 15 spans or 5 km, in order to reduce the failure of such towers in coastal areas due to cascading effect. The section shall be terminated with tension tower/ angle tower and angle of deviation should be based on the site requirement.
- A.18.0 Wherever, transmission lines are passing through cyclone prone areas (i.e. areas up to 60 km from coast)/ creek regions/ aggressive soil areas following shall also be applicable:
- a) The fabricated tower parts and stubs shall have a minimum overall zinc coating of 900 g/m² of surface area except for plates and sections below 5 mm which shall have a minimum overall zinc coating of 610 g/m² of surface area. The average zinc coating for all sections and plates 5 mm and above shall be maintained as 127 microns and that for plates and sections below 5 mm shall be maintained as 87 microns.
 - b) Ready mix concrete of M30 Grade shall be used to avoid use of locally available saline water. However, design mix concrete of M30 Grade conforming to IS 456 with potable water can be used at locations where transportation of ready-mix concrete is not feasible. Minimum cement content in any case shall not be less than 330 kg/m³.
 - c) The surface of the reinforced steel shall be treated with epoxy-based coating.



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to enhance corrosion performance of foundation. Use of epoxy coated reinforcement in foundation shall be as per IS 13620. In addition, two (2) coats of bituminous painting of minimum 1.6 kg/m² per coat shall be applied on all exposed faces of foundation (i.e. pedestal and base slab).

- d) Double coat 20 mm thick cement plaster shall be provided on all exposed concrete surface as well as up to 300 mm below the ground level to provide protection to concrete surface from environmental and saline effect.
- e) Before coping of chimney top portion, three coats of anti-corrosive paint of minimum 30-35 microns dry film thickness each shall be applied on the stub in the 50 mm coping portion as well as up to 350 mm above CL portion.

- A.19.0 The raised chimney foundation is to be provided in areas prone to flooding/water stagnation like paddy field /agricultural field and undulated areas to avoid direct contact of water with steel part of tower. The top of the chimney of foundation should be at least above High Flood Level (HFL) or the historical water stagnation/ logging level (based on locally available data) or above High Tide Level or 500 mm above Natural Ground level (whichever is higher).
- A.20.0 Routing of transmission line through protected areas shall be avoided to the extent possible. In case, it is not possible to avoid protected areas, the towers of the transmission line up to 400 kV level, which are installed in protected areas shall be designed for Multi-circuit (4 circuits) configuration of same voltage level considering reliability level of at least two (2). The top two circuits of these multi-circuit towers shall be used for stringing of the transmission line under present scope and the bottom two circuits shall be made available for stringing of any future transmission line of any transmission service providers/ State transmission utilities/Central transmission utilities passing through the same protected area. Further, the configuration and coordinates of such transmission towers shall be submitted to CEA, CTU and BPC by the TSP.
- A.21.0 The TSP shall abide by the Guidelines of CEA w.r.t. shifting of transmission lines for NHAI projects and other projects.
- A.22.0 Safety precautions in regard to gas/oil pipelines in vicinity of Transmission lines shall be taken in coordination with gas/ petroleum authorities.
- A.23.0 The stringing of the transmission line in forest area shall be carried out through drone.
- A.24.0 The tower shall be designed considering the porcelain Insulators with creepage factor of 31 mm/ kV irrespective of type of insulator used.
- A.25.0 RoW width and Span in different terrain shall be as per Schedule VII of CEA (Technical Standards for Construction of Electrical plants and Electric Lines) Regulations 2022 and RoW guidelines issued vide CEA-PS-14-86/2/2019-PSETD Division dated 24.09.2024



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SPECIFIC TECHNICAL REQUIREMENTS FOR SUBSTATION

The proposed **Kakinada** S/s shall be Gas Insulated Switchgear (GIS) type conforming to the requirements of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, as amended from time to time.

Other CEA Regulations/guidelines as amended up to date and Ministry of Power (MoP) guidelines, as applicable, shall also be followed.

B.1.0 Salient features of Substation Equipment and Facilities

The design and specification of substation equipment are to be governed by the following factors:

B.1.1 Insulation Coordination

The system design parameters for substations/switchyards shall be as given below:

Sl. No.	Description of parameters	765/400 kV Kakinada S/s (GIS)	
		765 kV System	400 kV System
1.	System Operating Voltage	765 kV	400 kV
2.	Maximum voltage of the system (rms)	800 kV	420 kV
3.	Rated Frequency	50 Hz	50 Hz
4.	No. of Phases	3	3
5.	Rated Insulation Levels		
i)	Lightning Impulse Withstand Voltage for (1.2/50 micro sec.) - for Equipment other than Transformer and Reactor - for Insulator String	2100 kVp 2100 kVp	1425 kVp 1550 kVp
ii)	Switching Impulse Withstand Voltage (250/2500 micro sec.) dry and wet		



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Sl. No.	Description of parameters	765/400 kV Kakinada S/s (GIS)	
		765 kV System	400 kV System
		1425 kVp	1050 kVp
iii)	One minute power frequency dry withstand voltage (rms)	960 kV	650 kV
6.	Corona Extinction Voltage	508 kV	320 kV
7.	Max. radio interference voltage for frequency between 0.5 MHz and 2 MHz	2500 micro-volts at 508 kV rms	1000 micro-volts at 266 kV rms
8.	Minimum creepage distance for insulator string/ longrod insulators/ outdoor bushings	24800 mm (31 mm/kV)	13020 mm (31 mm/kV)
9.	Minimum creepage distance for switchyard equipment	24800 mm (31 mm/kV)	13020 mm (31 mm/kV)
10.	Max. Fault Current	50 kA	63 kA
11.	Duration of Fault	1 sec	1 sec

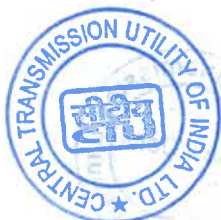
B.1.2 Switching Scheme

The switching schemes, as mentioned below, shall be adopted at various voltage levels of substation/switchyard:

Substation	765 kV side	400 kV side
765/400 kV Kakinada (GIS)	One and Half breaker	One and Half breaker

Notes: -

- For one and half breaker switching scheme, any double circuit line consisting of two numbers of feeders and originating from the same transmission or generating switchyard shall not be terminated in one diameter.*
- Two transformers of same HV rating shall not be connected in the same diameter and similarly two bus reactors of same HV rating shall also not be connected in the same diameter.*



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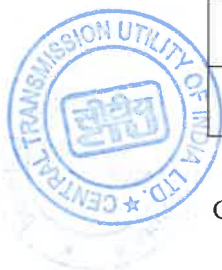
- iii) A diameter in one and half breaker scheme is a set of 3 circuit breakers with associated isolators, earth switches, current transformers etc. for controlling 2 (two) numbers of feeders.
- iv) In case of GIS substation where the bus scheme is One and Half breaker scheme, the diameters shall be complete with feeder/line side isolator and GIS duct of the future bay shall be brought outside the GIS hall/building with extension/interface module suitably.
- v) Connection arrangement of Switchable Line reactors shall be such that it can be used as Line reactor as well as Bus reactor with suitable NGR bypass arrangement. Further, Spare 1-phase Shunt Reactor unit shall be placed and connected in such a way that the spare unit can be utilized for all the bus and switchable line reactor banks (including future reactor banks) without its physical movement.
- vi) Space for 765 kV and 400 kV future line bays shall be kept considering provision of switchable line reactors.
- vii) **Provision for Bus sectionalizer:**
Space for One (1) set of future bus sectionalizer for 400 kV shall comprise Two (2) Nos. of bus sectionalizer bays with associated Circuit Breakers, Isolators and Current Transformers for both buses.
- viii) TSP shall plan connectivity of line and transformer feeders to bus bar in such a way that all power can be evacuated successfully without crossing thermal limit at any point of bus-bar.
- ix) **765/400 kV Kakinada (GIS) S/s:**

765 kV bay configurations (one and half breaker scheme) shall be as follows:

Configuration	Number of diameters
ICT- Tie- Line	3 (three)
Bus Reactor - Tie- Line	1 (one)

400 kV bay configurations (one and half breaker scheme) shall be as follows:

Configuration	Number of diameters
ICT (400 kV side of 765/400 kV ICT)- Tie- STATCOM	1 (One)
ICT (400 kV side of 765/400 kV ICT)- Tie- Future Line *	2 (Two)



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Note (): GIS modules for Line Bay shall be provided by TSP under present scope.*

Provision for future 400 kV Bus Sectionalization shall be with the following feeder distribution.

400 kV Bus Section-1	400 kV Bus Section-2 (Future)
a) 3 Nos. of 765/400 kV ICT b) 1 No. 400 kV STATCOM c) 2 Nos. for Future 400 kV Lines d) 4 Nos. of Future 400 kV Lines with Switchable line reactor	a) 3 Nos. of Future 765/400 kV ICT b) 1 No. 400 kV future STATCOM c) 6 Nos. of Future 400 kV Lines with Switchable line reactor

- x) In one and half breaker scheme, both main bay and tie bay shall be completed for controlling a feeder. Further, all associated interconnection work shall also be in the present scope of TSP.

B.2.0 Substation Equipment and Facilities (Voltage level as applicable):

The switchgear shall be designed and specified to withstand operating conditions and duty requirements. All equipment shall be designed considering the following capacity.

Sl. No	Description of bay	765/400 kV Kakinada (GIS)	
		765 kV	400 kV
1.	Bus Bar	4000 A	5000 A
2.	Line bay	3150 A	3150 A
3.	ICT bay	3150 A	3150 A
4.	Reactor bay	3150 A	N/A
5.	STATCOM Bay	N/A	3150 A

B.2.1 (765/√3)/(400/√3)/33 kV, Single Phase Autotransformer

500 MVA, (765/√3)/(400/√3)/33 kV, 1-phase autotransformer (including arrangement for 3-phase bank formation of 1500 MVA) shall conform to CEA's "Standard Specifications and Technical Parameters for Transformers and Reactors (66 kV and above voltage class)" as amended up to date available on CEA's website.

Spare 1-phase Transformer unit shall be placed and connected in such a way that the spare unit can be utilized to replace any unit of any of the transformer banks (including for future transformer banks) without physically moving it.



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B.2.2 (765/ $\sqrt{3}$) kV, Single Phase Shunt Reactor

80 MVAR, 765/ $\sqrt{3}$ kV, 1-Phase Reactor (including arrangement for 3-phase bank formation of 240 MVAR) shall conform to CEA's "Standard Specifications and Technical Parameters for Transformers and Reactors (66 kV and above voltage class)" as amended up to date available on CEA website.

Spare 1-phase Shunt Reactor unit shall be placed and connected in such a way that the spare unit can be utilized for all the bus and **switchable** line reactor banks (including for future reactor banks) without its physical movement.

Neutral Grounding Reactor and Surge Arrester for 765 kV Switchable Line Reactors (as applicable):

The neutral of the switchable line reactors (wherever provided) shall be grounded through adequately rated Neutral Grounding Reactors (NGR) to facilitate single phase auto-reclosure, provided that the NGR shall be provided with suitable bypass arrangement so that the switchable line reactor can be used as bus reactor as and when required. The neutral of bus reactor shall be solidly grounded.

NGR shall be oil filled or dry type air core for outdoor application. NGR shall conform to CEA's "Standard specifications and technical parameters of transformers and reactors (66 kV and above Voltage Class)", as amended up to date. Technical parameters of NGR shall be as specified in Annexure-A of above-mentioned document.

The surge arresters (rated voltage of arrester in co-ordination with ohmic value of NGR shall be decided by the TSP) shall be provided and physically located between the neutral of shunt reactor (brought out at 145 kV class bushing) and neutral grounding reactor. The surge arresters shall be of Station Medium (SM) class duty gapless Metal Oxide (ZnO) type conforming in general to relevant IEC Standards-60099-4. Arresters shall be hermetically sealed units, of self-supporting construction, suitable for mounting on structures.

The Ohmic value of NGR for Line Reactors shall be as follows:

Sl. No.	Line Name	Substation Name	NGR value (Ohm)
1.	LILO of Vemagiri – Srikakulam 765 kV D/C line at Kakinada substation (~20 km) {with 240 MVAR SLR at Kakinada GH end on Srikakulam – Kakinada section	Kakinada GH end	600



B.2.3 765 kV and 400 kV GIS Substation equipment

GIS (Gas Insulated Switchgear) shall be Indoor type in accordance to relevant IEC Standards: 62271-203. The switchgear shall be designed and specified to withstand operating conditions and duty requirements. All the switchgear such as Circuit Breaker, isolator, earth switch including CT, PT etc. shall be GIS type. The Surge Arrestor and Voltage Transformer shall be either GIS or outdoor AIS type.

The GIS assembly shall consist of separate modular compartments e.g. Circuit Breaker compartment, Bus bar compartment filled with SF₆ Gas and separated by gas tight partitions so as to minimize risk to human life, allow ease of maintenance and limit the effects of gas leaks failures and internal arcs etc. These compartments shall be designed to minimize the risk of damage to adjacent sections and protection of personnel in the event of a failure occurring within the compartments. Rupture diaphragms with suitable deflectors shall be provided to prevent uncontrolled bursting pressures developing within the enclosures under worst operating conditions, thus providing controlled pressure relief in the affected compartment. The arrangement of gas sections or compartments shall be such as to facilitate future extension of any make without any drilling, cutting or welding on the existing equipment. To add equipment, it shall not be necessary to move or dislocate the existing switchgear bays. The layout of Gas Insulated Bus Ducts shall be properly planned to optimize the length of bus ducts and for easy accessibility for maintenance. The length of busbars, bus ducts, isolator sections shall be optimized considering effects of fast transient voltage due to isolator operations.

The bus bar modules including auxiliary bus modules (wherever applicable) shall be provided with suitable End Piece (Interface) module **on both sides** with the test link facility for future extension as per provisions of future requirements. The end piece module shall be designed in such a way so that future GIS modules may be tested without extending test voltage to existing bus and vice-versa by removing the test link.

TSP shall make available the complete details for the design of interface module such as cross section, enclosure material, enclosure dimensions (inner and outer), Flange diameter (inner and outer), conductor cross-section and connection arrangement, bolt spacing and dimension, rated gas pressure, Gasket detail etc. Further, adequate space for GIS busbar interface module shall be taken into account for future scope.

Each section shall have plug-in or easily removable connection pieces to allow for easy replacement of any component with the minimum disturbance to the remainder of the equipment. Inspection windows (View Ports) shall be provided for Disconnectors Switches and both type of earth switches i.e. Maintenance and fast operating.

Local Control Cabinets (LCC) shall be provided as per requirement. The alarm and annunciation of GIS equipment shall be wired to the SCADA System.

The material and thickness of the enclosures shall be such as to withstand an internal flashover without burns through for a period of 300 ms at rated short time withstand




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current. The material shall be such that it has no effect of environment as well as from the by-products of SF₆ breakdown under arcing conditions. This shall be validated with Type Test.

Service continuity requirement for GIS:

The GIS equipment with the given bus switching arrangement shall be divided into different gas compartments. During the work such as a fault repair or major maintenance, requiring the dismantling of a gas compartment for which more than one compartments may need to be de-gassed.

TSP shall meet following Service continuity conditions (to the extent possible) with ensuring equipment and operating personnel's safety:

- For One and half breaker bus switching scheme, during a fault in Circuit Breaker compartment, no bus bar and feeder is permitted out of service during maintenance and repair/replacement.
- During a fault in a GIS compartment other than the Circuit Breaker compartment, maximum of one bus bar and/or one feeder is permitted out of service during maintenance and repair/replacement.

UHF sensors in GIS for PD (Partial Discharge) detection:

The adequate number of Ultra High Frequency (UHF) sensors shall be provided in the offered GIS along with suitable portable type Partial Discharge (PD) measuring instrument for detection of Partial discharge (of 5 pC and above as per relevant IEC Standards 60270). The number and location of these sensors shall be based on laboratory tests on the typical design of GIS as per recommendations of CIGRE Document No. 654 (Application Guide for sensitivity verification for UHF Partial discharge detection system for GIS).

B.2.3.1 Circuit Breakers (GIS)

GIS Circuit breakers shall in general be of C2-M2 class and comply to relevant IEC Standards -62271-100. The rated break time shall not exceed 40 ms (milli second) for 765 kV and 400 kV. Circuit breakers shall be suitable for single phase and three phase auto reclosing. Each breaker would have two sets of trip circuits which would be connected to separate DC supplies for greater reliability. The Circuit breakers controlling 765 kV lines shall be provided either with pre-insertion closing resistor of about 450 ohms with 9 ms insertion time or with Controlled Switching Device (CSD). The Circuit breakers controlling 400 kV lines wherever required shall be provided with pre-insertion closing resistor of about 400 ohms with 8 ms insertion time or Controlled Switching Device (CSD) for lines longer than 200 km. The short line fault capacity shall be the same as the rated capacity and this is proposed to be achieved without use of opening resistors. Controlled switching device shall be provided in the Circuit Breaker of the switchable line reactor bay and in Main and Tie bay circuit breakers of line with



non-switchable line reactors, Bus reactors and Transformers for 400 kV and above voltage class.

B.2.3.2 Isolators (GIS)

The isolators shall comply to relevant IEC Standards 62271-102 in general. Earth switches shall be provided at various locations to facilitate maintenance. Main blades and earth blades shall be interlocked and interlock shall be fail safe type. All isolators and earth switches shall be motor operated type.

The isolator shall be of extended mechanical endurance class-M2 and suitable for Bus Transfer Current Switching duty as per IEC standards. High speed earthing switches shall be provided for grounding purposes at overhead line terminations and cable terminations and shall have fault making capability as specified. Earth switch for line isolator shall be of earthing switch class E1 and shall be suitable for induced current switching duty as defined for Class-B as per relevant standard.

B.2.3.3 Current Transformers (GIS)

Current Transformers shall comply with relevant IEC Standards 61869 in general. All ratios shall be obtained by secondary taps only. Generally, Current Transformers (CT) shall have five cores (four for protection and one for metering) whereas; CT in Tie bays shall have six cores (four for protections and two for metering) suitably distributed on both sides of CB (for 400 kV and above voltage class). The burden and knee point voltage shall be in accordance with the requirements of the system including possible feeds for telemetry. The accuracy class for protection core shall be PX and for the metering core it shall be 0.2S. The rated burden of cores shall be closer to the maximum burden requirement of metering and protection system (not more than 20 VA for metering core) for better sensitivity and accuracy.

The instrument security factor shall be less than 5 for CTs up to 400 kV voltage class and less than 10 for CTs of 765 kV voltage class.

B.2.3.4 Voltage Transformer (GIS)

The voltage transformers shall conform to relevant IEC Standards-61869. Voltage transformers shall be of electromagnetic type with SF₆ gas insulation. The earth end of the high voltage winding and the ends of the secondary winding shall be brought out in the terminal box. The voltage transformers shall be located as a separate bay module and will be connected phase to ground and shall be used for protection, metering and synchronization. The voltage transformers shall be of inductive type, nonresistant and shall be contained in their own-SF₆ compartment, separated from other parts of installation. The voltage transformer shall be effectively shielded against high frequency electromagnetic transients. The voltage transformer shall have three secondary windings out of which two shall be used for protection and one for metering. The voltage transformer should be thermally and dielectrically safe when the secondary



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terminals are loaded with the guaranteed thermal burdens. The accuracy class for protection cores shall be 3P. The accuracy of 0.2 on metering core should be maintained throughout the entire burden range on all the three windings without any adjustments during operation. The rated burden of cores shall be closer to the maximum burden requirement of metering and protection system (not more than 50 VA for metering core) for better sensitivity and accuracy.

B.2.3.5 Surge Arresters (GIS) (if applicable)

624 kV Station High (SH) duty and 336 kV Station High (SH) duty gapless type Surge arresters with thermal energy (Wth) of minimum 13 kJ/ kV and 12 kJ/ kV respectively shall be provided for 800 kV and 420 kV system respectively conforming to relevant IEC Standards 60099-4 in general. Other characteristics of Surge arrester shall be chosen in accordance with system requirements. Surge arresters shall be provided at line entrances, near transformers and Reactors so as to achieve proper insulation coordination. A leakage current monitor with surge counter shall be provided with each surge arrester.

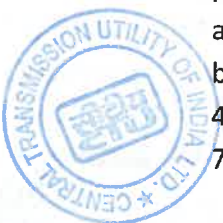
B.2.3.6 SF₆ to Air Bushing

Outdoor bushings, for the connection of conventional external conductors to the SF₆ metal enclosed switchgear, shall be provided. Bushings shall generally be in accordance with the requirements of relevant IEC Standards-60137. The creepage distance over the external surface of outdoor bushings shall not be less than 31 mm/ kV. SF₆ to air Bushing shall be of Polymer/ composite type and shall be robust and designed for adequate cantilever strength to meet the requirement of seismic conditions. The electrical and mechanical characteristics of bushings shall be in accordance with relevant IEC Standards-60137. Polymer/composite insulator shall be seamless sheath of silicon rubber compound. The housing and weather sheds should have silicon content of minimum 30% by weight. It should protect the bushing against environmental influences, external pollution and humidity. The hollow silicon composite insulators shall comply with the requirements of relevant IEC Standards 61462 and the relevant parts of relevant IEC Standards-62217.

B.2.4 765 kV and 400 kV AIS Substation equipment (as applicable)

B.2.4.1 Capacitive Voltage Transformers (AIS)

Capacitive Voltage Transformers shall comply with relevant IEC Standards 61869 in general. These shall have three secondaries out of which two shall be used for protection and one for metering. The Accuracy class for protection cores shall be 3P and for metering core shall be 0.2. The Capacitive Voltage Transformers on lines shall be suitable for Carrier Coupling. The Capacitance of CVT for 400 kV shall be of 4400/8800 pF depending on PLCC requirements whereas the Capacitance of CVT for 765 kV shall be 8800 pF. The rated burden of cores shall be closer to the maximum



burden requirement of metering and protection system (not more than 50 VA for metering core) for better sensitivity and accuracy.

B.2.4.2 Surge Arresters (AIS)

624 kV and 336 kV Station High (SH) duty gapless type Surge Arresters with thermal energy (W_{th}) of minimum 13 kJ/kV and 12 kJ/kV conforming to relevant IEC Standards 60099-4 in general shall be provided for 800 kV and 420 kV systems respectively. Other characteristics of Surge Arrester shall be chosen in accordance with system requirements. Surge arresters shall be provided at line entrances, near transformers and reactors so as to achieve proper insulation coordination. Surge Arresters shall be provided with porcelain/ polymer housing fitted with pressure relief devices. A leakage current monitor with surge counter shall be provided with each surge arrester.

B.2.5 Protection Relaying and Control System

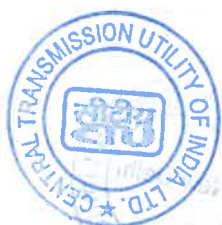
The protective relaying system proposed to be provided for transmission lines, auto-transformers, reactors and bus bars to minimize the damage to the equipment in the events of faults and abnormal conditions, is dealt in this section. All main protective relays shall be numerical type with relevant IEC Standards 61850 communication interface and should have interoperability during integration of numerical relays to communicate over relevant IEC Standards 61850 protocol with RTU/SAS/IEDs of different OEMs. All numerical relays shall have built in disturbance recording feature.

The protection circuits and relays of transformer and reactor shall be electrically and physically segregated into two groups each being independent and capable of providing uninterrupted protection even in the event of one of the protection groups failing, to obtain redundancy, and to take protection systems out for maintenance while the equipment remains in service.

a) Transmission Lines Protection

765 kV lines shall have Main-I numerical three zone distance protection scheme with carrier aided inter-tripping feature. 765 kV lines shall also have Main-II numerical distance protection scheme like Main-I but from different make that of Main-I. The Main-I and Main-II protection relays of same make may be provided only if they are of different hardware and manufacturing platform or different principle of operation.

However, Line Current Differential Relay (with back up distance protection feature) as Main-I and Main-II shall be considered at both ends for short lines (line length below 30 km) having Fibre Optic Communication Link. Differential relay at remote end shall be provided by the TSP. The associated power and control cabling and integration with SAS at remote end shall be provided by respective bay owners.



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In case of loop in loop out of transmission lines, the existing protection scheme shall be studied and suitable up-gradation (if required) shall be carried out.

Further, all 765 kV lines shall be provided with single and three phase auto- reclosing facility to allow reclosing of circuit breakers in case of transient faults. These lines shall also be provided with distance to fault locators to identify the location of fault on transmission lines.

All 765 kV lines shall also be provided with two stage over voltage protection. The over voltage protection and distance to fault locator may be provided as in-built feature of Main-I and Main-II protection relays. Auto reclose as built-in function of Bay Control Unit (BCU) is also acceptable.

The Main-I and Main-II protection relays shall be fed from separate DC sources and shall be mounted in separate panels.

For 765 kV transmission lines, directional Inverse Definite Minimum Time (IDMT) earth fault relay should be provided as standalone unit or in-built feature of Main-I and Main -II feature.

b) Auto Transformer Protection

These shall have the following protections:

- i) Numerical Differential Protection
- ii) Numerical Restricted Earth Fault Protection
- iii) Numerical Back-up Over-Current and Earth Fault Protection on High Voltage (HV) and Intermediate Voltage (IV) side
- iv) Numerical Over Fluxing Protection on HV and IV side
- v) Numerical Overload Alarm

Further, Numerical Back-up Over-current and earth fault protection on HV and IV side of autotransformer shall not be combined with other protective functions in the main relays and shall be independent relays. Besides these, power transformers shall also be provided with Buchholz relay, Magnetic Oil Gauge (MOG) with low oil level alarm, protection against high oil and winding temperature and pressure relief device etc.

Suitable monitoring, control (operation of associated circuit breaker and isolator) and protection for LT auxiliary transformer connected to tertiary winding of auto-transformer for the purpose of auxiliary supply shall be provided. The over current and other necessary protection shall be provided for the auxiliary transformer. These protection and control may be provided as built-in feature either in the bay controller to be provided for the auxiliary system or in the control and protection IEDs to be provided for autotransformer.



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c) Reactor Protection

Reactor shall be provided with the following protections:

- i) Numerical Differential Protection.
- ii) Numerical Restricted Earth Fault Protection
- iii) Numerical Back-up impedance protection

Besides these, reactors shall also be provided with Buchholz relay, Magnetic Oil Gauge (MOG) with low oil level alarm, protection against oil and winding temperatures and pressure relief device, etc.

d) Bus bar Protection

The high-speed low impedance type bus bar differential protection, which is essential to minimize the damage and maintain system stability at the time of bus bar faults, shall be provided for 765 kV and 400 kV buses. Duplicated bus bar protection is envisaged for 765 kV and 400 kV bus-bar protection. Bus bar protection scheme shall be such that it operates selectively for each bus and incorporate necessary features required for ensuring security. The scheme shall have complete bus bar protection for present as well as envisaged future bays i.e. input / output modules for future bays shall also be provided.

Bus Bar protection system for new substation shall be de-centralized (distributed) type.

The scheme shall have complete bus bar protection for present as well as envisaged future bays i.e. input/ output modules for future bays for the bus sections under present scope and PUs shall be provided by the respective bay owners. In case, the bus section is provided, then each side of bus section shall have separate set of bus bar protection schemes.

For existing substations, the existing bus bar protection shall be augmented as per requirement.

e) Local Breaker Back up Protection

This shall be provided for each 765 kV and 400 kV circuit breakers and will be connected to de-energize the affected stuck breaker from both sides.

Notes:

1. LBB and REF relays shall be provided separately from transformer differential relay.



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2. *LBB relay may also be provided as built-in protection function of distributed bus bar protection scheme; however in such case separate LBB relay shall be provided for tie bays (in case of One and Half breaker scheme).*
3. *Over fluxing and overload protection can be provided as built-in feature of differential relay.*
4. *In 765 kV and 400 kV switchyard, if spare bay of half diameter is identified as future, Tie CB relay panel shall be with Auto-reclosure feature.*

B.2.6 Substation Automation System

- a) For all the new substations, state of art Substation Automation System (SAS) conforming to relevant IEC Standards-61850 shall be provided. The distributed architecture shall be used for Substation Automation System, where the controls shall be provided through Bay Control Units. The Bay Control Unit is to be provided bay wise for voltage level 220 kV and above. All Bay Control Units as well as protection units are normally connected through an Optical fibre high speed network. The control and monitoring of circuit breaker, dis-connector, re-setting of relays etc. can be done from Human Machine Interface (HMI) from the Control Room.

The functions of control, annunciation, disturbance recording, event logging and measurement of electrical parameters shall be integrated in the Substation Automation System.

At new substations, the Substation Automation System (SAS) shall be suitable for operation and monitoring of the complete substation including proposed future bays/elements.

In existing substations with Substation Automation System (SAS), augmentation of existing SAS shall be done for bays under present scope.

In existing Substations where Substation automation is not provided, control functions shall be done through control panels.

Necessary gateway and modems (as required) shall be provided to send data to RLDC/SLDC as per their requirement and shall be provisioned with 2+2 redundancy i.e. 2 channels for Main Control Centre and 2 channels for Backup Control Centre. In order to meet this requirement, suitable redundancy at port and card level need to be ensured by the TSP to avoid any single point of failure which may lead to interruption in real-time grid operation. Accordingly, all the hardware for communication services of station as stated above shall support dual redundancy for data transmission of station to respective main and backup RLDCs. Any augmentation work at RLDC/SLDC is excluded from TSP's scope. However, all the configuration work at substation end required to send data to RLDC/SLDC shall be in the scope of TSP.

b) Time Synchronization Equipment

Time Synchronization Equipment complete in all respect including antenna, cable, processing equipment required to receive time signal through GPS or from National Physical Laboratory (NPL) through INSAT shall be provided at new substations. This equipment shall be used to synchronize SAS and IEDs etc.

B.3.0 Substation Support Facilities

Certain facilities required for the operation and maintenance of substations as described below shall be provided at the new substation. In existing substation, these facilities have already been provided and shall be extended/ augmented as per requirement.

B.3.1 AC and DC power supplies

For catering the requirements of three phase and single phase AC supply and DC supply for various substation equipment (for present and future scope), the following arrangement is envisaged:-

- i) For LT Supply at each new Substation, two (2) Nos. of LT Transformers (minimum 800 kVA for substations with highest voltage rating as 765 kV) shall be provided which shall be fed from two independent sources as per the CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007.

Metering arrangement with Special Energy Meters (SEMs) shall be provided by TSP at 33 kV tertiary of Transformer for drawing auxiliary supply at new substation. Such SEMs shall be provided by CTU at the cost of the TSP. Accounting of such energy drawn by the TSP shall be done by RLDC/RPC as part of Regional Energy Accounting. Additionally, Active Energy Meters may be provided at the same point in the 33 kV tertiary of Transformer by local SEB/DISCOM for energy accounting.

- ii) 2 sets of 220V battery banks for control and protection and 2 sets of 48 V battery banks for PLCC/ communication equipment shall be provided at each new Substation. Each battery bank shall have a float-cum-boost charger.

At new substation, sizing of 220 V battery and battery charger shall be done based on the number of bays specified (including future bays) as per CEA Regulations and relevant IS. 2 sets of 48 V battery banks for PLCC and communication equipment for present and future scope shall be provided at each new Substation with at least 10-hour battery backup and extended backup, if required. 48 V DC can be achieved from 220 V DC battery bank using adapter, if so desired by TSP, without compromising backup time.

- iii) Suitable AC and DC distribution boards and associated LT Switchgear shall be provided at new substation.

- iv) For new substation, following switch boards shall be considered with duplicate



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supply with bus coupler/ sectionalizer and duplicate outgoing feeders except for Emergency lighting distribution board which shall have only one incoming feeder:

- (a) 415 V Main Switch board – 1 No.
- (b) AC distribution board – 1 No.
- (c) Main lighting distribution board – 1 No.
- (d) Emergency lighting distribution board – 1 No.
- (e) 220 Volt DC distribution board – 2 Nos.
- (f) 48 Volt DC distribution board – 2 Nos.

Sizing of LT Switchgear shall be suitable to cater the requirement for all present and future bays. AC and DC distribution boards shall have modules for all the feeders (including future as specified).

- v) At new Substation, one No. of DG set (minimum 500 kVA for substations with highest voltage rating as 765 kV) shall be provided for emergency applications.
- vi) At new substation, sizing of battery and battery chargers shall be done based on the number of bays specified (including future bays).
- vii) For substation extensions, existing facilities shall be augmented as required.

B.3.2 Fire Fighting System

Fire-fighting system for substation including Transformer and Reactor shall conform to CEA (Measures Relating to Safety and Electric Supply) Regulations, 2023 as amended from time to time.

Further, adequate water hydrants and portable fire extinguishers shall be provided in the substations. The main header of the firefighting system shall be suitable for extension to bays covered under the future scope; necessary piping interface in this regard shall be provided.

Optical Beam type heat detection for GIS hall fire protection system shall be provided for all the GIS halls.

At existing substations, the fire-fighting systems as available shall be extended to meet the additional requirements.

B.3.3 Oil evacuating, Filtering, Testing and Filling apparatus

To monitor the quality of oil for satisfactory performance of transformers, shunt reactors and for periodical maintenance necessary oil evacuating, filtering, testing and filling apparatus would be provided at new substations. Oil storage tanks of adequate capacities for storage of transformer oil would be provided.

Online Transformer Oil Drying Out System (TODOS) shall be provided in line with the provisions of Standard Specification and Technical Parameters for Transformers and Reactors (66 kV and above Voltage Class) as amended up to date available on CEA website.



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B.3.4 Illumination

Normal and emergency AC and DC illumination shall be provided adequately in the control room and other buildings of the substation. The switchyard shall also be provided with adequate illumination.

The lighting of the entire control room building, fire-fighting pump house, other building (if any) and switchyard shall be done by LED based low power consumption luminaries.

B.3.5 Control Room

For the new substation, substation control room shall be provided to house substation work stations for station level control (SAS) along with its peripheral and recording equipment, AC and DC distribution boards, DC batteries and associated battery chargers, Fire Protection panels, Telecommunication panels and other panels as per requirements. Air conditioning shall be provided in the building as functional requirements. Main cable trenches from the control room shall have adequate space provision for laying of cables from the control room for all the future bays.

At existing substations, the adequacy of size of control room shall be ascertained and the same shall be augmented as per requirement.

B.3.6 GIS hall

The Gas Insulated Switchgear (GIS) of each voltage level along with other associated equipment shall be housed inside **separate** GIS building. The panels i.e. Bay level units, bay mimic, relay and protection panels, RTCC panels, PLCC panels, panels for telecommunication system etc. are to be placed in a separate room in the GIS building. The size of the room shall be such that all the panels for the bays under present scope shall be accommodated. The panel room shall be air-conditioned. Further, the temperature of the room shall be monitored through substation automation system by providing necessary temperature transducers. Ventilation system of suitable capacity shall be provided for each GIS hall. **GIS hall shall be constructed in such a way that its extension does not cause any hindrance to accommodate the bays of future expansion of substation.**

One EOT Crane of suitable capacity for erection and Maintenance of largest GIS component/assembly and all plant installed in the GIS switchgear room shall be provided in each GIS hall. The crane shall be capable of fulfilling all special requirements for erection and maintenance of GIS equipment. The capacity of the crane shall be sized to lift the heaviest GIS switchgear component.



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B.3.7 Control Concept

All the EHV circuit breakers in substation/switching stations shall be controlled and synchronized from the switchyard control room/remote control center. All the isolators shall have control from remote/local whereas the earth switches shall have local control only.

B.3.8 Visual Monitoring System (VMS) for watch and ward of substation premises:

Visual Monitoring System for effective watch and ward of substation premises shall cover all the transformers and reactors, all other major AIS Equipment (such as CB, isolators, CT, CVT, SA etc. as applicable), GIS Bays, panel room, all the gates of switchyard and all entry and exit points of control room building and accordingly the location of cameras shall be decided. In addition to the gates of the switchyard, the cameras shall also be located around the boundaries at suitable locations. The camera shall be high-definition color CCD camera with night vision feature. The VMS data partly/completely shall be recorded (minimum for 15 days) at least @25fps (or better) and stored on network video recorder. The system shall use video signals from various cameras installed at different locations, process them for viewing on workstations/monitors in the control room and simultaneously record all the cameras. The VMS data should go only to the intended personnel/facility and not to the remote server of the Camera (VMS supplier).

Mouse/keyboard controllers shall be used for pan, tilt, zoom and other functions of the desired camera. The Visual Monitoring System shall have provision of WAN connectivity for remote monitoring.

All camera recordings shall have Camera ID and location/area of recording as well as date/time stamp. The equipment should generally conform to Electromagnetic compatibility requirement for outdoor equipment in EHV substation. Advisory on deployment of CCTV issued by Ministry of Electronics and Information Technology (MEITY) shall be followed.

At existing substations, the Visual Monitoring System if available shall be augmented as per existing or better specification as required.

B.4 General Facilities

- a) Line Gantry/Towers are envisaged for bays under the present scope only. However, for adjacent future line bay, gantry/tower shall be designed for extension (considering Hexa conductors for 765 kV, Quad conductors for 400 kV and Twin conductor for 220 kV future lines) wherever applicable.
- b) Bay extension works at existing substation shall be executed by TSP in accordance with the requirement/provisions mentioned above. However,



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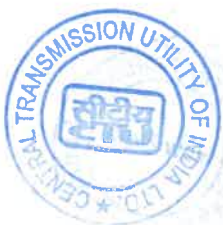
interface points shall be considered keeping in view the existing design/arrangement at the substation.

- c) TSP has to arrange for construction power and water on its own.
- d) All outdoor steel structures including anchor/foundation bolts shall be fully galvanized. The weight of the zinc coating shall be at least 610 g/m², however, for coastal/creek regions it shall be at least 900 g/m². (if applicable)
- e) In 765 kV and 400 kV switchyard, if spare bay of half diameter is identified as future, all the equipment for Tie and Future bay shall be designed considering the current rating of line bay i.e. 3150 A.
- f) Boundary wall shall be brick masonry wall with RCC frame or Stone masonry wall or Precast RCC wall under present scope along the property line of complete substation area including future switchyard area to prevent encroachment and unauthorized access. Minimum height of the boundary wall shall be of 1.8 m from Finished Ground Level (FGL).
- g) All electrical equipment shall be installed above the Highest Flood Level and where such equipment is not possible to be installed above Highest Flood Level, it shall be ensured that there is no seepage or leakage or logging of water.
- h) As per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022/CEA Manual on Transmissions Planning criteria 2023, line approaching substation shall normally be perpendicular to the substation boundary for a stretch of 2-3 km. Accordingly, TSP shall ensure that line terminations at substations are arranged in a manner to avoid hindrance to future line terminations at the substations.

SPECIFIC TECHNICAL REQUIREMENTS FOR STATCOM

The proposed STATCOMs shall be conforming to the requirements of CEA (Technical Standards for Connectivity to Grid) Regulations, 2007 including amendments and CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, as amended from time to time. Other CEA Regulations and MoP guidelines, as applicable, shall also be followed and complied with.

Note: These specifications are general in nature applicable to a STATCOM in combination of MSC and MSR. Since, +300 MVar STATCOM along with 2x125 MVar MSC has been specified under the present Scope of work at Kakinada PS, the specification may be read accordingly.



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C.1 Introduction:

This technical specification for a STATCOM Station consists of STATCOM, MSCs (Mechanically Switched Capacitors) and MSRs (Mechanically Switched Reactors) (to be installed at MV bus) including associated coupling Transformer (rated 400/xx kV) and other equipment connected to the 400 kV bus. MV voltage level (xx kV) of the coupling Transformer can be chosen by the TSP to optimize the offered solution which meets functional requirement of this Technical Specification.

The STATCOM station shall operate asymmetrically in the leading and lagging MVar regions as applicable to reach the dynamic range specified. The purpose of the STATCOM station is to regulate the voltage of 400 kV Bus Point of Common Coupling (PCC). The Configuration and the nominal rating of the STATCOM station is specified in this document.

The main building block of the STATCOM should be single phase Voltage Source Converter (VSC) based convertor valve (multi-level) operating in a way to eliminate or minimize AC filter requirement to High pass filter only and connected to the xx kV bus through air core reactors.

The ± 300 MVar STATCOM with 2x125 MVar Mechanically switched Capacitor (MSC) shall be with control switching arrangement for 240 MVar, 765 kV.

C.1.1 Definitions and Abbreviations

For the purpose of this specification, the following definitions / abbreviations are used:

PCC: Point of Common Coupling (herein also called as Point of Interconnection (POI)). The connection point between the STATCOM and the ISTS at which performance requirements are defined.

Reference Voltage (Vref): The Point on the voltage/current (V/I) characteristics where the static synchronous compensator (STATCOM) is at zero output (i.e. where no reactive power is absorbed from, or supplied to, the transmission system where the voltage is controlled)

MV: Medium Voltage.

STATCOM Unit: Static Synchronous Compensator based on Multi-Module technology and including air cored reactors as needed, Valve cooling, switchgear and its control and protection.

STATCOM: Static Synchronous Compensator consisting of STATCOM Unit(s) connected to a common Coupling Transformer. A static synchronous generator



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operated as a shunt connected compensator, whose capacitive or inductive output current can be controlled independently of the AC system voltage.

MSC: Mechanically Switched Capacitor (Including Switchgear). A shunt-connected circuit containing a mechanical power-switching device in series with a capacitor bank and a current limiting reactor.

MSR: Mechanically Switched Reactor (Including Switchgear). A shunt-connected circuit containing a mechanical power-switching device in series with a reactor.

Sub Module: Basic single power module of a Multi Module STATCOM unit Valve. It is a Part of a STATCOM unit valve comprising controllable switches and diodes connected in full bridge arrangement, together with their immediate auxiliaries, and storage capacitor, if any, where each controllable switch consists of one or more switched valve device(s) connected in series.

Valve: Electrically and mechanically combined assembly comprising of forced commutated devices [for example insulated-gate bipolar transistor(IGBT)] assembled in levels, complete with all connections, auxiliary components, and mechanical structures, which can be connected in series with each phase of the reactor of a STATCOM unit.

Valve Section: Electrical assembly defined for test purposes, comprising one of several sub-modules.

Valve Structure: Physical structure holding valve(s), which is insulated to the full system voltage above earth potential.

STATCOM Station: STATCOM Station includes 400 kV Switchgear, Coupling Transformer, STATCOM, MSCs (as applicable), MSRs (as applicable) along with its switchgear and complete integrated control and protection whose outputs are coordinated. (Complete turnkey delivery at site).

CT: Current Transformer.

VT: Voltage Transformer.

SAS: Substation Automation System.

Response Time: the duration from a step change in control signal until the voltage changes by 90% of its final change, before any overshoot.

Settling Time: The duration from a step change in control signal input until the STATCOM output settles to within $\pm 5\%$ of the required control output.

Slope: The ratio of the voltage change to the current change over a defined controlled range of the STATCOM, normally the full (inductive plus capacitive) range at nominal voltage, expressed as a percentage.



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VSC: Voltage Source Converter, A forced commutated device (for example, IGBT) based self-commutated convertor that is capable of generating AC voltage from DC capacitor.

Voltage/Current (V/I) Characteristic: The relationship between the current of the STATCOM and the voltage at the point of connection.

Lagging Operation: Inductive operation or reactive power absorption of the STATCOM similar to a shunt reactor.

Leading Operation: Capacitive operation or reactive power generation of the STATCOM similar to a shunt Capacitor.

TSP: Transmission Service Provider

C.2 Relevant Standard:

STATCOM Station shall comply with the following standards (latest edition):

Sl. No.	Description	Standards
1	Voltage source converter (VSC) valves for STATCOM	relevant IEC Standards- 62927 IEEE- 1052 relevant IEC Standards-60747
2	Control, protection and monitoring	relevant IEC Standards-61000 relevant IEC Standards-60255
3	Valve Hall for housing the equipment as above comprising of: - wall bushings for connection between converter phases and decoupling reactors, - piping and tubing connections of the cooling system to converter - connection of the control cabinet with the converter through optical fibers - internal lighting, auxiliary power supply (AC and DC) and power socket system - internal HVAC system	relevant IEC Standards-60071 relevant IEC Standards-60270 relevant IEC Standards-60137
4	X kV, dry insulated, air core and air self-cooled decoupling reactors. Mechanically Switched Reactors (MSRs), half-reactors	relevant IEC Standards- 60076



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Sl. No.	Description	Standards
	stacked on above the other, Outdoor installation, Complete with supporting structures	
5	Power Capacitors (MSC etc.)	relevant IEC Standards-60871-1
6	400 kV Power transformer (Coupling Transformer)	relevant IEC Standards-60076 relevant IEC Standards-60354
7	CT's and VT's	relevant IEC Standards- 61869
8	Dis-connectors and Earthing Switches	relevant IEC Standards- 62271
9	HV and MV Circuit Breakers	relevant IEC Standards- 62271
10	Surge Arresters	relevant IEC Standards- 60099
11	Auxiliary and grounding transformer	relevant IEC Standards- 60076 IEEE C57.32 IS- 5553 (Part 6)
12	Neutral Grounding Resistor, charging resistor	IEEE- C57.32
13	UPS, SMPS and Other Power supply units	relevant IEC Standards- 62040 relevant IEC Standards- 61558
14	Cyber Security	relevant IEC Standards-62243

C.3 Scope of work for STATCOM

The scope of work with regard to the works associated with the STATCOM shall comprise ± 300 MVar Modular Multi-level Voltage Source Converter (MMC-VSC) based STATCOM along with 2x125 MVar MSC (Mechanically Switched Capacitor).

STATCOM can either be Single/ multiple units. The minimum size of a unit allowed is 150 – 200 MVar. TSP shall ensure that there are no coordination issues between multiple STATCOM branches of STATCOM station. Further complete Dynamic range for STATCOM may also be installed based on appropriate studies instead of



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combination of VSC with MSC/MSR technology. Minimum MV bus voltage is to be decided by OEMs.

The TSP shall be responsible for the complete installation of STATCOM station along with the substation works as specified in the complete scope of work.

The TSP shall also perform the system studies (steady state and dynamic) according to the requirement mentioned and documentation of the same shall be preserved by TSP and to be submitted to CEA/CTU/GRID-INDIA, as per their request.

TSP shall carry out a detailed study on prevailing system conditions before interconnection of the STATCOM to assess the performance of the STATCOM. Parameters tuning to avoid any adverse impact on the grid with integration of the STATCOM shall also be identified and implemented at this stage. TSP shall carry out tuning of Power Oscillation Damping (POD) along with an interaction study with nearby HVDC/FACTS controllers.

TSP shall ensure interconnection study at the time of commissioning and shall also be responsible for tuning the POD during the license period as per relevant standards (e.g. IEEE 1052).

The switchgear for connection of STATCOM units, MSCs and MSRs provided on the secondary side of the coupling transformer shall be of standard voltage rating as per relevant IEC Standards. The switchgear, structure, control, protection and substation automation on the 400 kV side shall be as per applicable Technical Specification of the substation equipment.

Generally, the purpose of STATCOM is to improve system stability, provide damping, and smooth out the step voltage change associated with MSCs, MSRs and external compensating equipment (i.e. any existing capacitor and reactor banks) switching and provide steady state VARs as needed to support the 400 kV bus voltage.

In order to get optimum control of MVar, the control of MSCs and MSRs, as well as reactor banks connected on the 400 kV HV side, may be integrated along with STATCOM control to provide steady state 400 kV bus voltage control in a smooth manner. MSRs and MSCs are to be switched to relieve the STATCOM from high level operation, reduce its continuous losses and maximize its dynamic control potential. There should be a provision for the independent operation of MSC/MSR after delinking it with STATCOM controls when STATCOM is out of service due to any reason. Switching of MSC/MSR shall be based on value of external bus voltage.

The operating functions of the STATCOM Station shall include:



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- Steady state voltage control of 400 kV bus,
- Balance steady state voltage at 400 kV bus,
- Dynamic over-voltage control,
- Transient and Dynamic stability control
- Damping of Power Oscillations

It is assumed that the arresters will limit any transient and switching surge over voltages and may also, by design, limit dynamic over voltages.

The requirement of reactive power compensation (as defined above) guaranteed by the TSP shall not be less than the levels specified considering following.

- The total cumulative Capacitive (+) and Inductive (-) MVar rated Capacity of STATCOM Station as defined above comprising of STATCOM, MSCs (as applicable), MSRs (as applicable) coupling transformer, coupling reactor or any filter (if applicable) shall be rated at 1 p.u. voltage, for the frequency range of 48.5 Hz-50.5 Hz and at 50 °C (Celsius) ambient temperature at 400 kV Bus (Referred to as "Point of Common Coupling" or PCC).
- Capacity of one or more branches of MSC, MSR in STATCOM Station can be included in the STATCOM with equivalent capacity. Accordingly, ratings of STATCOM Unit/Branch equipment may be designed.

Example of equivalent acceptable solutions for each STATCOM Station is given below:

For ± 300 MVar STATCOM:

Option 1: ± 300 MVar STATCOM, 2x125 MVar Mechanically Switched Capacitor (MSC).

Option 2: +425/-300 MVar STATCOM, 1x125 MVar Mechanically Switched Capacitor (MSC).

Option 3: +550/-300 MVar STATCOM

- The rated capability of STATCOM, MSC (as applicable) and MSR (as applicable) shall be at 400 kV (Referred to as "Point of Common Coupling" or PCC) and in the steady state frequency range of 48.5 Hz-50.5 Hz.
- The STATCOM Station including STATCOM Units, MSCs and MSRs shall be designed to operate continuously under the worst possible combination of steady state voltage range of 360-440 kV and frequency range of 47.5 Hz – 52.5 Hz respectively and transient and temporary over voltages defined in Clause C.6.1-f).



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- The AC voltage unbalance at fundamental frequency shall be assumed equivalent to a negative phase sequence component of 1.5% for equipment rating purposes.
- The reactive power compensation levels shall be determined by manufacturing tolerances of the components and measurements carried out using metering accuracy instrumentation at the 400 kV feed points to the STATCOM Station.
- The reactive power capability shall also be determined by calculations based on test values of appropriate quantities at the discretion of the owner.
- In calculations of capability and availability, the owner shall assume the most unfavourable combinations of control, manufacturing and measurement tolerances.
- In case more than one STATCOM Station are installed in a particular substation, each STATCOM Station shall be connected to 400 kV bus individually with complete separate downstream system. Each individual STATCOM station shall have complete independent yet coordinated control system to avoid simultaneous tripping of both STATCOM Stations. The system shall be design in such a way that single common contingency (other than loss of 400 kV voltage, abnormal system events) will not cause tripping of both STATCOM Stations.
- Operation of STATCOM Station shall not excite any resonance condition in connected Power System.
- Control of STATCOM Station shall be designed to prevent hunting between MSRs, MSCs and STATCOM.

C.3.1 STATCOM building

The STATCOM station shall have an independent building including a separate control room different from the main control room building of the 765/400 kV Substation.

The STATCOM Building shall comprise of following facilities:

1. Control and Relay Panel room
2. ACDB and DCDB room
3. Battery room
4. Service Room cum workshop



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5. Conference room
6. Valve hall
7. Cooling system room
8. Lobby
9. Corridor with minimum width of 1600 mm
10. Portico
11. Common Toilet
12. Provision of shaft for electrical, sanitary, water supply facilities
13. Other facilities as per functional requirement of building
14. AHU Room

C.4 Ambient Condition

STATCOM Station should be designed to perform at 50 °C ambient temperature.

C.5 Power System Characteristics

The following AC power system characteristics apply at the point of connection i.e. point of common coupling in this case (PCC). STATCOM station operation is required within the parameter value and duration given in following table:

S. No	Power System Characteristic	Value	unit
1.	Nominal ac system voltage, line-to-line	400	kV
2.	Maximum continuous ac system voltage, line-to-line	420	kV
3.	Minimum continuous ac system voltage, line-to-line	380	kV
4.	Maximum short-term ac system voltage, line-to-line	448	kV
5.	Maximum duration of item 4	10	s
6.	Continuous negative-sequence voltage component (used for performance calculation)	1	%
7.	Continuous negative-sequence voltage component (used for rating calculation)	1.5	%



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S. No	Power System Characteristic	Value	unit
8.	Continuous zero-sequence voltage component	1	%
9.	Nominal ac system frequency	50	Hz
10.	Maximum continuous ac system frequency (for rated output)	50.5	Hz
11.	Minimum continuous ac system frequency (for rated output)	48.5	Hz
12.	Maximum short-term ac system frequency	52.5	Hz
13.	Minimum short-term ac system frequency	47.5	Hz
14.	Basic Insulation Level (BIL)	1550	kV peak
15.	Switching impulse level (SIL)	1050	kV peak
16.	Power Frequency Withstand voltage	630	kV
17.	Maximum three-phase fault current a) for performance requirements b) for rating of STATCOM X/R (Positive/Negative Seq)* X/R (Zero Seq)* Clearing time - normal Clearing time – backup	a) 63 b) 63 2.85 9.71 0.1 0.75	kA kA for 1s s s
18.	Maximum three-phase fault current	63	kA
19.	Minimum three-phase fault current # -for performance requirements -for safe operation	15 15	kA kA



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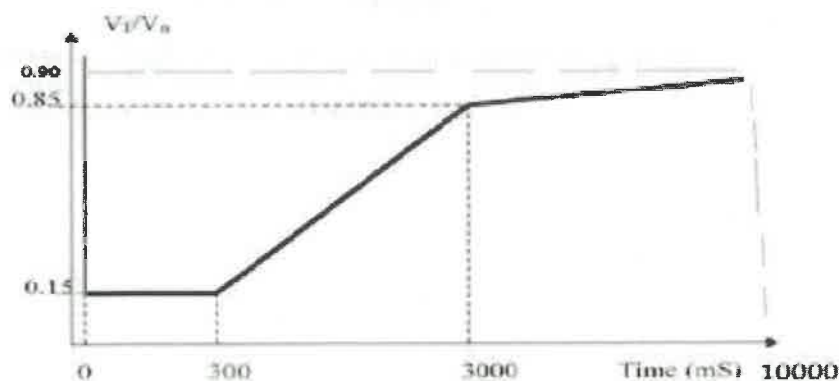


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S. No	Power System Characteristic	Value	unit
20.	Maximum single-phase fault current	63	kA
21.	Minimum single-phase fault current#	3	kA
22.	Harmonic impedance sectors for each harmonic number up to the 49th harmonic or system impedance data as R-X values with frequency steps not larger than 1 Hz (for performance and/or STATCOM system component rating)	Chapter 7.3 of CIGRE Publication 139	
23.	Background harmonic voltage (or current) spectrum (for STATCOM components rating) (Distortion up to 15th Harmonic	5th Harmonic 1.5% 7th Harmonic 1.0% Other Harmonics 0.5% (each)	
24.	Power System Phase Rotation	CCW	

The STATCOMs shall remain connected to the grid and shall be able to operate at rated reactive power capability when voltage at the interconnection point, on single phase or three phases dips up to the level depicted by the thick lines in the following curve (for specified time) and up to at least 0.3 p.u. in case of two phase faults :

VT : Actual Voltage; Vn: Nominal Voltage



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C.6 STATCOM Station Characteristics

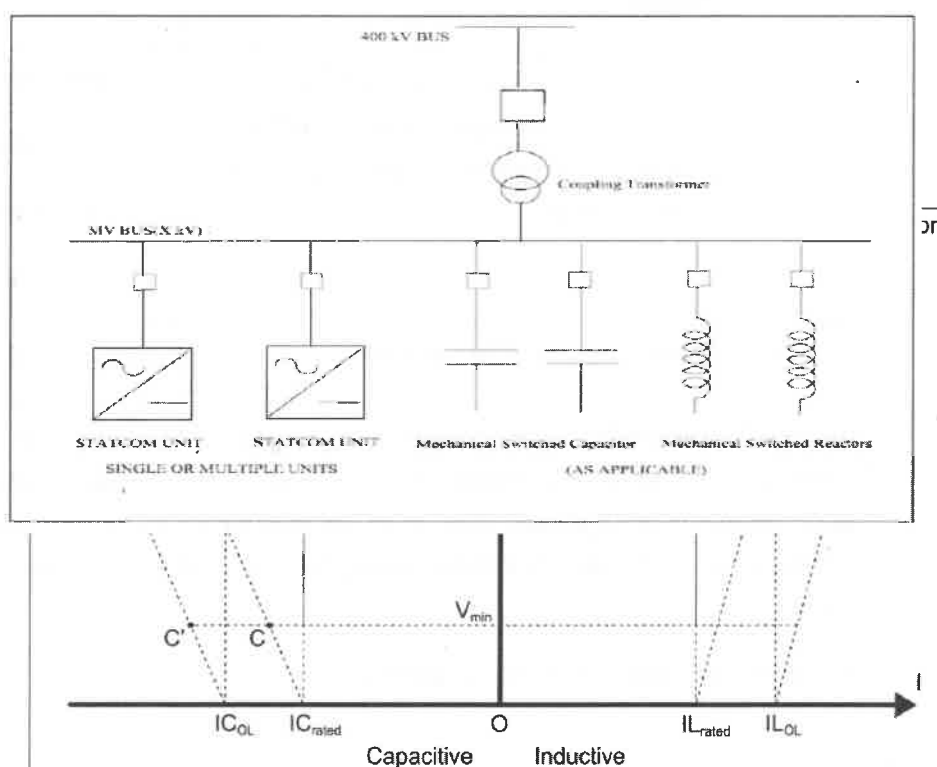


Figure-1: Conceptual Indicative Schematic diagram of STATCOM Station



Figure-2: VI Curve of the VSC Portion

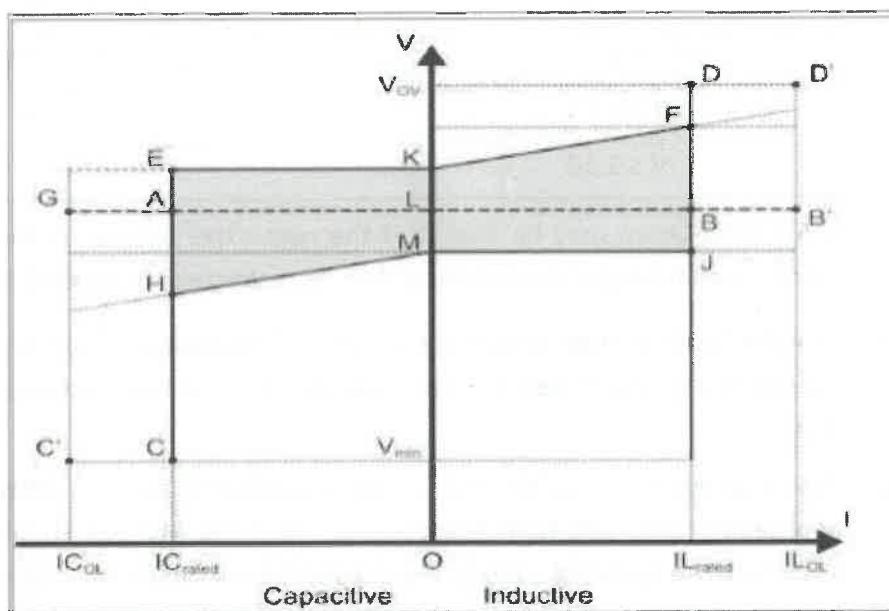


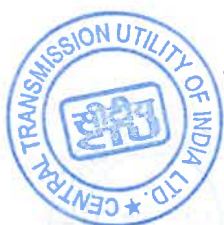
Figure-3: VI Curve of the STATCOM Station

C.6.1 STATCOM Station Ratings

The output of a STATCOM Station shall be adjusted continuously over the range illustrated in Figure-3.

The following items define the ratings of the STATCOM station equipment.

- a) The STATCOM Station should regulate the voltage of 400 kV bus to a reference voltage of 400 kV (1.0 per unit, Point L Figure-3), continuously adjustable between 0.95 per unit and 1.05 per unit.



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- b) The nominal capacitive and inductive reactive power output of the STATCOM should be as defined in the scope, at 1.0 p.u. AC bus voltage and nominal system frequency (f), and 50°C ambient temperature (Point A and point B of figure-2).
- c) The slope of the STATCOM Station characteristic should be adjustable in steps of not greater than 0.5% between 1% and 8%, on a basis of cumulative MVA capacity of STATCOM Station (A+B in Figure-3).
- d) The STATCOM Stations shall continue to inject reactive power during temporary under voltage down to 60 kV (0.15 p.u.) for the duration 0.3 sec (Point C) and STATCOM behavior for voltages above 0.15 p.u. shall be as specified under section C.5 above. The STATCOM system may be blocked if the under voltage persists for time beyond limits specified under section C.5 above.
- e) The STATCOM shall continue to absorb reactive power during HVRT Conditions in a controlled manner as per the following.

Nominal Voltage (pu)	Minimum time for remaining connected to the Grid
$V > 1.50$	Instantaneous trip
$1.50 \geq V > 1.30$	100 milli seconds
$1.30 \geq V > 1.10$	10 seconds
$V \leq 1.10$	Continuous

STATCOM Station may be tripped if the respective temporary over voltages as mentioned above persists for more than its respective mentioned duration.

- f) The STATCOM Station should be capable of repeating temporary operation as defined in any one of item (d) and (e) as above for at least 3 charging cycles in 60 mins.
- g) The coupling transformer and all bus equipment, such as filter branches (if applicable), MSC and MSR branches etc. and the MV Bus should be rated to withstand the specified continuous and short-term operation, and to withstand or be protected against voltage and current stresses that exceed these conditions.
- h) All equipment in the STATCOM Station should be capable of sustaining, without damage, any fault limited by the maximum design short circuit level of the system and the Coupling transformer impedance.
- i) The TSP shall assume the negative sequence voltage of 1% at rated short circuit level and provide control to reduce this unbalance.
- j) The injected harmonics by STATCOM Station under the full operating range measured at 400 kV Bus (PCC) in accordance with IEEE-Standard.
- k) The STATCOM controls should be designed to correct negative sequence voltage during steady state operation.




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- l) The switching module design should include an appropriate allowance for stray capacitance and component tolerances.
- m) The STATCOM should be designed to prevent, or alternatively to withstand, false firing events, i.e., the firing of any valve at an incorrect time in the cycle or when not ordered.

C.6.2 Control Objectives

The control system shall control the STATCOM, MSCs, MSRs required under this specification, as well as all bus reactors on the 400 kV HV bus of the substation.

Operation logic for the breakers, disconnectors and earth-switches in the STATCOM Station shall also be incorporated in the control system. The control shall be programmable and shall have sufficient scope and flexibility (software programming margin of at least 20%) to permit re-programming according to future changes/addition in the power system. The operator interface must be integrated in a latest version of Windows environment.

C.6.2.1 STATCOM Station Functions and Applications

C.6.2.1.1 Voltage Control mode (Automatic and Manual)

Control of the positive sequence component of the fundamental frequency voltage in steady state at POI shall be, with slope in the range as specified at clause 6.1 c) above.

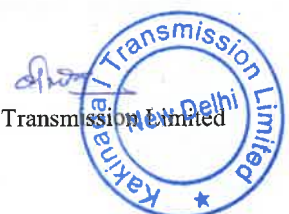
There shall be following provisions in STATCOM System to operate in Voltage Control Mode:

- a) To adjust the reference voltage for changes by Grid Operator.
- b) To adjust the value of reactive power droop in p.u. to provide a stable, coordinated and dynamic response.
- c) To adjust the voltage dead band with a minimum magnitude of ± 0.05 p.u.

C.6.2.1.2 Fixed Reactive Power Mode

In this mode, the STATCOM system shall maintain a specified constant reactive power output at the POI under continuous / steady state operating region. The target reactive power level and mode (injection or absorption) shall be specified by the Grid operator. There shall be a provision to adjust the reactive power set point. The dynamic response of the STATCOM system to any changes in reactive power shall be positively damped with a damping ratio of 0.3 or better.

C.6.2.1.3 Steady State Condition



The STATCOM Station (STATCOM along with MSCs and MSRs) shall provide necessary reactive power support to the 400 kV bus (PCC) to compensate for voltage variation under steady state.

C.6.2.1.4 Dynamic Over-voltage Control Performance

The STATCOM shall be required to provide necessary reactive power support with fast and smooth variation so that over-voltages under dynamic conditions are controlled. STATCOM shall smooth out the step caused by the switching of MSCs and MSRs.

The operation of each STATCOM over its range of MVar from full capacitive to full Inductive capacity and vice-versa shall be on the basis of smooth variation.

C.6.2.1.5 Transient and Dynamic Stability Performances

The STATCOM Station shall provide necessary reactive power so that the transient and dynamic stability of the Owner's system is enhanced.

C.6.2.1.6 Damping of Power Oscillations

The STATCOM shall provide necessary damping to power oscillations by modulating its output in its entire range based on the measured rate of change of power/frequency at the 400 kV bus. The damping controller would track local area oscillations as well as wide area oscillations and control would include several loops each focused on different frequencies.

TSP shall ensure the damping of oscillation during the entire license period including the pre-commissioning period as per relevant standards. (e.g. IEEE 1052).

C.6.2.1.7 Facility for compensation of phase imbalance

Provide negative phase sequence voltage control to minimize the presence of negative sequence content of the 400 kV bus voltage.

C.6.2.1.8 Start up and Initial Switching

The operation of STATCOM Station during start-up/initial switching on should not create significant energizing transients causing voltage drop, voltage distortion and swinging of transmission voltage angle at the PCC bus by more than +/-5%. TSP shall have to ensure this analytically during the design phase and also in the field after the commissioning of the facility. TSP shall prepare the design documentation and the same shall be preserved by TSP and to be submitted to CEA/CTU/GRID-INDIA, as per their requirement.

C.6.2.1.9 Gain Supervision and Control




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To control the regulator gain in order to prevent oscillations and excessive overshoot in the STATCOM response, a gain supervision function shall be implemented. This shall be an essential function for the supervision of stability of closed-loop voltage control. The function of this controller is that when the supervision of the gain in the voltage regulator detects oscillations in the voltage controller output, the gain shall gradually be reduced until stability is reached. Normally it is a changed condition in the transmission system contribution to the closed loop gain that results in instability. The reduction in the voltage regulator gain shall only balance the external change. The control should be adaptive in order to maximize its effectiveness. Gain reductions should be indicated and the reduction of the gain shall be able to be reset to nominal value by means of commands from the operator interface or automatically. A relative gain factor shall also be able to be changed from a gain optimizer.

C.6.2.1.10 Coordinated reactive power control of external devices

To optimize the use of dynamic VARs versus steady state VARs, control of externally connected shunt capacitor or reactor banks shall be implemented. Such banks will be connected locally to a HV bus or/and at MV bus. For simultaneous control with the supplementary VSC current controller, coordination for the two functions shall be provided. External devices like mechanically switched capacitors (MSC)/mechanically switched reactors (MSR) can be switched ON or OFF to position the steady state operating point of the VSC so as to extend its dynamic range. There should be a provision for independent operation of MSC/MSR after delinking it with STATCOM controls when STATCOM is out of service due to any reason. The threshold values for switching the MSC/MSR on/off shall be configurable in all modes of operation.

C.6.2.1.11 Supplementary VSC current controller

To optimize the use of dynamic VARs versus steady state VARs, a control function that slowly reduces or offsets the STATCOM point of operation shall be implemented. By deliberately adjusting the voltage reference setting within a narrow window the STATCOM system output is pushed towards either a specific point or towards a window to preserve dynamic range. This slow operating function is meant to provide for slower controllers, such as externally connected shunt banks to operate and meet the slower long term voltage variations caused by daily or weekly load variations. Rapid changes in the system voltage that call for dynamic compensation will have priority over this type of controller.

C.6.2.1.12 Gain optimization

To provide operation at optimal regulator gain, a fully automatic optimizing function shall be implemented. This function operates by inducing a small change



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in the STATCOM output. The gain is adjusted based on the network response signal.

C.6.2.1.13 Control of Direct Current

During STATCOM operations, any flow of direct current to the transformer's MV side must be less than 25% of the transformer magnetizing current. DC current flow in the transformer should be minimized by an independent control function that minimizes DC current. For presence of up to 0.2% second harmonic in 400 kV system, the STATCOM control should minimize DC current flow in the transformer.

C.6.2.2 Under Voltage Strategy

It is essential that the STATCOM Station operates in a robust manner when transmission system under voltages appears. In case of single phase or three phase faults, the STATCOM units must operate unrestricted, producing its rated capacitive current for transmission system voltages down to 0.15 p.u. In case of two phase fault, STATCOM shall be capable to produce rated capacitive current atleast down to 0.3 p.u., however, it shall be designed to operate upto 0.15 p.u. The STATCOM must be designed to operate at transmission system under voltage, even considering that severe voltage unbalances can appear. The STATCOM must not be restricted by short term negative sequence voltages up to 1.5%, appearing in conjunction with under voltages.

Transmission system under voltages below 0.15 p.u. will appear in conjunction with transmission system faults. The STATCOM must ride through during faults and post fault under voltages. The minimum trip delay for the STATCOM Station, upon complete loss of the transmission system voltage shall not be less than 5 seconds. If station AC auxiliary power distribution is affected, critical loads must be fed from DC station batteries, uninterrupted power supply (UPS) without tripping the STATCOM Station. Adequate capacity must be kept in DC station batteries, UPS to feed critical loads for the smooth operation of the STATCOM Station facility. There must be redundant station battery system with each station battery system capable of delivering 100% load.

At under voltage conditions for the transmission system voltage, special control strategies are activated which override the normal control modes presented above. Normally if the voltage is low, the output from the STATCOM will be capacitive. If the voltage in all three phases goes below a level, but not greater than 0.15 p.u., a special under voltage strategy may be activated that controls the STATCOM output to 0 MVar. As soon as the voltage goes higher than 0.15 p.u., the under voltage strategy is deactivated and the normal control will be in operation (for the specified duration).




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The STATCOM Station must not be tripped or shut down automatically due to under voltages appearing for specified duration as specified under section C.5 above. STATCOM Station must continue to operate when AC system Voltage on any or all phases dips down to 0.15 p.u. voltage as per the characteristic given at section C.5.

C.6.2.3 Over Voltage Strategy

C.6.2.3.1 The TSP shall carry out dynamic stability study upfront in order to assess the dynamic overvoltage requirements. These studies shall include conditions with maximum and minimum short circuit system MVA conditions, single phase and three phase faults as well as stuck breaker, outage of the nearby generator and also with the outage of parts of the STATCOM Station. It is important that the STATCOM Station rides through temporary over voltages and not trip when it is needed the most.

C.6.2.3.2 The system should be able to withstand any 3 phase, 5 cycle (100 ms) and single phase 10 cycles (200 ms) fault with consequent loss of a 400 kV double circuit line and loss of a 500 MW generator. The fault duration mentioned above corresponds to time assumed for the persistence of fault. For other system parameters refer clause 5 above (Power System Characteristics). In addition to above requirement, system contingency cases as provided in Annexure-I need to be considered and satisfied.

C.6.2.3.3 The 400 kV system and equipment to which the STATCOM Station is connected is designed to withstand switching surge overvoltage up to 2.5 p.u. and power frequency over voltages up to 1.5 pu with initial value of the temporary overvoltage up to 2.0 p.u. for 1-2 cycles. Based on arrester coordination and under the worst case scenario the 400 kV system phase to ground peak over voltages may be expected as follows

- i) 650 kVp for 3 peaks
 - ii) 575 kVp up to 5 cycles
 - iii) 530 kVp up to 1 second
 - iv) 475 kVp up to 10 seconds
- a) The STATCOM Station shall be designed to withstand these sequential over voltages.
 - b) If the over voltages greater than 1.1 p.u. are exceeded in magnitude and duration due to any system contingencies, suitable control action shall be taken by STATCOM Station to bear this kind of contingency.



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- c) The TSP shall evolve the insulation co-ordination of the components of the STATCOM Station after studies have been conducted to determine the over-voltage profile with the STATCOM connected to the system.
- d) The TSP shall ensure that STATCOM Station will not excite ferro-resonance and sub-synchronous oscillation in the AC system. The study report in this regard shall be preserved and to be submitted to CEA/CTU/GRID-INDIA, if required.
- e) It may also be noted that the tripping action for 400 kV lines is initiated if the overvoltage exceeds 1.1 p.u. for 10 seconds. The tripping of 400 kV lines is initiated if 1.5 p.u. voltage persists for more than 100 milli seconds. The over voltage strategy shall be coordinated with these settings such that the STATCOM Station rides through up to these levels.

C.6.2.4 STATCOM Station Over load / Over Current

The overvoltage cycles mentioned in clause 6.2.3.3 above create a corresponding current overload in the STATCOM Station components; the STATCOM Station and its components shall be designed to withstand these.

In addition to the above the STATCOM Station and its components shall be designed to withstand overloading caused due to the following eventualities.

- i) Short circuits and ground faults in the 400 kV system especially those occurring near the STATCOM Station and medium voltage bus of the STATCOM Station.
- ii) Transient overvoltage due to switching operations and atmospheric effects.
- iii) Temporary over voltages.
- iv) Short circuits in the transformer secondary circuit such as:
 - Bushing terminal fault
 - Flashover across a reactor, Bus Bar and other connected components/switchgear etc.
- v) Protection system faults.

If the rated overvoltage is exceeded as a result of prolonged stressing or for other reasons, the protection specified elsewhere in the specification shall come into effect to prevent damage.

C.6.2.5 Dynamic Performance Controls of STATCOM Station

The TSP must describe in detail, the dynamic reactive power controls for enhancing stability margin and also damp oscillations of any critical frequencies. The dead band for continuous damping control must be very small so that there are no discernible sustained oscillations.



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C.6.2.6 Protective Control Functions

TSP shall provide all necessary protections including Main and Back-up protections for all protective zones and equipment like transformers, STATCOM Units, MSCs (if applicable), MSRs (if applicable), MV Bus Bar etc. TSP shall provide any protective control functions to meet the performance requirement of STATCOM under the scope of the TSP.

a) Overvoltage Protection

TSP shall provide adequate overvoltage protection as a result of any normal operation, mal-operation or system event.

b) Over current Protection

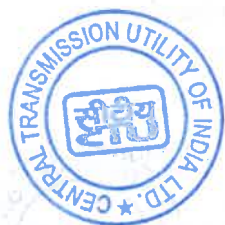
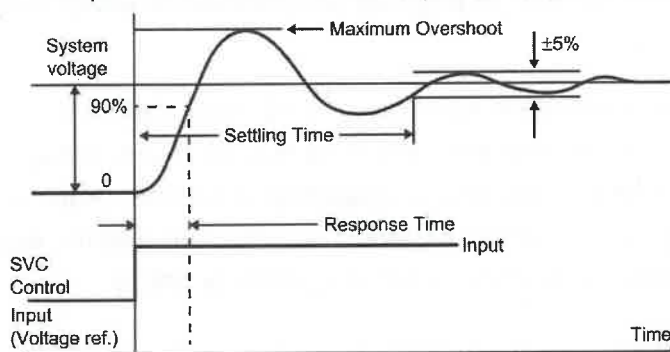
TSP shall provide adequate over-current protection for the STATCOM Station as a result of any abnormal operation, mal-operation or system event.

c) Gate level control Supervision

TSP shall provide adequate Sub module Gate level control supervision.

C.6.2.7 STATCOM Station Response

STATCOM station response shall be such that the change in measured system voltage to small disturbance should reach 90% of the desired total change within 30 ms of initiating a 5% step change of voltage reference. The maximum overshoot should not exceed 120% of the total change and the settling time should not exceed 100 ms, after which the voltage should be within $\pm 5\%$ of the final value. This response characteristic within these limits must be respected when the system's three-phase fault MVA is between the minimum and maximum value defined in clause-5. The response of the system voltage using the actual controller should be validated on a real time simulator during the Factory Acceptance Test (FAT) at the manufacturer's premises. For the purpose of STATCOM Station, response time measurement and signal conversion of the voltage, the error should not exceed 0.3%. The voltage response acquisition circuit should have a response time of no longer than 10 ms. However, time longer than 10 ms can be allowed provided the requirement of STATCOM response time is met.



*Figure-4 Response and Settling time***C.6.3 Harmonic performance and AC harmonic filter design**

It is likely that with multi-level VSC based technology, no filters or only a small high-pass filter will be needed. The STATCOM shall be operable without AC filters. The STATCOM Station should be designed to eliminate the effects of any harmonic resonance between its MSRs, MSCs banks, filter branches, and the AC system. To limit the harmonic distortion imposed on the 400 kV transmission system, the additional contribution of harmonic distortion from the STATCOM Station to 400 kV system (PCC) should not exceed 1% for the total and 0.5% for any specific harmonic.

C.6.3.1 Filter performance

The distortion levels as specified should be met for the following:

- a) The continuous range of all system and environmental conditions.
- b) Variation in total filter capacitance due to manufacturing tolerance, ambient temperature, aging, and changes in capacitance up to alarm level.
- c) Variation in tolerance for STATCOM parameters, such as transformer winding unbalances, valve firing variations MSC and MSR unequal reactor and capacitor reactance between phases.
- d) System frequency in the range of 48.5 Hz to 50.5 Hz. Calculation should take into account all possible combinations of STATCOMs, MSCs and MSRs.

C.6.3.2 Filter component rating

The harmonic filter components (and other STATCOM components) should be rated to carry continuously the harmonic currents caused by the background harmonic distortion of the system and the harmonic currents produced by the STATCOM itself. Unless otherwise specified, harmonic currents from the system and the STATCOM of the same order should be added arithmetically. All filter harmonic currents of different order should be added quadratically (root sum of squares).

The rated voltage of capacitors should be derived from the largest arithmetic sum of the power-frequency and individual harmonic voltages obtained from stress calculations in continuous operating conditions (Note: Maximum fundamental voltage and maximum harmonic contributions may not exist at the same time for STATCOM configurations including MSRs or MSCs).



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For filter capacitor voltage rating, the loss of capacitor unit or elements should be considered up to the trip level.

The rated voltage of so-called "low voltage" capacitors (e.g. in double or triple tuned filters) should be chosen such as to also withstand imposed transient stresses from faults, energization, or other switching events.

C.6.3.3 Harmonic at PCC

The STATCOM Station's contribution to the harmonic distortion levels at the STATCOM Station connection point (PCC) to the transmission system shall not exceed the limits defined in IEEE-2800 standard.

C.6.3.4 Harmonic calculation:

Chapter 7.3 of CIGRE Publication 139 together with information in PSSE network files given shall be used for the Network harmonic impedance.

C.6.4 MV Switchyard

- Medium Voltage (MV) delta bus shall be grounded through a Grounding Transformer (i.e. zig-zag winding Transformer) along with a suitable resistor in the neutral.
- MV Switchyard of different STATCOM Station branches shall be fenced with a fence height of three (3) meter. To minimize the probability of electrical fault suitable arrangement i.e. electrified fence shall be done to prevent the encroachment of unwanted animals or other to minimize the probability of electrical faults (Ph-E, Ph-Ph). Further bus bar arrangements shall be made in a way to minimize the probability of electrical faults.
- Secondary side of the Coupling Transformer shall be provided with suitable surge capacitors to mitigate transfer surges.
- For MV bus bar, an Aluminum conductor (Tube, Rectangular Hollow Section or C Section) may be used, however, a suitable bus bar end cover/cap shall be provided to avoid any animal/bird entering the hollow space.

C.6.5 Broadband Interference

C.6.5.1 Radio Interference

The TSP shall take necessary precautions in the form of shielding of valve hall and building or Containers to meet its own requirement together with any



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requirements that may be specified in Section-Project. Further, the following requirements shall also be met:

- a) With the STATCOM Station operating at any load upto rated value and within the design range of firing angle, the radio interference level from electromagnetic or electrostatic inductions generated by the STATCOM station shall not exceed 100 micro-volts/m, under fair weather conditions, at 500 m away from STATCOM fence or boundary of the substation whichever is higher. The Radio Interference Level (RIL) criteria shall be achieved at all frequencies within the range of 150 kHz to 300 MHz and with the STATCOM operation at any level up to and including rated value, the design shall provide correcting measures, in case the specified design is not being realized in the final installation. In case of any third-party complaints about the radio interference, suitable measures shall be implemented by the TSP.
- b) Measurements of actual RI at STATCOM Station shall be made by the TSP, at points along the above defined contour and at other critical points.
- c) RIV (Radio Interference voltage) measured at a phase to ground voltage (266 kV rms) in accordance to NEMA-107 shall not be more than 500 micro-volts for 400 kV system. For other system voltages, relevant IEC Standards/NEMA in the order of preference shall be applicable.

C.6.5.2 Interference with Power Line carrier and open wire carrier system

The TSP shall take the necessary precautions in the form of noise suppression techniques and filtering devices to prevent harmful interferences from STATCOM Station to the power line carrier communication (PLCC) system operating on connected AC transmission network.

The frequency spectra to be protected are:

System	Frequency spectrum
Power Line Carrier	30 kHz to 500 kHz
Open wire Carrier	5 kHz to 30 kHz

C.6.6 Audible Noise

The TSP shall limit the audible noise in various areas of the STATCOM Station buildings and containers to the following values.

Valve hall (Inside)	90 dBA
Mechanical equipment areas indoor (measured at 2 meter distance)	75 dBA
Mechanical equipment outdoor (Measured at 15 m distance)	75 dBA
Control Room Building*	60 dBA
At the limits of the STATCOM STATION perimeter fence	80 dBA



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**This is the background noise from the ventilation system in adjacent rooms, control cubicles etc. Printers, recorders may be switched off during the measurement.*

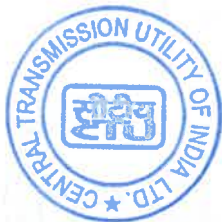
C.6.7 Loss Requirements

C.6.7.1 The TSP must guarantee the total losses of STATCOM Station, be less than 1% of the reactive power output individually at its inductive limit (STATCOM+MSRs) and capacitive limit (STATCOM+MSCs) for the cumulative highest reactive power output of STATCOM Station at PCC with the worse combination of manufacturing tolerances for the Option-1 to 2 as provided in clause C.3. In case of Option 3 as provided in clause C.3 i.e. +550/-300 MVar STATCOM without MSC and MSR, the TSP must guarantee the total losses of STATCOM Station will be less than 1.5% of the reactive power output individually at its inductive limit and capacitive limit for the cumulative highest reactive power output of STATCOM Station at PCC with the worse combination of manufacturing tolerances. For the purpose of total loss measurements, it should be assumed that the ambient temperature is 20 °C, the PCC voltage is 1 per unit, and the slope setting is 1%. The STATCOM system may not operate under these conditions, but they provide a common base.

C.6.7.2 The total losses shall include all components, as well as different parts or subsystems of the complete STATCOM Station such as coupling transformer, All VSC systems and components, MSC and MSR, Control and protection systems, including ancillary devices such as HMI, fault recorders, and SCADA, Auxiliary Power supply systems, cooling systems, Building ancillary services such as lighting, air conditioning, heating, and ventilation. It may be noted that for the redundant VSC valve levels and dual/redundant control and protection systems, the losses of redundant VSC valve levels and dual control and protection systems shall be considered during loss measurement.

C.6.7.3 For the dual or redundant systems design of STATCOM Station, such as dual pumps or redundant fans, dual systems losses are to be excluded, if the dual system is not in service during the normal operation of the STATCOM Station. However, dual systems should be included if they are required to be in service under the defined operating conditions. The same methodology shall be applied for HVAC (heating ventilation and air conditioning systems).

C.6.7.4 The TSP is required to prepare documentation for the detailed calculation of total losses based on measurement during Factory Acceptance Tests of major equipment and systems mentioned above as per relevant IS/ relevant IEC Standards /IEEE standards and the same shall be preserved and to be submitted to CEA/CTU/GRID-INDIA, as per their requirement. Further for equipment/systems, whose loss measurement cannot be done during Factory



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Acceptance Test, the same can be measured at the site, and a combination of calculation and measurement shall be used to derive the total losses as specified above. During Loss measurement, all fans, and pumps; valve room and control room air-conditioning system shall be switched on. However, redundant fans, pumps and air-conditioners shall be kept off during loss measurement.

C.6.7.5 During the factory tests the losses for the following equipment shall be measured/ assessed as detailed below:

Coupling transformer:

Losses shall be measured at factory/lab at the maximum rating, at power frequency as per relevant IEC Standards /IS under below mentioned conditions:

- i. No load loss (Iron loss) at rated voltage and fundamental frequency.
- ii. Load loss (copper loss) at rating corresponding to maximum continuous current and at 75 °C.
- iii. Transformer cooling equipment's loss (Auxiliary loss) at rated voltage and fundamental frequency.

Reactors:

The losses shall be measured at the factory/lab at the maximum rating at power frequency as per relevant IEC Standards /IS.

VSC Valves:

Converter losses comprise the losses in power electronic switches [insulated gate bipolar transistor (IGBT) or equivalent], made up of conduction and switching losses, and the losses in DC capacitors, resistors, and inductors used within the converter system. Refer IEEE-1052 for calculating VSC losses.

Capacitor:

The capacitor losses shall be measured at the manufacturer's works at power frequency as well as calculated to obtain the losses in the complete bank on the basis of factory measurement.

Auxiliary System:

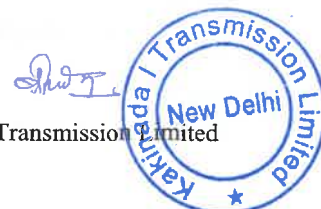
Auxiliary power losses shall be calculated from the kW and efficiency of all motors (name plate rating) of the cooling system, air conditioning, ventilation etc. The higher of the total losses for the entire auxiliary systems occurring at full capacitive capacity MVAR or full Inductive MVAR as the case may be shall be considered for arriving at the total losses.



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Harmonic Filters, if any:

The losses shall be calculated at the maximum STATCOM Station loading at 400 kV and 50 Hz.

The calculations shall be on the basis of the tested results of the components.

C.6.8 Selection of Insulation Levels

C.6.8.1 Arresters:

Protective levels of arresters connected to the 400 kV AC Bus Bars of the STATCOM Station shall be coordinated with the insulation and surge arrester Characteristics of the 400 kV AC systems to which the STATCOM Station is to be connected. The specification and characteristics of the surge arresters installed in 400 kV AC system is given in the Substation specifications. The front of wave (FWWL), lightning impulse (LIWL) and switching impulse withstand levels (SIWL) shall be determined by the following margins:

- a) A SIWL at least 1.15 times the switching impulse protection level.
- b) A LIWL which is an relevant IEC Standards level corresponding to the SIWL and shall be at least 1.25 times the lightning impulse protection level.
- c) A FWWL which is at least 1.25 times the front of wave protection level.

In addition to the above minimum basic requirement, the various insulation level of 400 kV equipment shall be as below. The STATCOM Station equipment, coupling transformers etc. shall be co-ordinated accordingly.

Description	SIWL	LIWL
All equipment including Transformer Bushing and winding	1050 kVp	1425 kVp

C.6.8.2 Valves

The requirement of insulation levels of the valves shall be as per the design requirement.

C.6.8.3 Air clearances

The air clearances shall be determined by the TSP based on the required withstand levels for all waveforms in order to limit the probability of flashover within the STATCOM Station to a target value of one flashover in 15 years.



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C.6.8.4 Switchyard

The air clearances for switchyard equipment shall be equal to or greater than the minimum values as specified in relevant IEC Standards-60071. Altitude correction factor (if any) shall also be considered as per relevant IEC Standards.

C.6.8.5 Leakage distances

The Creepage/leakage distance across insulation shall be determined by the TSP and shall be adequate to ensure that under conditions of heavy pollution, the probability of a flashover of an insulator does not exceed one in 15 years. However, the leakage distance for all AC insulators for outdoor installation shall not be less than 31 mm/kV of the maximum operating phase to earth rms voltage at the insulator. The leakage distance of equipment connected to 400 kV systems shall not be less than 13020 mm.

Specific creepage distance for outdoor bushings, insulator strings and long rod insulators shall be a minimum 31 mm/kV.

C.6.9 STATCOM Station availability and reliability

The following definitions apply:

C.6.9.1 Outage terms:

a) Outage

The stage in which equipment is unavailable for normal operation due to an event directly related to the equipment which results in a reduction in STATCOM Station capacity.

b) Scheduled Outage

An outage that can be scheduled at least one week in advance.

c) Forced outage

The stage in which the equipment is unavailable for normal operation but is not in the scheduled outage stage and which results in a reduction in STATCOM Station capacity i.e. an outage which is not scheduled outage.

C.6.9.2 Capacity terms

Maximum Continuous Capacity (Pm)




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The maximum STATCOM Station capacity (MVar) for which continuous operation under normal conditions is possible.

C.6.9.3 Outage duration terms

Actual outage duration (AOD)

The time elapsed in hours between the start and end of an outage.

C.6.9.4 Time Categories

- a) The number of hours in the reporting period in a full year, the period year is 8760 hours. If the equipment is commissioned, part way through a year, the period hours will be proportionately less than 8760 hours.

- b) Total Outage hour (TOH)

The sum of all outage duration within the reporting period. $TOH = AOD$

C.6.9.5 Availability and Reliability Terms

Unavailability:

Unavailability is the duration for which the STATCOM Station is not available with a specified rating due to forced outages per year. If part of the station is unavailable, then the unavailability duration shall be counted proportionally. However, if STATCOM is out then its duration shall count as a fully unavailable STATCOM Station. However, If the STATCOM unit is out then the STATCOM Station unavailability shall be counted proportionally to STATCOM capacity. STATCOM Station Control system outage shall count as full STATCOM Station unavailability.

'OF' is the Outage Frequency which will be the number of forced outages per year.

The period basis for availability and reliability calculations shall be 12 months. The TSP shall ensure that the design will meet the specified guaranteed and design target value of availability and reliability.

Outage times for repair, maintenance and replacement of components shall be based on the premise that all items in the list of recommended spare parts are on hand, and that all maintenance schedules of recommended maintenance are adhered to. Reliability calculations shall be made and shall be presented as the expected frequency of unscheduled loss of STATCOM Station capacity. For simultaneous occurrence of events, for either of which a loss of capacity would result, the longer repair time shall be counted.



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The facilities shall be assumed to be utilized 100% of the time at 100% load, regardless of the actual reactive power generated/absorbed by the STATCOM Station. Hence the availability and reliability assessment will be based on the capability of STATCOM Station to generate/absorb the rated reactive power regardless of whether, it is in service or not.

C.6.9.6 Availability Requirement

The calculated availability of the system considered on an annual basis shall be equal to or exceed the following target values.

Minimum availability requirement of each complete STATCOM Station

- Guaranteed for STATCOM Station - 98%

The outages of STATCOM Station capacity caused by the failure of equipment outside the scope of the TSP shall not be considered for the calculation of availability and reliability guarantee. However, such outages shall be restricted to

- 1) Complete loss to 400 kV supply (at PCC)
- 2) Human Error.

Circumstances causing curtailment of STATCOM Station capacity that will be included in reliability and availability assessment and which can lead to forced outages shall include but not be limited to the following:

- a) Failure of equipment
- b) Mal-operation of control and protection system
- c) Failure to start
- d) Reduction in capacity.

C.6.9.7 Reliability Requirement

- a) Reliability

In the assessment of reliability, the following events shall also be considered to constitute a STATCOM Station outage:

- i) A STATCOM Station shut down.
- ii) A reduction of STATCOM Station capacity due to an outage of any component of STATCOM Station

The calculated reliability of the complete STATCOM Station shall be equal to or exceed the following design target values.

The average outage frequency per year for each STATCOM Station shall not exceed the following values:



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	Design target for STATCOM Station	Max acceptable Guaranteed value for STATCOM Station
Total Number of Forced Outages	3 x Nos. of STATCOM Station	5 x Nos. of STATCOM Station

C.6.9.8 **GUARANTEED FAILURE RATE OF Sub-modules.** (Including all components and electronic). The maximum annual guaranteed failure rate of sub module (including all components and electronic) shall not exceed 1.0% per STATCOM. The failure rate shall not include failures directly attributable to operation and maintenance errors.

C.6.9.9 **GUARANTEED VALUE OF FAILURE RATE OF AC POWER CAPACITOR**

The maximum guaranteed annual capacitor failure rate shall not exceed 0.15% except for first unit failure. The capacitor shall be considered as failed if its Capacitance value varies more than $\pm 5\%$ of the (actually measured) name plate value. Leakage of oil from the capacitor and the deformation of the capacitor unit shall be considered as a failure even if the capacitance value is within the tolerance limits.

C.7 **Design Principles**

The objective for the design of the STATCOM Station shall be to achieve a high level of availability and reliability as specified. Special attention shall be given to designing the STATCOM Station to avoid forced outages. The TSP shall conduct thorough design reviews to ensure the minimum risk of such outages. The TSP shall give careful attention to related factors affecting STATCOM Station performance such as subsystem and system testing, protective relays co-ordination and proper setting of relays.

Except where greater reliability requirements are specified in these specifications, the design basis for STATCOM Station shall be such that no single contingency downstream from the medium voltage bus shall cause a total outage of the STATCOM Station. The following general criteria shall be followed for the design of the control system:

- a) Use of components similar to those whose reliability has already been proved in use.
- b) Use of good design practices, surge protection, filtering, and interference buffers to assure Immunity to sensitive components and circuits against damage and interference by induced voltages and currents in the external cabling and cubicle wiring.




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- c) Use of fail-safe and self-checking design features.
- d) Use of component and equipment redundancy, by means of either duplication or triplication with automatic transfer facilities wherever necessary to meet the requirement of these specifications.
- e) Design which in the event of component failures, provides for transfer to a less complex operating mode.
- f) Provision of alarm, fault diagnosis and indication

C.8 STATCOM Station Main Components

C.8.1 STATCOM Unit

The main electrical data of the STATCOM Units are the following:

- | | |
|---|----------------------------------|
| o Rated voltage | 20 kV Minimum |
| o Rated frequency | ± 50 Hz |
| o Redundancy (Sub Module) | 2 Nos. or 5% whichever is higher |
| o Rated Power of each STATCOM unit/Branch | ± 50 MVar Minimum |
| o Valve Cooling | Deionized/Demineralized water |

In general, the STATCOM units shall equally share the load however under contingency conditions it should be possible to run the units with unequal load. Charging of the DC capacitors of Sub module during the initial start-up shall be achieved by means of Resistors and bypass breaker arrangement. The charging resistor for DC capacitor of the STATCOM Sub module should be designed for three charges per hour followed by the appropriate cooling time. Power for the gate level control shall be derived internally from Sub module. The offered STATCOM Units with their Control system shall be suitably located inside the STATCOM Station Building.

C.8.1.1 STATCOM Valve

The valve shall be designed to meet the performance requirements described in this specification and as described below.

In order to ensure a modern low loss and reliable solution, the STATCOM valve assembly shall use the multi-module (including redundant sub-modules) approach.

The valves shall be designed to ensure satisfactory operation according to the overall performance requirements and include all necessary auxiliary equipment



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required for smooth and reliable operation. The valves shall be indoor air-insulated and cooled by de-mineralized water. The valves shall be of modular design and have removable Sub-Module for ease of maintenance. The valves shall be mounted to allow easy access for visual inspection, routine maintenance and replacement, and facilities shall be provided to enable easy access.

C.8.1.2 Semiconductor Switches

The electronic switches should be designed with the aim to achieve operation according to the overall performance requirements of the STATCOM Station. The valve shall be designed with individual semiconductor switches applied in a conservative manner with regard to their basic design parameters. The semiconductor switch shall meet the requirements of relevant IEC Standards 60747 except where otherwise specified herein.

The semiconductor switches shall be designed to withstand all stresses expected under steady state, transient and temporary overvoltage conditions. Basic semiconductor devices shall be of the Press Pack type, or packaged to provide short circuit means in case of device failure such that the STATCOM can continue to operate without interruption. The adjacent sub-module should be protected against the possible explosion of the semiconductor switch.

Under the restriction of redundancy (minimum two or 5% whichever is higher) i.e. the failure of any semiconductor switch or sub module or monitoring device etc shall not prevent continued system operation. In the event of any of the above failures, the STATCOM shall annunciate and identify the specific location of the failed device and continue operation until such time as repairs can be scheduled. During such time the next shutdown can be avoided, the STATCOM must continue to operate without downgrading STATCOM capability.

The switching device's design should include an appropriate allowance for unequal voltage distribution across individual devices in the valve due to the stray capacitor and component tolerances.

Each switching device should be able to operate within component ratings, generally with at least two failed sub-module or levels. The number of possible failed sub-modules or levels as specified shall be consistent with the availability requirements of the STATCOM system.

C.8.1.3 Sub module for Multi-Module Topology

The key element of the multi-module topology shall be the sub-module. By increasing the number of these sub-modules, it is possible to obtain high voltage with extremely low harmonic distortion and very low dv/dt using a low switching




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frequency that reduces power losses. Sub-module shall have the following characteristics:

VSC sub-modules should be protected against over voltages with appropriate strategies. A description of the failure mode of the switching device and the strategies used for failure should be provided.

In each fiber optic cable (having multiple fiber cores) used for control/communication purposes of sub-module at least two fiber cores shall remain available as spare for future use.

- C.8.1.4** The STATCOM sub-module has DC capacitors that require a charge to allow full functionality and performance. At the startup of the STATCOM Station, the capacitors are discharged. During the energization sequence of the STATCOM, Capacitors are charged from the main power grid via resistor operated in series to the main connection circuits. Once the desired charging voltages are reached, the charging resistor circuit is bypassed using a bypass switch/breaker.

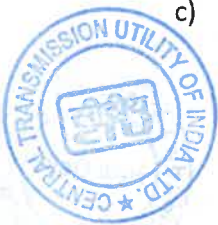
The Type and Rating of the charging resistor and associated bypass switch shall be designed with the aim to achieve operation according to the overall performance requirements of the STATCOM Station and shall conform to the relevant Standard.

C.8.1.5 STATCOM Valve Cooling system

A closed-loop recirculating system shall be provided with full heat rejection capacity with redundancy for pumps, heat exchangers, and fans, appropriate to the STATCOM Station availability requirements. The cooling system should be able to maintain full capacity at maximum ambient temperature and maximum STATCOM reactive power output. The cooling system should be able to operate at the lowest ambient temperature and zero output specified. The Valve cooling system shall have black start capability and necessary Uninterruptible Power Supply (UPS)/ Uninterruptible Motor Drives (UMD) shall be provided separately for each STATCOM Unit.

The valve cooling system shall be designed to meet the performance requirements described in this specification and as described below.

- a) Each STATCOM Unit shall have its own de-ionized water valve cooling system with redundant pumps.
- b) For cooling the STATCOM valves, a deionized re-circulating (closed loop) water system shall be used.
- c) Water to air heat exchanger shall be used for cooling of this de-ionized water. Water to water heat exchanger shall not be employed.



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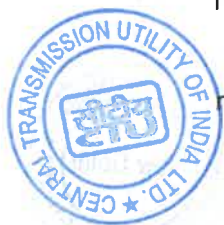
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- d) System shall be designed such that no shut down of STATCOM be resorted to for making up the deionized water in the system. The make-up water should comply with the recommended pH and purity.
- e) Cooling water shall have a constant flow rate irrespective of loading. The flow rate shall be decided on the basis of extreme operating conditions.
- f) The control system for the cooling system shall be redundant type including the provision of redundant control supply and main power supply. However, in place of the redundant control system for the cooling system, suitable alternate mode is also acceptable meeting the requirement of fulfilling cooling system operation even if failure of cooling control system.
- g) 2x100% pumps with one as standby shall be provided for the primary. In case a pump failure occur, the second pump shall automatically switch in without shutting down the STATCOM. An alarm shall be displayed at the control panel for the failure of the first pump and standby pump in operation.
- h) Each cooling system shall be provided with an independent/dedicated UMD supply however common battery for both UMD power supply may be accepted. An UMD system will provide an extended capability of the STATCOM Station to deliver reactive power without any interruption, adding a buffer against the system faults or during events such as delayed voltage recovery or Transient over Voltage (TOV).
- i) The secondary cooling system shall be a redundant type such that it shall be possible to take out 10% (minimum one number) of the cooler module (fan unit) of secondary cooling system without affecting the rated performance of STATCOM).
- j) Normally no make-up water shall be required however in case of expansion vessel level going low; the same shall be replenished automatically by means the of make-up water tank and make up water pump to be supplied with the system.
- k) TSP shall provide a water treatment plant of sufficient capacity. The purification (treatment) system shall be designed to maintain conductivity below 1 micro Siemens. A resistivity cell in the outgoing water from the deionizer should detect the depletion of ionized material. Filters and deionizers shall be designed to allow replacement during operation. Normal replacement shall not be required more than once every year.
- l) Filters and deionizer/deoxidizer material shall be designed to allow replacement within minutes without shutdown of the cooling unit. (Normal replacement should not be required more than once/year).
- m) Primary cooling system shall monitor its own operation and condition of cooling water.
- n) The protection system of the cooling cycle shall have minimum following alarms



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- i) Depleted deionizing cell
 - ii) Low water resistivity
 - iii) High water temperature
 - iv) Primary pump stopped
 - v) Fan stopped
 - vi) Primary pump or fan interlock circuits faulty
 - vii) Primary cycle (Make-up water) tank level low
 - viii) Failure of control supply.
 - ix) UMD/UPS fault.
- o) Following shutdown alarms / TRIP shall be provided with cooling system protection. Excessive low water resistivity excessive high water temperature, complete loss of auxiliary supply to primary pumps, low flow, Low Pressure etc.
- p) The dissipative components of the converter are cooled with deionized water.
- q) The power losses are transferred to the external ambient by means of a deionized water /air heat exchanger. All the piping and other components shall be provided. Complete instrumentation set including following shall be mounted on board in order to check the status of the cooling system:
- Conductivity gauge system.
 - Flow meter equipped with two set points (alarm and trip).
 - Pressure meter
 - Two thermometers for the inlet and two thermometers for the outlet (two set points for alarm and trip)
 - Thermostat
- r) The status of the cooling system shall be monitored by means of the control system.
- s) Replacement of certain cooling equipment (e.g. pumps, fans, cooler unit etc.), if defective, shall be possible while the cooling system still operates.

C.8.1.6 Tests on STATCOM Unit Valve

All applicable tests i.e. Operational Type Tests, Dielectric Type Tests and Test for valve insensitivity to electromagnetic disturbance and Production tests shall be done as per the latest edition of relevant IEC Standards 62927.

C.8.2 STATCOM Station Control equipment and operator interface

C.8.2.1 Control Equipment




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The control systems should achieve the functional objectives given in 6.2. The accuracy of voltage should be within $\pm 1\%$ of the reference voltage. The accuracy of the gradient and linearity of the slope delivered by the STATCOM Station should be defined in relation to the current deviation from the theoretical slope defined in 3.1. The maximum deviation should be less than $\pm 5\%$ of the nominal current.

The control system design shall be based on a single fail criterion i.e. failure of any one component in the system should not result into outage of the complete system. As a minimum, a dual (hot standby) digital programmable controller shall be supplied for each STATCOM unit/branch and STATCOM Station to control the STATCOM, MSRs and MSCs completely including the functions listed as mentioned below:

- a. The controller shall have diagnostic and self-checking features for both itself and for valves, gate firing and drive circuits, interface hardware, and software. This is required to reduce outage times and to facilitate fault finding.
- b. The Controller shall be reprogrammable. The Owner shall have at least the following possibility for changing the following reference and limit values via HMI:
- c. Closed loop Controllers:

The STATCOM Station controller shall have the means to modify the reference set points. This refers to the functionality that will allow all the control parameters to be adjustable within selectable limits and is inclusive of, but not limited to following:

- o Voltage controller
 - o Q controller (reactive power controller).
 - o Supplementary VSC current controller.
 - o Other supplementary control functions.
- d. Sequence Controllers:

The sequence control and open-loop controllers shall include the control of all switchgears and associated control gear and external devices.
- e. The Controller shall have at least 10% excess I/O capacity to allow future program upgrades to satisfy the changing requirements of the power systems or future extensions to the STATCOM Stations. As a minimum, a control of up to 4 future HV shunt devices (reactors or capacitors) shall be included in the offer.
- f. All control signals available for remote control must also be available locally so as to ensure that a local operator can operate the STATCOM Station if the communications link between STATCOM Station and remote control centers is lost.



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- g. A changeover switch shall be provided for control of the selection of local or remote control.
- h. TSP shall provide the equipment necessary for the purpose of control, protection and interlocking of all equipment within the scope of supply.
- i. TSP shall be responsible for the design and coordination of control, protection and interlocking system and switching sequences within the STATCOM Station. All necessary interfacing required between AC switchyard equipment and STATCOM Station for the above purpose shall also be included in the scope of TSP.
- j. It is proposed to control STATCOM through a Supervisory Control and Monitoring System (SCADA). All the data shall be acquired through suitable means from the field and various components and control is executed through the redundant HMI. The local STATCOM Station Control system shall consist of a redundant STATCOM Station controller, redundant HMI workstation, Gateway, STATCOM Station Control System Engineering cum Disturbance Recorder (DR), PC which can also be used as standby HMI workstations in case of emergency with associated peripheral equipment such as color laser log Printers, Color laser jet fault record printer, GPS System, Inverter / UPS etc. all interconnected via redundant Ethernet based Station LAN Network. Each work-stations and PCs at STATCOM Station shall have at least 19" LED display.
- k. In addition to the above, HMI workstation (identical to HMI Workstation provided in the STATCOM Station control room) should also be provided in the control room of the main 400 kV substation. This HMI workstation should be powered from an independent UPS system adequate enough to provide power to the HMI workstation for a minimum two hours in case of auxiliary power failure.
- l. The control equipment shall satisfy the reliability and availability requirements specified in this specification
- m. All necessary measures shall be taken to ensure satisfactory operation in the presence of harmonic current and voltage, noise and radio interference signals. The equipment shall be designed to operate in the environmental conditions specified in the specification.
- n. There should be a provision for independent operation of MSC/MSR after delinking it with STATCOM controls when STATCOM is out of service due to any reason.
- o. The threshold values for switching the MSC/MSR on/off shall be configurable in all modes of operation.



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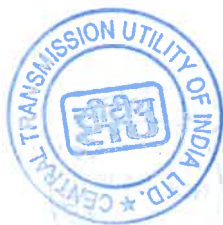
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C.8.2.2 Operator Interface

- a) Each STATCOM Station shall have a SCADA consisting of an HMI which shall provide a Centralized (local) operator control of the STATCOM Station functions. All human interface operations necessary for the control and monitoring of the STATCOM shall be provided at this point.
- b) Any abnormal condition requiring operator action or intervention or maintenance on any of the STATCOM Station subsystems shall be annunciated at the STATCOM Station control room and the Substation control room.
- c) The local HMI shall include the following diagrams as different screens in the display system:
 - i. Complete STATCOM Units and STATCOM Station single line diagram including EHV and MV busses
 - ii. AC Auxiliary supply and distribution
 - iii. DC Auxiliary supply and distribution
 - iv. STATCOM Valve cooling systems
 - v. Interlocking system.
- d) These diagrams shall indicate status, alarms, voltages, currents, etc. The HMI shall provide complete diagnostics on alarm and trip indications as required and discussed in this specification, including SER information.
- e) A facility shall be provided whereby the local HMI features and functions shall be accessible from remote. A remote user shall be able to view screens and change STATCOM Station parameter settings.
- f) As the substation where STATCOM Station shall be installed, will be equipped with Sub-station Automation System (SAS) conforming to relevant IEC Standards 61850, it is required that STATCOM Station control and monitoring shall be integrated with SAS at the main Sub-station by the TSP. It is proposed to connect STATCOM Station's SCADA with SAS through a Gateway and the database, configuration etc of the main substation SAS shall be upgraded to incorporate STATCOM Station events, alarms, Controls (both switchgear and control functions of STATCOM Station like the setting of parameters etc.) so that STATCOM Station can be effectively monitored and controlled from main substation SAS and shall be monitored from Load Dispatch Center (RLDC).




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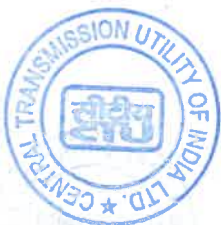
C.8.3 STATCOM Station Protection System

C.8.3.1 Protection system Design

- a) To ensure that faults are cleared within stability critical clearing time, to minimize damage to the plant, and to avoid voltage collapse, loss of load, or load limitations, TSP shall provide a high speed main protection scheme. An independent (having a separate measurement system) back-up protection scheme shall be provided in the event of the main protection scheme failing or taken out for maintenance.
- b) The STATCOM Station shall be completely self-protecting (unit protection). STATCOM Station shall be protected from damage for all conditions of over-current, overvoltage, excessive reactive power loading, unbalance due to loss of capacitor elements, phase-to-phase and phase-to-ground faults, three phase faults, loss of cooling, semiconductor valve or control malfunction, faults (STATCOM, MV system) in individual primary connected components of the STATCOM, HV system faults, etc. The STATCOM Station shall withstand the maximum fault current for a period of the maximum fault clearing time as specified, considering second contingency cases due to the previously mentioned conditions.
- c) All protection equipment and systems should be properly co-ordinated to prevent incorrect operations of the protection equipment or systems during normal STATCOM Station operation, including anticipated abnormal conditions on the transmission system, as specified. Fail-safe principles should be applied throughout.

C.8.3.2 The basic principle and order of precedence for the control and protection shall be, to take care of the following:

- Correctly identify a fault, problem or error condition,
 - Only if necessary, isolate the minimum number of components, subsystems whenever possible,
 - Utilize degraded modes to the maximum extent possible either directly (no interruption of the STATCOM Station operation) or indirectly (by tripping the STATCOM Station momentarily in order to isolate the branch and re-energization of the STATCOM Station).
 - Trip STATCOM Station and Block.
- a) Failure of the STATCOM Station Interface (SCADA interface) shall not result in a Protection trip of the STATCOM Station. A fail-safe philosophy



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shall be implemented to allow the STATCOM Station to operate safely and independently from the STATCOM Station Interface (SCADA interface).

- b) Protection equipment shall be designed and applied to provide maximum discrimination between faulty and healthy circuits.
- c) The Protection shall be sufficiently sensitive to cater to the full range from maximum to minimum fault level conditions. The Protection shall also be suitable for a system fault level equal to the maximum short circuit capacity of the substation. All current transformer designs shall be based on these fault levels.
- d) All required protective, control devices, etc including auxiliary instrument transformers and panels, relays, cabling, wiring, indication, and all other associated plant and material necessary for the effective operation of the protection systems shall be supplied and installed by TSP.
- e) The protective relays shall be microprocessor based. Relays shall have approved characteristics and be mounted in dust and moisture-proof cases. The protective relays shall be provided with visual indications for starting, tripping and failure of the protective function. The LEDs shall be reset without opening the covers. The protection relays shall also be equipped with HMI facilities suitable for manual parameter settings and viewing of the settings. Relays with provision for manual operation from outside the case, other than for resetting, are not acceptable. Relay settings shall be visible and readable without having to remove the relay cover. Relays shall be of approved construction and shall be arranged so that adjustments, testing and replacement can be effected with the minimum of time and labor. Auxiliary Relays of the hand reset type, if provided shall be capable of being reset without opening the case. Electrically reset tripping relays shall be provided as necessitated by the system of control, such as for those circuits subject to remote supervisory control.
- f) Relay contacts shall be suitable for making and breaking the maximum currents which, they may be required to control in normal service but where contacts of the protective relays are unable to deal directly with the tripping currents, approved Auxiliary tripping relays shall be provided. In such cases, the number of auxiliary tripping relays operating in tandem shall be kept to a minimum in order to achieve fast and reliable fault clearance times. Separate contacts shall be provided for alarm and tripping functions. Relay contacts shall make firmly without bounce and



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the whole of the relay mechanisms shall be as far as possible unaffected by vibration or external magnetic fields

- g) Steps shall be taken to protect the circuitry from externally impressed transient voltages which could reach the circuitry via connections to instrument transformers or the station battery. The routing of cables should be such as to limit interference to a minimum. Any auxiliary supplies necessary to power solid-state circuits shall be derived from the main station battery and not from batteries internal to the protection.

h) **Relay communication**

The Relays shall also have a communication port provided on the front of the relay for configuration and parameter settings as well as downloading of data. A direct port suitable for remote communication shall also be provided at the back of the Relay. This port shall conform to relevant IEC Standards - 61850.

i) **Tripping schemes**

- Tripping of MV circuit breakers shall be done by means of two-separated trip signals.
- Duplicate high security tripping circuits for MV Circuit Breaker shall comprise two independent high speed (less than 10 ms) high burden (greater than 150 W) tripping relays for each circuit, each with its own independent DC supply. The trip circuits for all circuit breakers need to be equipped with a "lockout" function and it shall be possible for this to be reset manually and remotely by the operator.

- j) The protection for the power system is based on a normal switching state and an occurrence of a single fault. This means that faults resulting from maintenance as well as the simultaneous occurrence of two or more faults are not taken into account.

- k) The input circuits of the digital protections shall be monitored by means of a plausibility check. If any incorrect information is found, the protection function shall be blocked by the protection system. All protection relays shall have facilities for monitoring trip circuits. Detection of an interruption in the case of a switched on circuit breaker shall be signaled.

l) **Test facilities**

- It shall be possible to test the protective device during operation without causing trips. Links shall be provided for the isolation of individual protection trip circuits and the common protection trip circuit to each circuit breaker trip coil.



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- Separate test facilities shall be provided for each current and voltage transformer secondary circuit so as to give access for testing of protection relays and associated circuits. The Test facility to be supplied shall have two selectable positions, a Service and a Test position. In the service Position, the test switch connects CTs and VTs signals to the Relays and trip commands to the circuit breaker trip coils. In the Test Position, the test switch applies a short-circuit to the Current Transformer (CT) secondary windings and open circuits the VT secondary cores and allow injection of secondary current and voltage into the relay. At the same time, the Trip commands to the Circuit Breaker Trip Coils are isolated. The test switch supplied shall be to the Approval of the Owner.
- m) The protection of the electrical system shall be designed and installed in such a way that the failed equipment is disconnected selectively and automatically. All equipment have to remain operative during transient phenomena, which may arise during switching or other disturbances to the system.
- n) **Auxiliary DC Supplies**
 - The protection concept has to be designed in a way so that back-up protection is provided at all times. All protection relays shall be configured in a way that failure of one Auxiliary DC system will not affect the relay. If all DC supplies to the controllers are lost, the STATCOM Station breaker must be tripped via the protection panel.
- o) **Electromagnetic Compatibility**
 - Electronic Relays and other electronic devices and the ancillary circuits connected to them, such as power supplies, current and voltage transformer secondaries, status or tripping or alarm circuits shall be designed to ensure that they are compatible for use in the hostile electrical environment found in an MV or HV substation.
 - Adequate steps by means of suitable design, shall be taken to prevent Electromagnetic Interference (EMI), (generated by sources such as circuit breakers, disconnectors, lightning, radio or radar emissions, switching contactors in DC circuits etc) or Electrostatic Discharges (ESD) from affecting relay performance or causing damage to components.
 - All relays offered shall therefore have been type-tested to meet the current requirements of relevant IEC Standards with respect to High Frequency disturbance, Fast Transients, Electrostatic Discharge, Radio Frequency Interference testing etc.
- p) List of Protection functions for STATCOM Station

Coupling Transformer Protection:



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- i) Biased Differential protection (87T)
- ii) REF protection (64T)
- iii) Overcurrent protection (50, 51)
- iv) Ground Overcurrent (51N)
- v) Over flux protection (HV and MV)
- vi) Transformer mechanical trips

STATCOM MV Bus Protection:

- i) Bus Differential protection (87)
- ii) Ground over current protection (51N), used with a neutral Grounding Transformer
- iii) Under / Over Voltage (59 Ph-Ph) protection
- iv) Over voltage (Open Delta) protection

STATCOM Branch Protection:

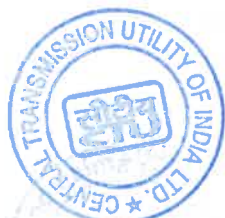
- i) Differential protection (87)
- ii) Overload protection (49)
- iii) Overcurrent protection inside delta (50, 51)
- iv) Negative phase sequence protection (46)
- v) STATCOM branch overcurrent protection (50, 51, 50N, 51N)

MSR Branch Protection:

- i) Differential protection (87)
- ii) Ground over current protection (51N)
- iii) Reactor branch unbalance protection (Negative Phase Sequence)
- iv) Thermal Overload protection

MSC Branch Protection:

- i) Ground over current protection (51N)
- ii) Capacitor Overvoltage (Using current signal) protection.
- iii) Capacitor unbalance protection (60C)
- iv) Over current protection (50, 51)
- The protection functions listed above are the minimum set of function to be provided, any additional protection required to fulfill the requirement of the protection system shall also be provided.
- Further protection functions of individual branch (STATCOM, MSC, MSR) shall trip the respective branch MV Circuit Breaker (CB).



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- All CBs shall be provided with individual Breaker Failure protection relays. Breaker Failure relay shall have the logic based on the current signal or Circuit Breaker close open status.
- Any fault on MV bus will trip the 400 kV breaker. However, any branch fault shall be cleared by the respective MV branch Circuit Breaker.
- Protection System for the STATCOM valve portion of the STATCOM station shall be provided in the redundant controllers to isolate the STACOM valve during internal overload/overvoltage, ground fault etc.

C.8.4 STATCOM Station Fault Recording System

An integrated Transient Fault Recording (TFR) System shall be supplied, installed and commissioned. This shall include trigger level settings for analog signal, etc subject to review and comment. Disturbance and event recording facilities are required for local monitoring of the STATCOM following a disturbance on the power system or the STATCOM System. The TFR shall be Global Positioning System (GPS)/NavIC synchronized.

The following inputs are required:

- All analog signals (output signals) including 3-ph and sequence values of voltage, control.
- All digital signals (control outputs, status indications, commands, alarms, and trip indications). Internal STATCOM Station control signals/variables to be selectable.
- The accuracy of the TFR for event inputs shall be at least 100 μ s (sampling rate of minimum 10 kHz).
- The TFR shall have provision for remote access and retrieval of recorded information onto a PC. For this purpose, a communication link to the substation LAN shall be implemented.
- The remote software application for data retrieval shall be included.
- There shall be multiple channels to view 3-ph and sequence values of voltage, current.
- TFR file shall be viewable in any open source software.

C.8.5 Mechanically Switched Reactor (MSR)

MSR is a fixed source of inductive reactive power connected in shunt to the MV bus of STATCOM Station and switched by means of a circuit breaker (with a control switching device) based on the command from the STATCOM Station control system. The rated capability of MSRs shall be at 400 kV (Referred to as "Point of Common Coupling" or PCC) and in the steady state frequency range of 48.5 Hz-50.5 Hz. However, the MSR Components shall be designed with the aim to achieve operation according to the overall performance requirements of the STATCOM.



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Station. The individual components of MSR shall be able to withstand the onerous conditions imposed by system overvoltage and harmonics. The MSR consists of 3-ph Air Core Reactor, 3-ph MV Circuit breaker (SF6/Vacuum type), associated current transformer, 3-ph Disconnecter and associated safety grounding switch. The MSR area shall be fenced and a castle key interlock with safety grounding switch shall be provided for human safety.

Specifications for individual components like Air core reactors etc are provided in the subsequent clause.

C.8.6 Mechanically switched capacitor (MSC)

MSC is a switched 3-phase capacitor bank connected in shunt to the MV bus of STATCOM station and switched automatically by means of a circuit breaker (with control switching device) based on the command from STATCOM Station control system. The rated capability of MSCs shall be at 400 kV (Referred to as "Point of Common Coupling" or PCC) and in the steady state frequency range of 48.5 Hz- 50.5 Hz. However, TSP will ensure the corresponding values at PCC (400 kV) for possible operating condition measured at PCC. The MSC Components shall be designed with the aim to achieve operation according to the overall performance requirements of the STATCOM Station. The individual components of MSC shall be able to withstand the onerous conditions imposed by system overvoltages and harmonics. The MSC consists of 3-ph AC power capacitor bank, a current limiting air core reactor as required, 3-ph MV Circuit breaker (SF6/Vacuum type), associated current transformer, 3-ph Disconnecter and associated safety grounding switch. The MSC area shall be fenced and a castle key interlock with safety grounding switch shall be provided for human safety. Specifications for individual components like Capacitors, Air core reactors etc are provided in the subsequent clauses.

C.8.7 Air Core Reactors

- a) Reactors shall be air core, dry type, be suitable for outdoor installation and there shall be no tapping on the reactors. The insulation level shall be adequate and TSP has to ensure proper insulation coordination.
- b) The insulation of the reactor shall be class F and hot spot temperature rise shall not exceed 105 °C above ambient temperature. Winding temperature rise shall not exceed 80 °C above ambient temperature.
- c) The reactor shall be designed to withstand thermal dynamic shocks and mechanical shocks while in service and during erection.
- d) The reactor shall fully conform to the relevant IEC Standards.



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- e) The reactor shall be designed to withstand overloading due to over voltage as specified and shall also be subjected to excitation by harmonics; the reactor must be able to withstand such events without deterioration in normal life.
- f) The reactors shall be subjected to type and routine tests in accordance with the latest issue of relevant IEC Standards-60076 as appropriate to the type of reactor provided.
- g) Tests on Reactors: The reactors shall be subjected to type and routine tests in accordance with the latest issue of relevant IEC Standards-60076 as appropriate to the type of reactor provided.

C.8.8 AC POWER CAPACITORS

i) General

- a) The capacitor banks shall comprise capacitor units, discharge devices, protection equipment, series reactor as required, earthing switches, suitably connected in series and parallel, mounted at ground level with protected fencing all around. The number, arrangement and connection of capacitor banks shall be designed to suit the requirement of the compensator as a whole. If convenient, the capacitor banks may be used in conjunction with reactors. In this event, the rating of the capacitor shall be adequate to cope up with the harmonic loading. The frequency variations shall also be considered. To limit the peak inrush current for switching in the capacitors, current limiting reactors with parallel connected damping resistors, if required shall be connected in series with shunt capacitor banks.
- b) The capacitors shall be provided with internal-type fuses. Alternatively, the fuse less capacitor is also acceptable.
- c) Fuses shall not melt nor shall deteriorate when subjected to the inrush current during the life of the capacitor bank.
- d) With the capacitor charged to a peak voltage, the fuses associated with the healthy elements shall not melt when carrying the discharge current resulting from a breakdown of an element or from an external short circuit.
- e) Fuses shall be capable of disconnecting a faulty element over a range of voltage across the unit terminals from $0.9 U_n$ to $2.0 U_n$. In addition, if all the elements in the same row of an internally fused capacitor were to fail as a result of a cascading action, the last fuse element to melt shall be capable of successful disconnection with a voltage of not less than 1.5 times.
- f) After fuse operation the fuse assembly shall be able to withstand continuously at least 1.5 times the rated unit voltage U_n across the gap for 10 Seconds.



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- g) Fuses shall preferably be of the current limiting type but fuse system shall in any event be designed to ensure that energy released into a faulty capacitor unit is less than the value that will cause rupture or bursting of the container.
- h) The capacitor units shall be the outdoor type. The container of the capacitor shall be of stainless steel.
- i) Each capacitor unit shall be readily accessible and replaceable without disturbing any other unit. The supporting frames shall be designed to provide adequate ventilation to the units.
- j) The dielectric fluid used in the capacitor unit shall be environmentally safe and biodegradable, non-toxic. Polychlorinated Biphenyle (PCB) type dielectric or any of its derivatives shall not be acceptable.

ii) Construction and Design Requirement

- a) The capacitors shall conform to relevant IEC Standards-60871. The capacitors shall be provided with internally mounted discharge resistors with characteristics in accordance with relevant IEC Standards-60871.
- b) The current limiting reactors (as required) shall be dry type and connected in series with the capacitor bank. Suitable lifting lugs shall be provided.
- c) The capacitor enclosure shall have sufficient strength to withstand without damage or loss of life, mechanical load, both in operation and during erection. The loads shall include electromagnetic forces including those during faults external or internal to the capacitor bank, wind loading, forces due to expansion and contraction caused by ambient temperature and load variation, and seismic effects all as specified.
- d) The capacitor units shall be interchangeable in order to reduce the spare requirements and simplify maintenance procedures.
- e) The capacitor stack shall be vibration free. The stack shall have a fixed potential, which is connected to one electrical point in the bank. The stack shall be of galvanized structural steel.
- f) The capacitor racks shall be supplied complete with all capacitor units, insulators, and connections and shall be equipped with lifting lugs/eyes to facilitate assembly into the stacks. The racks shall be constructed of galvanized structural steel. No drilling of galvanized steel shall be allowed. Each rack shall be labeled with the weight of the fully equipped racks, the phase, and the bank of which it forms a part. The maximum and minimum capacitor unit capacitance which may be substituted into the racks as spares shall be suitably identified. Suitable warning labels shall be affixed.

The capacitor shall be specially designed to be suitable for intermittent duty.



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- h) The capacitors should comply with the overload capacity as per NEMA Standard.
- i) The capacitor elements shall be vacuum dried inside the case prior to impregnation with dielectric fluid. After impregnation, the capacitor unit shall be sealed immediately upon removal of the impregnated reservoir.
- j) The discharge resister shall discharge the unit from peak operating voltage to less than 75 Volts within 10 minutes.
- k) The capacitor case shall be made from type 409 stainless steel or equivalent stainless steel with all joints welded and tested for leaks.
- l) All racks and bus insulators as well as the insulators used to insulate each stack of capacitor from ground level shall be pin-cap or post type. The minimum voltage rating shall be 15 kV and low frequency wet withstand voltage of all insulators used to insulate within or between the capacitor rack of a stack shall not be less than three times the actual voltage stress across the insulators. The insulator shall be outdoor type manufactured from wet porcelain. The insulators shall be bolted to the top members of the frame to support electric-grade aluminum buses.
- m) The size and groupings of the individual capacitor units shall be such that a single blown fuse will not cause the voltage across the parallel group to rise by more than 10%.
- n) The redundancy to be provided, shall be as per the requirement specified regarding reliability and availability in the clause mentioned elsewhere.

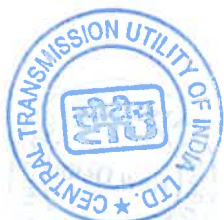
iii) Capacitor Unit Failure Detection

The stages of capacitor units or element failure detection shall be provided as below:

- a) A three-step unbalanced current protection shall be provided in each capacitor bank to initially generate an alarm when the unbalance limit is reached and finally to trip the bank in case of the limit is exceeded.
- b) The first stage shall generate an alarm and the capacitor unit shall continue in service. It may be assumed that the bank shall be disconnected for maintenance within 2 weeks.
- c) The second stage shall generate a separate alarm and a delayed trip signal which will disconnect the bank after two hours.
- d) The third stage shall cause immediate disconnection of the Capacitor Bank.

iv) Tests on Capacitors

All the tests on capacitor units shall be in accordance with the latest issue of relevant IEC Standards 60871.



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C.8.9 Coupling Transformer

The TSP shall provide single phase coupling transformers to operate as 3- phase bank with one unit as a common spare with necessary auxiliary arrangements for stepping down the voltage from 400 kV system to a suitable medium voltage value as required for replacing any one of the faulty phase units without physically shifting the transformer. The Medium Voltage side of the coupling transformer to couple with the STATCOM shall not be less than 20 kV to ensure optimum power transformation.

The Coupling Transformer shall be designed with the aim to achieve operation according to the overall performance requirements of the STATCOM Station. The transformer should be designed and rated to carry complete capacitive and inductive reactive loading as specified for STATCOM Station including that of mechanically switched capacitors (MSC) and Reactors (MSR) etc.), as well as harmonic currents associated with the most onerous operating conditions of STATCOM Station, without loss of life.

The coupling transformer shall be designed in accordance with the most up-to-date experience in STATCOM application and shall incorporate the latest improvements of design currently employed in the industry. The Comprehensive design review of the Coupling Transformer of STATCOM Station shall be carried out by the TSP.

C.8.9.1 General Requirements

The coupling transformer shall be designed electrically and mechanically for operating conditions peculiar to STATCOM Station operation, which shall include, but not be limited to the following:

- a) Electrical insulation problems resulting from the transformer being subjected to voltages of distorted sinusoidal wave shape because of saturation, harmonics, trapped charges in capacitors etc.
- b) The cumulative effect of electro-dynamic forces produced during valve commutation or other short circuit conditions imposed by valve design limitation and valve group operation.
- c) Harmonic currents due to STATCOM operation, with reference to additional stray losses resulting from these harmonic currents.
- d) No generation of uncharacteristic harmonics by the transformers.
- e) Stresses due to normal control operation and other onerous operations such as blocking and de-blocking.
- f) Stress due to the fast response requirement of STATCOM for loading from 100% inductive to 100% capacitive and vice-versa.



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- g) Overvoltage stresses for which STATCOM shall be designed as per specification would apply to the transformer also.
- h) All other stresses for which STATCOM Station shall be designed as per specification would apply to the transformer also.
- i) The transformer and all its accessories like Bushings, CTs etc shall be designed to withstand without damage, the thermal and mechanical effects of any external short circuit to earth and of a short circuit across the terminals of any winding for a period of 3 seconds. The short circuit level of the 400 kV system to which the transformer shall be connected, will be as per the maximum short circuit level of the main substation. Short Circuit level of the Coupling Transformer shall be as per the Short Circuit level of the respective Substation. Short circuit level for HV bushing shall be 63 kA for 1 Sec.
- j) The transformer shall be capable of being loaded in accordance with relevant IEC Standards 60076 or the overload conditions as specified whichever is the worst. There shall be no limitation imposed by bushings during its terminal fault.
- k) The transformer shall be capable of withstanding the mechanical stresses caused by symmetrical or asymmetrical faults on any winding.
- l) The transformer should be designed to carry a certain level of direct current consistent with the STATCOM design. To ensure minimum harmonics generation, the saturation flux density of the transformer should be higher than the maximum flux density reached over the full steady state (continuous operating) range; this margin shall be at least 10%. This maximum flux density (over the full steady-state range) is obtained at the highest secondary voltage during any reactive power generation, highest reference voltage, minimum slope, and minimum continuous frequency. The flux density at the highest secondary voltage shall lie in the linear portion of the BH curve of the core. Any harmonic generated by the transformer should be considered for the design of the STATCOM.
- m) All protection class Current Transformers in the coupling transformer shall be of PX/PS type. Other details of these Current Transformers shall be as per protection/metering requirements and shall be decided during detailed engineering. However, the parameters of the Winding Temperature Indicator (WTI) of Current Transformer for each winding shall be as per the Coupling Transformer manufacturer.
- n) Transformers shall be capable of operating under natural cooled conditions up to the specified load. The forced cooling equipment shall come into operation by pre-set contacts of winding temperature indicator and the transformer shall operate as a forced cooling unit initially as Oil Natural Air Forced (ONAF) up to a specified load and then as Oil Forced Air Forced (OFAF). Cooling shall be so designed that during total failure of power supply to cooling fans and oil pumps, the transformer



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shall be able to operate at full load for at least ten (10) minutes without the calculated winding hot spot temperature exceeding 140 degree Celsius. Transformers fitted with two coolers, each capable of dissipating 50 percent of the heat due to losses at the continuous maximum rating, shall be capable of operating for 20 minutes in the event of failure of the oil circulating pump or blowers associated with one cooler without the calculated winding hot spot temperature exceeding 140 degree Celsius at continuous maximum rating.

- o) The transformer shall be free from any electrostatic charging tendency (ECT) under all operating conditions when all oil circulation systems are in operation. In general, the oil flow speed shall not exceed 1.0 m/sec within winding in the oil flow system of the transformers. The manufacturer shall ensure that there is no electrostatic charging tendency in the design.

The Technical Parameters of the Transformer shall be as below

Sl. No.	Description	Unit	Technical Parameters
1.1	Rated Capacity		
	HV	MVA	To meet the performance requirement and ratings of STATCOM. The transformer shall be suitable for 100% reactive loading
	MV	MVA	
1.2	Voltage ratio (Line to Line)		400 / XX (*)
1.3	Single / Three Phase Design		Single phase
1.4	Applicable Standard		relevant IEC Standards 60076
1.5	Rated Frequency	Hz	50
1.6	Cooling and Percentage Rating at different coolings		ONAN/ONAF/(OFAF or ODAF): 60% / 80%/100% OR ONAN/ONAF1/ONAF2: 60% /80%/100% OR OFAF (with 5 x 25% unit cooler if required)
1.7	Impedance at 75 °C (in percentage)		
	HV–MV		To suit the design requirements.
1.8	Tolerance on Impedance (HV-MV)	%	As per relevant IEC Standards



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Sl. No.	Description	Unit	Technical Parameters
1.9	Service		Outdoor
1.10	Duty		Continuous Reactive loading
1.11	Overload Capacity		relevant IEC Standards -60076-7
1.12	Temperature rise over 50 °C ambient Temp		
i)	Top oil measured by thermometer	°C	50
ii)	Average winding measured by resistance Method	°C	55
1.13	Windings		
i)	System Fault level		
	HV	kA	63
	MV	kA	To suit the design requirements.
ii)	Lightning Impulse withstand Voltage		
	HV	kVp	1300
	MV	kVp	*
	Neutral	kVp	170
iii)	Switching Impulse withstand Voltage		
	HV	kVp	1050
iv)	One Minute Power Frequency withstand Voltage		
	HV	kVrms	570
	MV	kVrms	*
	Neutral	kVrms	70
v)	Neutral Grounding		Solidly grounded
vi)	Insulation		
	HV		Graded
	MV		Uniform
vii)	Tan delta of winding	%	< 0.5
1.14	Vector Group (3 – ph) (unless specified differently elsewhere)		YNd*
1.15	Tap Changer		Not Applicable
1.16	Bushing		
i)	Rated voltage		



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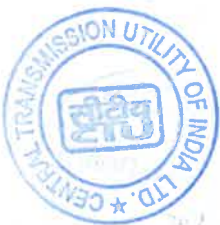
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Sl. No.	Description	Unit	Technical Parameters
	HV	kV	420
	MV	kV	*
	Neutral	kV	36
ii)	Rated current (Min.)		
	HV	A	*
	MV	A	*
	Neutral	A	*
iii)	Lightning Impulse withstand Voltage		
	HV	kVp	1425
	MV	kVp	*
	Neutral	kVp	170
iv)	Switching Impulse withstand Voltage		
	HV	kVp	1050
v)	One Minute Power Frequency withstand Voltage		
	HV	kVrms	695
	MV	kVrms	*
	Neutral	kVrms	77
vi)	Minimum total creepage distances		
	HV	mm/kV	31
	MV	mm/kV	31
	Neutral	mm/kV	31
vii)	Tan delta of bushings		
	HV	%	Refer Note 2
	MV	%	Refer Note 2
viii)	Max Partial discharge level at Um		
	HV	pC	10
	MV	pC	10
	Neutral		-
1.17	Max Partial discharge level at $1.58 * U_r / \sqrt{3}$	pC	100
1.18	Max Noise level at rated voltage and at principal tap at no load and all cooling Active	dB	80



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Sl. No.	Description	Unit	Technical Parameters
1.19	Maximum Permissible Losses of		
	Transformers		
i)	Max. No Load Loss at rated voltage and Frequency	kW	To suit the design requirements.
ii)	Max. Load Loss at maximum continuous current and at 75° C	kW	To suit the design requirements.
iii)	Max. Auxiliary Loss at rated voltage and Frequency	kW	To suit the design requirements.

Notes:

1. No external or internal Transformers / Reactors are to be used to achieve the specified HV/MV impedances.
2. The criteria for Transformer losses shall be "Copper Loss (Load Loss) > Iron Loss (No Load Loss) > Cooler Loss (Auxiliary Loss)".
3. (*) marked parameters shall be decided based on STATCOM manufacturer's requirement.

C.8.10 STATCOM Station MV Switchgear

The MV Switchgear shall be designed with the aim to achieve operation according to the overall performance requirements of the STATCOM Station.

C.8.10.1 MV Circuit Breaker

The MV Circuit Breaker shall comply with the relevant IEC Standards and all other relevant Standards, and as specified in this specification. They shall satisfy the General Technical Requirements and shall be designed to operate in the environmental conditions specified in this specification.

The Circuit Breaker offered should be of SF6 type/Vacuum type only and of class C2, M2 as per relevant IEC Standards

- i) The circuit breaker shall be complete with terminal connectors, operating mechanism, control cabinets, piping, interpole cable, cable accessories like glands, terminal blocks, marking ferrules, lugs, pressure gauges, density monitors (with graduated scale), galvanised support structure for CB and control cabinets, their foundation bolts and all other circuit breaker accessories required for carrying out all the functions the CB is required to perform.



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- ii) All necessary parts to provide a complete and operable circuit breaker installation such as main equipment, terminals, control parts, connectors and other devices whether specifically called for herein or not shall be provided.
- iii) The support structure of the circuit breaker shall be hot dip galvanized. Exposed hardware items shall be hot dip galvanized or Electro-galvanized.
- iv) MV Circuit Breaker shall be equipped with controlled switching with consequent optimization of switching behavior, when used in:
 - Switching of Capacitor Bank
 - Switching of shunt Reactor Bank
- v) Reactor Switching Duty test shall be conducted on MV Circuit Breaker in line with latest edition of relevant IEC Standards 62271-110.
- vi) Type Tested for Back-to-Back Capacitor Bank Switching as per latest edition of relevant IEC Standards 62271-100.
- vii) Routine tests as per relevant IEC Standards: 62271-100 shall be performed on all circuit breakers.
- viii) The medium voltage circuit breakers in any of the branches shall be designed to switch off metallic three phase short circuits only limited by the transformer impedance of the STATCOM System (Coupling transformer) with the initial short circuit current and DC component according to relevant IEC Standards 60909-0. Thereby the worst case time constant where the maximum short circuit peak and DC component occur shall be considered. The network shall be considered to deliver the maximum short circuit power of the substation.

C.8.10.2 MV Isolator and Earth Switch

The isolators and earth switches shall comply with the relevant IEC Standards and all other relevant Standards, and as specified in this specification. They shall satisfy the General Technical Requirements and shall be designed to operate in the environmental conditions specified in this specification.

- i) The isolators and accessories shall conform in general to relevant IEC Standards-62271 series as per relevance (or IS:9921) except to the extent explicitly modified in specification.
- ii) Earth switches shall be provided on isolators wherever called for.
- iii) Switches shall be motor operated with local and remote operation features and local manual operation features. Remote operation of Earth Switch is not required.



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- iv) Disconnections and earth switches shall electrically and mechanically be interlocked. Castle Key interlocking facilities shall be provided to mechanically interlock the earth switch and Isolator to the doors of valve rooms.

C.8.10.3 Instrument Transformers for STATCOM Station

The instrument transformers shall comply with the relevant IEC Standards. They shall satisfy the general Technical Requirement specified in the specification and shall be designed to operate in the environmental conditions specified in this Specification. The instrument transformers provided for control, metering and protective relaying functions shall have voltage and current ratings, accuracy ratings and burden capabilities adequate to provide their designated functions within the overall accuracy requirement of the systems.

Voltage Transformers

Voltage transformers shall comply with the relevant IEC Standards 61869 (Part-1, Part-3 and Part-5).

Current Transformers

Current transformers shall comply with relevant IEC Standards 61869 (Part-1 and Part-2). Type tests and routine tests as per relevant IEC Standards.

C.8.10.4 Surge Arrester

TSP shall install the surge arresters necessary for the protection of the equipment associated with the STATCOM Station in accordance with the requirements as per the insulation coordination study. The surge arresters shall give consistent protection to their associated equipment against overvoltage produced by lightning or switching surges, internal or external station faults, and other system disturbances.

The surge arresters shall be rated such that they are able to discharge a specified maximum energy due to the application of lightning, switching surges, temporary over voltages and faults as determined by insulation coordination studies, without coming into the temperature region where thermal runaway could result upon subsequent application of maximum transient and steady state voltage conditions.

The arrester housing shall be porcelain/composite type. The end fittings shall be made of non-magnetic and corrosion proof material.

Internal components shall be designed to eliminate internal corona and also to ensure minimal capacitive coupling with any conducting layer of pollutant on the outside of the porcelain housing. Particular attention shall be given to the high discharge currents which some of the arresters may experience in service due to




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discharge of stored energy of the AC filter and reactive compensating equipment, tripping of STATCOM etc.

C.8.11 STATCOM Station Auxiliary Power Supply

The auxiliary supply of STATCOM Station shall conform with the system requirements relating to reliability, availability, and redundancy, performing continuously to help ensure that the complete STATCOM Station operates as per the requirements. STATCOM station Auxiliary supply including all necessary switchgear (viz. AC/DC, lighting boards etc.) shall be completely separate from the main 765/400/220 kV substation auxiliary supply, all loads of STATCOM station shall be fed from this supply. The auxiliary supply provides power to the controllers, cooling system, station supplies, and various other essential and non-essential loads. With the exception of the cooling system, all other essential loads are also connected to the DC system of the STATCOM Station which is also to be provided separately from the DC system of the main 765/400/220 kV substation.

The auxiliary supply system shall be able to provide a stable supply for the STATCOM Station during system faults such as single-phase faults, phase-to-phase faults, and three-phase faults and LVRT (Low Voltage Ride Through) to allow continuous operation of the STATCOM Station during these transient events.

The auxiliary supply system of each STATCOM Station shall consist of two main incomers and one emergency incomer from DG set. The two main incomers shall be required to be paired to act redundantly to help ensure a certain degree of reliability and availability. One of the main incomers shall be supplied from 33 kV tertiary winding of 765/400/33 kV or 400/220/33 kV ICT at the main substation.

The other main incomer can be supplied from any one of the following three options:

- Supplied from Tertiary/Yoke winding of STATCOM coupling Transformer.
- Supplied from MV Bus Bar of STATCOM Station.
- Supplied from Power PT on HV side of coupling Transformer.

Wherever the Voltage variation on the incomer is very high, AVR (Automatic Voltage Regulator) shall be provided to control the auxiliary supply voltage.

All MV incomers shall be provided with suitable CB, disconnector, instrument Transformer etc along with necessary protection system.

C.8.12 Fire Protection System for STATCOM Station:

Necessary fire protection for STATCOM units, Coupling Transformer, MSC, MCR and Harmonic filter (if any) shall be required. The main features of these protections are as under.




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Fire Detection and Alarm System:

Suitable fire detection system using smoke detectors and/or heat detectors shall be provided in STATCOM Station for all room and areas. These smoke fire detection systems shall be connected to a separate Fire annunciation system clearly identifying the zone.

Hydrant System:

The hydrant system shall be extended from fire fighting system of the substation in the yard. Suitable number of hydrants shall be provided for protection of STATCOM Station equipment in the yard namely Coupling Transformer, MSCs, MSRs and Harmonic Filter (if required) etc as applicable for the station. Further suitable number of hydrants shall also be provided for STATCOM Station building

HVW System:

HVW (High Velocity Water) Spray system shall be provided for coupling transformer. The tapping for HVW system shall be done from nearby transformer/Reactor or any other suitable point of the main substation fire-fighting line-

Fire protection system shall be provided in accordance with the Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2023.

C.8.13 Air-conditioning and ventilation system for STATCOM station

The STATCOM Station shall be provided with Air conditioning system as per requirement.

1) AC System (Except Valve Hall):

Air condition system shall be provided for the following rooms in the STATCOM Building:

- a. Control and Relay room
- b. Battery room
- c. Conference Room
- d. Store cum workshop
- e. Cooling system room
- f. Lobby

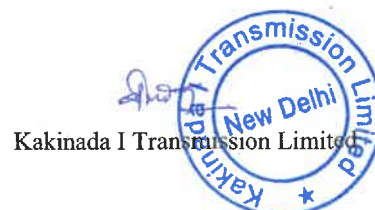
Capacity and quantity of the AC units shall be decided based on heat load calculation and redundancy requirement.

2) Air-Conditioning System for Valve hall:



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Air-Conditioning shall be provided for each Valve room for maintaining the following inside conditions round the year:

DBT - 35 °C (Maximum) Relative Humidity (RH) - 60% (Maximum)

The system shall be designed for an outside ambient temperature of 50 °C. Based on the above system design and parameters for valve room the AC system shall comprise "AHU and Air-cooled DX Condensing units" with one Main and one Standby unit for each room. The system shall be designed for 24 Hours, 365 Days of the year operation to maintain the inside temperatures of the Valve Hall for proper operation of the critical equipment. The air-cooled condensing unit shall be designed for continuous duty.

C.9 Engineering studies

The TSP shall carry out studies as brought out in this section with a model of the STATCOM in PSSE and PSCAD and documentation of the same shall be preserved and to be submitted to CEA/CTU, as per their requirement. The objective of these studies is to verify the steady state requirement of reactive power under normal and contingent operating conditions for peak and light loads conditions in the network.

The studies shall have to be carried out for

- Peak Load
- Light Load
- Contingency Conditions

The load flow and dynamic file available with CTU shall be provided to the TSP in PSSE version 34 format. If data is not available typical data shall be assumed by TSP.

The studies should demonstrate that the STATCOM system meets all system and equipment specified performance criteria as per the specification. Engineering studies should include, but not be limited to, the studies described in subsequent subsections.

C.9.1 System dynamic performance studies

Dynamic performance studies should verify that the STATCOM system controls the system's dynamic performance during system disturbances. Dynamic performance studies include the following:

- a. Studies verifying that the STATCOM provides adequate dynamic control to meet the system and STATCOM system performance criteria for the system conditions.
- b. Study of response time and of the STATCOM system's behavior and contribution to the system's recovery from faults.



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- c. Studies to verify the operation of any supplementary controls designed to damp power oscillations following system disturbances.
- d. Studies to evaluate the interaction of the STATCOM controls with the other nearby control systems, including high-voltage direct current (HVDC) controls, generator controls, and controls of other flexible AC transmission systems (FACTS) devices

In addition to the above, relevant studies shall include the cases stated as mentioned in Annexure-I

C.9.2 Harmonic performance

The studies should evaluate resultant maximum harmonic levels at the STATCOM system point of common coupling (PCC), and determine maximum stresses on all STATCOM system components. The study report should include the following:

- a. Evaluation of specified system and operating conditions (refer to Clause 5) under all possible STATCOM operating conditions.
- b. Evaluation within maximum ranges of STATCOM system component tolerances (worst performance values may not occur at detuning extremes).
- c. Evaluation with maximum system voltage unbalance (refers to item 8 and item 9 in Table 3 of Clause 5).
- d. Evaluation of the worst case resonance condition between STATCOM system and overall system.
- e. Evaluation of possible resonant over voltages.
- f. Transformer saturation induced harmonics for component rating calculation only.
- g. Evaluation of impact considering single phase auto reclose deadtime.

C.9.3 Electromagnetic transients, control performance, and overvoltage studies

Transient overvoltage studies should be performed with the actual control modeled to verify that the STATCOM system equipment is adequately protected against over voltages and over currents (including excessive valve recovery voltages) from power system transients resulting from switching, fault clearing events, and credible STATCOM system maloperations. Evaluation shall include the following:

- a. Study of start-up, including transformer energization, shutdown, switching coordination, and other local area network switching events
- b. Study of STATCOM system protection and protection coordination
- c. Faults on the high-voltage (HV) and MV bus (single line-to-ground, phase-to-phase, and three-phase)



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- d. Faults across the VSC, capacitors, and other equipment if used.
- e. Control interaction

C.9.4 Insulation coordination study

Overall insulation coordination should be verified by considering the results of 8.4 (dynamic over voltages, and fault and switching transients), including the impacts of lightning surges on the STATCOM equipment. This study should determine and verify insulation levels, clearances, and arrester placement and ratings.

C.9.5 Other Studies

- a) Grounding Study
- b) Protection coordination
- c) PLC/radio interference
- d) Magnetic field strength
- e) Other studies as applicable

C.9.6 Software simulation models

The TSP shall provide the latest following PSCAD and PSSE simulation model(s) and parameters to CEA/CTU/GRID-INDIA alongwith detailed documentation for the purpose of future simulation to adequately represent and model the proposed STATCOM system in the respective software:

- a. **Stability model.** TSP should provide a detailed STATCOM system dynamics model for use in (PSCAD and PSSE) powerflow and stability simulation software. The model detail should be appropriate and complete for positive-sequence power system simulation and analysis that is typically performed with power flow and transient stability programs. All appropriate control features for such analysis will be modeled, and necessary documentation on the theory and use of model should be provided. Further, a generic model, benchmarked to detailed STATCOM stability model, shall also be furnished for distribution.
- b. **Transients model.** TSP should provide a detailed STATCOM transients model for use in PSCAD. The model detail should be appropriate and complete for the transient response calculation of the STATCOM system. All appropriate control features for such analysis will be modeled, and necessary documentation on the theory and use of model should be provided. Further, a generic model, benchmarked to detailed STATCOM transient model, shall also be furnished for distribution.

PSS/E files may be used for developing RTDS files/ models. For simulation of STATCOM in PSS/E file (load flow and dynamic) and PSCAD (Transient) model for



STATCOM is required for study. TSP will share STATCOM models with CEA, CTU and Grid-India along with detailed documentation for above study purposes and simulations. For PSS/E, both Generic and User-defined models shall be shared by the TSP with the CEA, CTU and Grid-India. Generic model (**PSS/E**) response shall be benchmarked with user-defined model (**PSS/E and PSCAD**) to the extent possible by the TSP. Generic models can be shared by the CEA, CTU and Grid-India with the concerned stakeholders/external party(ies) e. g. STUs etc. on need basis. For User Defined model, confidentiality shall be maintained by the CEA, CTU and Grid-India. For PSCAD, User Defined model shall be provided by the TSP for which confidentiality shall be maintained by the CEA, CTU and Grid-India.

Both UDM (PSCAD and PSS/E) and Generic model (PSSE) shall be provided by OEMs to CEA/CTU/GRID-INDIA without any NDA (Non-Disclosure Agreement)

C.9.7 Factory tests of controls

The integrated nature of the performance of the STATCOM in an electrical grid requires the following tests:

- a. The TSP should perform factory simulator system tests for integrated control and protection system to ensure the proper operation of the same. The control system should be connected to a digital simulator with adequate representation of the electrical network for various conditions. The STATCOM system controller needs to be representative of control functions, including basic controllers but inclusive of supplementary controls, firing controls, and protective functions integrated into the controllers. TSP shall submit the Factory Acceptance Test (FAT) reports of STATCOM controls to CTU/RLDC.
- b. The simulator should provide an accurate network representation including network harmonic behavior, as well as synchronous condensers, power stations, generators (with AVRs), and pump storage schemes, existing HVDC, SVCs and STATCOMs, future SVCs and STATCOMs, FSC (fixed series capacitors), and shunt reactors/capacitors/filters.

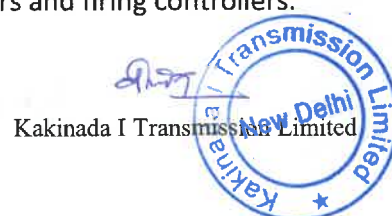
STATCOM system control function type tests on a simulator should include the following:

- Verification of each control function.
- Verification of control linearity.
- Verification of control redundancy.
- Verification of the monitoring system.
- Verification of the protection system with reference to integrated protective functions included in the Controllers and firing controllers.



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- Verification of overall system performance for minor and major system disturbances.
- Verification of processor loading of all digital controllers.
- Verification of STATCOM system parallel operation with other controls in the system and control Stability.
- Verification of control equipment performance for auxiliary power supply voltage (AC and DC) and frequency variations (AC).
- Routine production tests of all control functions, and separately of all protection functions.

C.10.0 VISUAL MONITORING SYSTEM FOR WATCH AND WARD OF STATCOM STATION

Visual monitoring system (VMS) for effective watch and ward of STATCOM station premises covering the areas of entire switchyard, STATCOM building, Coupling Transformer, Cooling Towers and main gate, shall be provided. The TSP shall design, supply, erect, test and commission the complete system including cameras, Digital video recorder system, mounting arrangement for cameras, cables, LAN Switches, UPS and any other items/accessories required to complete the system.

Features of VMS system shall be as those specified for main substation. The number of cameras and their locations shall be decided in such a way that any location covered in the area can be scanned. The cameras shall be located in such a way to monitor at least:

- a) Coupling Transformer, Mechanically Switched Reactors (MSRs) (if any) and Mechanically Switched Capacitors (MSCs) (if any), AC filter banks (if any).
- b) STATCOM Valve Hall, Cooling System, Electrical and Mechanical Auxiliary area.
- c) Entrance to STATCOM Station.
- d) All other Major Equipment (such as CB, CT, VT, SA etc.)

The cameras can be mounted on structures, buildings or any other suitable mounting arrangement.

C.11.0 Spares, Special Tools and Tackles

Considering STATCOM as high technology proprietary equipment of the OEM, the TSP shall ensure necessary spares are procured to maintain the necessary reliability and availability of STATCOM station. Further all necessary special tools and tackles required for erection, testing, commissioning, and maintenance of equipment shall also be taken.



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Contingency Cases for STATCOM**A) N-1 Contingency**Contingency at 765 kV level

1. Three Phase Fault close to 765 kV bus of Kakinada GH followed by tripping of one circuit of Kakinada GH – Srikakulam 765 kV D/C line (fault persisted for 100 ms)
2. Single Phase to Ground Fault close to 765 kV bus of Kakinada GH followed by single pole opening (100 ms) of the faulted phase and unsuccessful re-closure (dead time 1 second) followed by 3-pole opening (100 ms) of the faulted line i.e. tripping of one circuit of Kakinada GH – Srikakulam 765 kV D/C line
3. Three Phase Fault close to 765 kV bus of Kakinada GH followed by tripping of one circuit of Kakinada GH – Vemagiri 765 kV D/C line (fault persisted for 100 ms)
4. Single Phase to Ground Fault close to 765 kV bus of Kakinada GH followed by single pole opening (100 ms) of the faulted phase and unsuccessful re-closure (dead time 1 second) followed by 3-pole opening (100 ms) of the faulted line i.e. tripping one circuit Kakinada GH – Vemagiri 765 kV D/C line
5. Three Phase Fault close to 765 kV bus of Srikakulam PS followed by tripping of one circuit of Srikakulam – Angul 765 kV D/C line (fault persisted for 100 ms)
6. Single Phase to Ground Fault close to 765 kV bus of Srikakulam PS followed by single pole opening (100 ms) of the faulted phase and unsuccessful re-closure (dead time 1 second) followed by 3-pole opening (100 ms) of the faulted line i.e. tripping one circuit of Srikakulam – Angul 765 kV D/C line
7. Three Phase Fault close to 765 kV bus of Vemagiri SS followed by tripping of one circuit of Vemagiri – C'Peta 765 kV D/C line (fault persisted for 100 ms)
8. Single Phase to Ground Fault close to 765 kV bus of Vemagiri SS followed by single pole opening (100 ms) of the faulted phase and unsuccessful re-closure (dead time 1 second) followed by 3-pole opening (100 ms) of the faulted line i.e. tripping one circuit of Vemagiri – C'Peta 765 kV D/C line

Contingency at 400 kV level

9. Three Phase Fault close to 400 kV bus of Kakinada GH followed by tripping of one 765/400 kV ICT at Kakinada GH (fault persisted for 100 ms)
10. Three Phase Fault close to 400 kV bus of Kakinada GH followed by tripping of 1 GW demand at Kakinada GH (fault persisted for 100 ms) – **Load Throwover case**

B) N-1-1 ContingencyContingency at 765 kV level

11. Case 1 and 2 (consider as separate cases) + Single Phase Fault close to 765 kV bus of Kakinada GH followed by single pole opening (100 ms) of the faulted phase (2nd circuit of



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- Kakinada GH – Srikakulam 765 kV D/C line) and successful re-closure (dead time 1 second)
12. Case 3 and 4 (consider as separate cases) + Single Phase Fault close to 765 kV bus of Kakinada GH followed by single pole opening (100 ms) of the faulted phase (2nd ckt of Kakinada GH – Vemagiri 765 kV D/C line) and successful re-closure (dead time 1 second)
 13. Case 5 and 6 (consider as separate cases) + Single Phase Fault close to 765 kV bus of Srikakulam PS followed by single pole opening (100 ms) of the faulted phase (2nd ckt of Srikakulam – Angul 765 kV D/C line) and successful re-closure (dead time 1 second)
 14. Case 7 and 8 (consider as separate cases) + Single Phase Fault close to 765 kV bus of Vemagiri SS followed by single pole opening (100 ms) of the faulted phase (2nd ckt of Vemagiri – C’Peta 765 kV D/C line) and successful re-closure (dead time 1 second)



SPECIFIC TECHNICAL REQUIREMENTS FOR COMMUNICATION

The communication requirement shall be in accordance to CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020, CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, CERC (Communication System for inter-State transmission of electricity) Regulations, 2017, CEA (Cyber Security in Power Sector) Guidelines, 2021, CERC Guidelines on "Interface Requirements" 2024 and all above documents as amended from time to time.

The communication services viz. SCADA, AGC (wherever applicable), VoIP, AMR and PMU have been identified as critical services and therefore shall be provisioned with 2+2 redundancy i.e. 2 channels for Main Control Centre and 2 channels for Backup Control Centre. In order to meet this requirement, suitable redundancy at port and card level need to be ensured by the TSP to avoid any single point of failure which may lead to interruption in real-time grid operation.

PMU to PDC communication (wherever required) shall be through 2 channels to the PDC (main) as there is no backup PDC at present.

Accordingly, all the hardware for communication services of station as stated above shall support dual redundancy for data transmission of station to respective main and backup RLDCs

The complete ISTS communication system commissioned by TSP under the RFP shall be the asset of ISTS and shall be available for usage of ISTS requirements as suggested by CTU from time to time.

In order to meet the requirement for grid management and operation of substations, Transmission Service Provider (TSP) shall provide the following:

C.1.0 Establishment of 765/400kV Kakinada S/s

- (I) **TSP shall supply, install and commission one or more FODP with minimum 120 Fiber capacity with panel and approach Cable (24F each) with all associated hardware fittings from gantry tower to Control Room for all the incoming lines envisaged under the present scope.**
- (II) TSP shall supply, install and commission One or more STM-16 (FOTE) equipment alongwith panel/s supporting minimum Five (5) directions with MSP (Multiplex Section Protection – 1+1). These directions shall exclude protected (1+1) local patching among equipment (if any). Communication Equipment shall be provided with necessary interfaces to meet the voice and data communication requirement among Kakinada S/s, Vemagiri S/s, Srikakulam S/s and 1 nos. for future line. Out of Five (5) directions, necessary direction shall also be provided in FOTE for 1 no. upcoming line, however required optical interfaces shall be provided by upcoming entities on this line at the time of connectivity with Kakinada S/s. The suitable DC Power Supply and backup to be provided for communication equipment.



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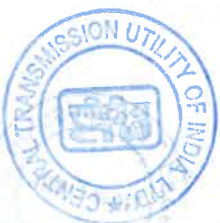
- (III) FODP and FOTE equipment with panels shall be provided in the Control Room of Kakinada S/s. FOTE and FODP Eq can be accommodated in same panel to optimize space.
- (IV) TSP shall deploy Cyber Security System in compliance with CEA (Cyber Security in Power Sector) Guidelines, 2021 and CEA (Cyber Security in Power Sector) Regulation, from its date of publication/ notification and their amendments thereof.
- (V) The maintenance of all the communication equipment and software thereof including FOTE, FODP, PMU, approach cable, DCPS along with Battery Bank & Cyber Security System shall be the responsibility of TSP.

C.2.0 LILO of Vemagiri – Srikakulam 765kV Dc line at Kakinada S/s

- (I) On LILO of both ckt of 765kV Vemagiri - Srikakulam D/C line at Kakinada S/s, TSP shall supply, install and commission OPGW and earthwire as per Tower Configurations :
 - i. Loop-In and Loop out Ckt on Single Towers: Two (2) No. OPGW cable containing 24 Fibres (24F) OPGW to be installed and commissioned by the TSP on both the Earthwire peaks .
 - ii. Loop-In and Loop out Ckt on Two separate Towers: One (1) no. OPGW cable containing 24 Fibres (24F) on one earthwire peak and conventional earthwire on other E/W peak for both Loop In and Loop Out Lines.

Note: Existing OPGW on Vemagiri – Srikakulam 765kV D/C line is 24 Fiber therefore 24 Fiber OPGW is proposed on the LILO of Vemagiri – Srikakulam 765kV D/C line at Kakinada S/s

- (II) The TSP shall install OPGW cables from gantry of Kakinada S/s up to the LILO tower with all associated hardware including Vibration Dampers, mid-way and gantry Joint Boxes (called OPGW Hardware hereafter) and finally terminate in Joint Boxes at Kakinada S/s. The transmission line length is 20 kms (approx.). After LILO, if fiber length for links **Kakinada S/s to Vemagiri S/s** and **Kakinada S/s to Srikakulam S/s** is **above** 225 kms then repeater shall be envisaged, otherwise line can be managed as a repeater less link.
- (III) TSP shall finalize the location of the repeater station depending upon the actual site conditions. Further TSP shall comply with the requirements mentioned as per Appendix-F.1
- (IV) Further necessary optical interfaces shall also be provided by the TSP in the FOTE of Vemagiri and Srikakulam S/s as per link budget requirement after change of fiber length due to LILO at Kakinada.



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- (V) Maintenance of OPGW Cable and OPGW Hardware shall be the responsibility of TSP.

C.3.0 Specific Requirement for Phasor Measurement Units (PMUs)

TSP shall supply, install and commission required no. of Phasor Measurement Units (PMUs) at all the locations under the scope this RFP as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 (alongwith all amendments if any) and all the other applicable Regulations, Standards, Guidelines issued time to time. The signal list shall be as per the Annexure-I Part-B of **CERC Guidelines on "Interface Requirements" 2024**. PMUs also to be provided at **STATCOMs** locations. These PMUs shall be provided with GPS clock and LAN switch and shall connect with LAN switch of control room of respective substations/ generating stations with Fibre Optic cable. These PMUs shall be connected with the FOTE at Substation/ generating stations for onwards data transmission to the PDC (Phasor Data Concentrator) located at respective RLDC. Configuration work in existing PDC at RLDC for new PMU integration shall be done by respective RLDC, however all the necessary support in this regard shall be ensured by TSP. The maintenance of all the PMUs and associated equipment shall be the responsibility of TSP.

Note: Existing Station owner/s to provide necessary support to integrate different equipment and applications of new extended bays with the existing substation e.g. Communication (through FOTE), Voice etc. for smooth operation and monitoring of new added grid elements.

Appendix-F.1

Repeater Requirements

- If the repeater location is finalized in the Control Room of a nearby substation, TSP shall provide OPGW to accommodate all the fibers in main transmission line on a single Earthwire peak with OPGW Hardware & mid-way Joint Boxes etc. of the line crossing the main line and required approach Cable to accommodate all the OPGW fibers with all associated hardware fittings, to establish connectivity between crossing point of main transmission line up to the repeater equipment in substation control room.

TSP shall co-ordinate for Space & DC power supply sharing for repeater equipment. TSP shall provide FODP, FOTE (with STM-16 capacity) with suitable interfaces require for link budget of respective link.

OR

If the repeater location is finalized in the nearby substation premises, the TSP shall identify the Space for repeater shelter in consultation with station owner. Further TSP shall provide OPGW to accommodate all the fibers in main



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transmission line on a single Earthwire peak with OPGW Hardware & mid-way Joint Boxes etc. of the line crossing the main line and required approach Cable/UGFO to accommodate all the OPGW fibers with all associated hardware fittings, to establish connectivity between crossing point of main transmission line up to the substation where the repeater shelter is to be housed.

TSP shall provide repeater shelter along with FODP, FOTE (with STM-16 capacity) with suitable interfaces require for link budget of respective link, reliable power supply provisioning for AC and DC supply, battery bank, Air Conditioner and other associated systems.

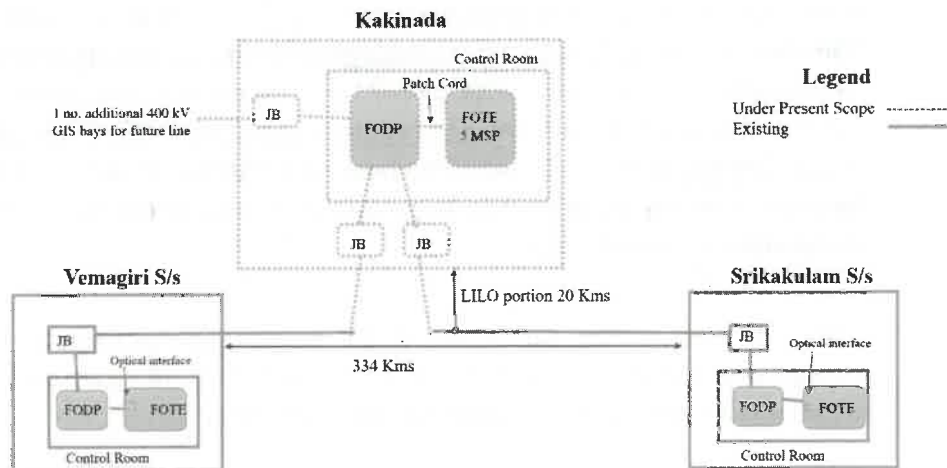
OR

- If the repeater location is finalized on land near the transmission tower. TSP shall make the provisions for Land at nearby tower for repeater shelter. Further TSP shall provide required approach Cable to accommodate all the OPGW fibers with all associated hardware fittings to establish connectivity up to the location of repeater shelter.

TSP shall provide repeater shelter along with FODP, FOTE (with STM-16 capacity) with suitable interfaces require for link budget of respective link, reliable power supply provisioning for AC and DC supply, battery bank, Air Conditioner and other associated systems

Maintenance of OPGW Cable and **OPGW Hardware**, repeater equipment and items associated with repeater shelter shall be responsibility of TSP

Proposed Communication for "Transmission system for Green Hydrogen / Green Ammonia Projects in Kakinada area, Andhra Pradesh (Phase-I)"



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List of applications to be used for Grid-Operation

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Annexure- F.3



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- i. SCADA
- ii. PMU
- iii. Tele protection
- iv. Telecontrol
- v. AGC
- vi. Voice
- vii. Automated Metering Application
- viii. Telemetry
- ix. Video conferencing
- x. ICCP (between control centers)
- xi. PDC
- xii. PDC to PDC
- xiii. Supervision of communications System
- xiv. Video Surveillance
- xv. Data Sync between MCC and BCC

C.4.0 PLCC and PABX:

Power line carrier communication (PLCC) equipment complete for speech, tele-protection commands and data channels shall be provided on each transmission line. The PLCC equipment shall in brief include the following: -

- Coupling device, Coupling filters line traps, carrier terminals, protection couplers, HF cables, PABX (if applicable) and maintenance and testing instruments.
- At new substation, a telephone exchange (PABX) of 24 lines shall be provided at as means of effective communication among various buildings of the substation, remote end substations and with control centres (RLDC/ SLDC) etc.
- Coupling devices shall be suitable for phase-to-phase coupling for 400 kV Transmission lines. The pass band of coupling devices shall have sufficient margin for adding communication channel in future if required. Necessary protection devices for safety of personnel and low voltage part against power frequency



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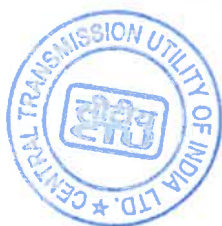
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voltages and transient over voltage shall also be provided.

- The line traps shall be broad band tuned suitable for blocking the complete range of carrier frequencies. Line Trap shall have necessary protective devices such as lightning arresters for the protection of tuning device. Decoupling network consisting of line traps and coupling capacitors may also be required at certain substation in case of extreme frequency congestion.
- The carrier terminals shall be of single side-band (SSB) amplitude modulation (AM) type and shall have 4 kHz band width. PLCC Carrier terminals and Protection couplers shall be considered for both ends of the line.
- CVT and Wave trap for all 765 kV line bays under present scope shall be provided by TSP.
- TSP shall provide/ undertake necessary addition/ modification/ shifting/ re-commissioning etc. of PLCC equipment due to LILO of transmission lines (wherever applicable).

Sl. No	Line name	PLCC configuration
1	Vemagiri - Kakinada GH 765 kV D/c line [after LILO]	1 set Analog PLCC + 1 set Digital Protection Coupler for each circuit at both ends.
2	Srikakulam - Kakinada GH 765 kV D/c line [after LILO]	1 set Analog PLCC + 1 set Digital Protection Coupler for each circuit at both ends.

- All other associated equipment like cabling, coupling device and HF cable shall also be provided by the TSP.
- Two (2) sets of 48 V battery banks for PLCC and communication equipment shall be provided at each new Substation with at least 10-hour battery backup and extended backup, if required.



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SPECIFIC TECHNICAL REQUIREMENTS FOR INTEGRATION OF COMMUNICATION EQUIPMENT WITH REGIONAL LEVEL NMS / REGIONAL UNMS:

The new communication equipment/ system for all the substations under the present scope shall be compatible for integration with existing regional level NMS system/ Centralized Supervision and Monitoring System (CSMS) i.e. Regional UNMS. The local configuration of the new communication equipment at the station end shall be the responsibility of TSP as per Annexure E.1. The configuration work in the existing centralized NMS/ CSMS at Control center end, for integration of new Communication equipment/ system shall be done by Regional ULDC Team/ NMT, however all the necessary support in this regard shall be ensured by TSP.

Annexure E.1

Requirement for integration of Communication Equipment with Regional UNMS:

1. TSP shall ensure that NMS/EMS/NE supplied by them is NBI compliant and all FCAPS functionality is supported in the NBI such as NE Inventory, Hardware Inventory – Shelf/Slot/Card/SFP/Port, Topology, Protections, Alarms, Performance- real time and periodic, Performance KPI parameters (E-1, STM, Ethernet) , Remote Configuration, Cross Connects, Trails and Circuits, Services Provisioning (NE), E-1 , STM, Ethernet , TX and RS Trace, loop back and details are published in the NBI guide for the configuration parameters.
2. TSP shall be obliged to provide/share all necessary documentations such as NBI Guide/MIB/IDL/WSDL/API files/ etc. for onward integration of their NMS/EMS/NE with regional UNMS.
3. The following support shall be provided by TSP for integration of their supplied equipment with regional UNMS:
 - Enabling and activating NBI license in their EMS/NMS and providing NBI login access along with User credentials
 - Assist in verifying NBI Connectivity with UNMS vendor for the successful communication and retrieval of data.
 - Assist in troubleshooting (if required) for NBI connectivity along with UNMS vendor for the communication and retrieval of data.
4. For standalone NE which is not integrated with any EMS/NMS, TSP shall provide modality of complete FCAPS data acquisition as above through industry standard programmatic methods and provide the CLI command manual.



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Schedule: 2

Scheduled COD

[Note: As referred to in the definition of "Element", "Scheduled COD", and in Articles 3.1.3 (c), 4.1 (b) and 4.3 (a) of this Agreement]

S. No.	Name of the Transmission Element	Scheduled COD as per Gazette Notification	% of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring the commercial operation (COD) of the respective Element
1.	Establishment of Kakinada 765/400 kV, 3x1500 MVA substation (GIS) alongwith 240 MVar bus reactor.	30 months (December 29, 2028)	100%	All the elements are interdependent and therefore shall be commissioned simultaneously
2.	LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation {with 240 MVar SLR at Kakinada GH end on Srikakulam – Kakinada section			
3.	±300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV GIS S/s with control switching arrangement for proposed 1x240 MVar bus reactor			



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Schedule: 3

Safety Rules and Procedures

[Note: As referred to in Articles 5.6 of this Agreement]

1. Site Regulations and Safety:

The TSP shall establish Site regulations within sixty (60) days from fulfilment of conditions subsequent, as per Prudent Utility Practices setting out the rules to be observed till expiry of the Agreement at the Site and shall comply therewith.

Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Project, gate control, sanitation, medical care, and fire prevention, public health, environment protection, security of public life, etc.

Copies of such Site regulations shall be provided to the Nodal Agency and the CEA for the purpose of monitoring of the Project.

2. Emergency Work:

In cases of any emergency, the TSP shall carry out all necessary remedial work as may be necessary.

If the work done or caused to be done by any entity, other than the TSP, the TSP shall, reimburse the actual costs incurred, to the other Party carrying out such remedial works.

3. Site Clearance:

In the course of execution of the Agreement, the TSP shall keep the Site reasonably free from all unnecessary obstruction, storage, remove any surplus materials, clear away any wreckage, rubbish and temporary works from the Site, and remove any equipment no longer required for execution of the Agreement. After completion of all Elements of the Project, the TSP shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site clean and safe.

4. Watching and Lighting:

The TSP shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper construction, operation, maintenance / repair of any of the Elements of the Project, or for the safety of the owners and occupiers of adjacent property and for the safety of the public, during such maintenance / repair.



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Signature

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Schedule: 4

Computation of Transmission Charges

1.1 General

The Monthly Transmission Charges to be paid to the TSP for providing Transmission Service for any Contract Year during the term of the Agreement shall be computed in accordance with this Schedule and paid as per Sharing Regulations.

Illustration regarding payment of Transmission Charges under various scenarios (considering definitions of Contract Year, Expiry Date & Monthly Transmission Charges above) is as below: -

Illustration-1: In case the Project Elements achieve COD as per Schedule

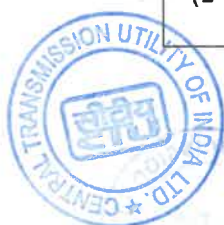
Quoted Transmission Charges: **Rs. 140 Million**

Completion Schedule:

Element No.	Completion Schedule in Months	Scheduled CoD of the Element	Actual CoD of the Element	% Charges recoverable on Scheduled CoD of the Element
Element 1	28	1-Feb-2018	1-Feb-2018	25%
Element 2	38	1-Dec-2018	1-Dec-2018	75%

Tariff Payable as follows:

Transmission Charges for Element 1			Transmission Charges for Element 2		
1-Feb-18 to 31-Mar-18	$140 \times 25\% \times ((28+31)/365)$	5.65		--	0.00
1-Apr-18 to 30-Nov-18	$140 \times 25\% \times (244/365)$	23.39		--	0.00
1-Dec-18 to 31-Mar-19	$140 \times 100\% \times (121/365)$				46.41
2	$140 \times 100\% \times 1$				140
3	$140 \times 100\% \times 1$				140
4	$140 \times 100\% \times 1$				140
5	$140 \times 100\% \times 1$				140
.....					
.....					
36 (1-Apr to 30-Nov)	$140 \times 100\% \times (244/365)$				93.59



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Illustration-2: In case of extension of Scheduled COD as per Article 4.4.1 & 4.4.2 of this AgreementQuoted Transmission Charges: **Rs. 140 Million**

Completion Schedule:

Element No.	Completion Schedule in Months	Scheduled CoD of the Element	Actual CoD of the Element	% Charges recoverable on Scheduled CoD of the Element
Element 1	20	1-Feb-2018	1-Jul-2018	25%
Element 2	28	1-Oct-2018	1-Dec-2018	75%

Tariff Payable as follows:

Transmission Charges for Element 1			Transmission Charges for Element 2		
1-Feb-18 to 31-Mar-18	--	0.00		--	0.00
1-Apr-18 to 30-Jun-18	--	0.00		--	0.00
1-Jul-18 to 30-Nov-18	140 X 25% X (153/365)	14.67		--	0.00
1-Dec-18 to 31-Mar-19	140 X 100% X (121/365)				46.41
2	140 X 100% X 1				140
3	140 X 100% X 1				140
4	140 X 100% X 1				140
5	140 X 100% X 1				140
.....					
.....					
36 (1-Apr to 30-Nov)	140 X 100% X (244/365)				93.59



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Illustration-3: In case of delay in achieving COD of Project & all individual Elements (COD of the Project achieved in Contract Year 1)

Quoted Transmission Charges: **Rs. 140 Million**

Completion Schedule:

Element No.	Completion Schedule in Months	Scheduled CoD of the Element	Actual CoD of the Element	% Charges recoverable on Scheduled CoD of the Element
Element 1	20	1-Feb-2018	1-Dec-2018	25%
Element 2	28	1-Oct-2018	1-Dec-2018	75%

Tariff Payable as follows:

Transmission Charges for Element 1			Transmission Charges for Element 2		
1-Feb-18 to 31-Mar-18	--	0.00		--	0.00
1-Apr-18 to 30-Sept-18	--	0.00		--	0.00
1-Oct-18 to 30-Nov-18	--	0.00	1-Oct-18 to 30-Nov-18	--	0.00
1-Dec-18 to 31-Mar-19	140 X 100% X (121/365)				46.41
2	140 X 100% X 1				140
3	140 X 100% X 1				140
4	140 X 100% X 1				140
5	140 X 100% X 1				140
.....					
.....					
36 (1-Apr to 30-Nov)	140 X 100% X (244/365)				93.59



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Illustration-4: In case of delay in achieving COD of Project & all individual Elements (COD of the Project achieved in Contract Year other than Contract Year 1)Quoted Transmission Charges: **Rs. 140 Million**

Completion Schedule:

Element No.	Completion Schedule in Months	Scheduled CoD of the Element	Actual CoD of the Element	% Charges recoverable on Scheduled CoD of the Element
Element 1	38	1-Oct-2019	1-May-2020	25%
Element 2	38	1-Oct-2019	1-May-2020	75%

Tariff Payment to be paid as:

Transmission Charges for Element 1			Transmission Charges for Element 2		
1-Oct-19 to 31-Mar-20	--	0.00	1-Oct-19 to 31-Mar-20	--	0.00
1-Apr-20 to 30-Apr-20	-	0.00	1-Apr-20 to 30-Apr-20	-	0.00
1-May-20 to 31-Mar-21	140 X 100% X (335/365)				128.49
2	140 X 100% X 1				140
3	140 X 100% X 1				140
4	140 X 100% X 1				140
5	140 X 100% X 1				140
.....					
.....					
36 (1-Apr to 30-Apr)	140 X 100% X (30/ 365)				11.51



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Illustration5: In case of delay in achieving COD of Element but Project COD achieved on time

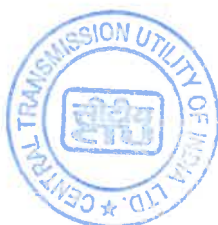
Quoted Transmission Charges: **Rs. 140 Million**

Completion Schedule:

Element No.	Completion Schedule in Months	Scheduled CoD of the Element	Actual CoD of the Element	% Charges recoverable on Scheduled CoD of the Element
Element 1	20	1-Feb-2018	1-Jul-2018	25%
Element 2	30	1-Dec-2018	1-Dec-2018	75%

Tariff Payable as follows:

Transmission Charges for Element 1			Transmission Charges for Element 2		
1-Feb-18 to 31-Mar-18	--	0.00		--	0.00
1-Apr-18 to 30-Jun-18	--	0.00		--	0.00
1-Jul-18 to 30-Nov-18	140 X 25% X (153/365)	14.67		--	0.00
1-Dec-18 to 31-Mar-19	140 X 100% X (121/365)				46.41
2	140 X 100% X 1				140
3	140 X 100% X 1				140
4	140 X 100% X 1				140
5	140 X 100% X 1				140
.....					
.....					
36 (1-Apr to 30-Nov)	140 X 100% X (244/365)				93.59



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Illustration-6: In case of early commissioning of Project

Quoted Transmission Charges: **Rs. 140 Million**

Completion Schedule:

Element No.	Completion Schedule in Months	Scheduled CoD of the Element	Actual CoD of the Element	% Charges recoverable on Scheduled CoD of the Element
Element 1	38	1-Oct-2019	1-Jul-2019	25%
Element 2	38	1-Oct-2019	1-Jul-2019	75%

Tariff Payment to be paid as:

Transmission Charges for Element 1		Transmission Charges for Element 2	
1-July-19 to 31-Mar-20	140 X 100% X (274/365)		105.09
2	140 X 100% X 1		140
3	140 X 100% X 1		140
4	140 X 100% X 1		140
5	140 X 100% X 1		140
.....			
.....			
36 (1-Apr to 30-Jun)	140 X 100% X (91/365)		34.91




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Illustration-7: In case of early commissioning of an elementQuoted Transmission Charges: **Rs. 140 Million**

Completion Schedule:

Element No.	Completion Schedule in Months	Scheduled CoD of the Element	Actual CoD of the Element	% Charges recoverable on Scheduled CoD of the Element
Element 1	38	1-Oct-2019	1-Apr-2019	25%
Element 2	38	1-Jul-2019	1-Jul-2019	75%

Tariff Payment to be paid as:

Transmission Charges for Element 1			Transmission Charges for Element 2		
1-Apr-2019 to 30-Jun-19	140 X 25% X (91/365)	8.72	1-Apr-2019 to 30-Jun-19	--	0.00
1-July-19 to 31-Mar-20	140 X 100% X (274/ 365)				105.09
2	140 X 100% X 1				140
3	140 X 100% X 1				140
4	140 X 100% X 1				140
5	140 X 100% X 1				140
.....					
.....					
36 (1-Apr-30-Jun)	140 X 100% X (91/365)				34.91

The Transmission Charges shall be payable on monthly basis as computed above.

1.2 Computation of Monthly Transmission Charges

The Monthly Transmission Charges for any month m in a Contract Year n shall be calculated as below:

For AC System:

- a. If Actual Transmission System Availability for the month m of contract year n is greater than or equal to 98% and less than or equal to 98.5%;

$$\text{Monthly Transmission Charges MTC}(m) = T_{mn} * 1$$

- a. If Actual Transmission System Availability for the month m of contract year n exceeds 98.5% and less than or equal to 99.75%;

$$\text{Monthly Transmission Charges MTC}(m) = T_{mn} * (AA / 98.5\%)$$

- c. If Actual Transmission System Availability for the month m of contract year n is greater than 99.75%;



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Monthly Transmission Charges $MTC(m) = Tmn * (99.75\% / 98.5\%)$

- d. If Actual Transmission System Availability for the month m of contract year n is less than 98% and greater than or equal to 95.00%;

Monthly Transmission Charges $MTC(m) = Tmn * (AA/ 98\%)$

- e. If Actual Transmission System Availability for the month m of contract year falls below 95%;

Monthly Transmission Charges $MTC(m) = Tmn * (AA/ 98\%) - 0.02 * (Tmn * (AA/ 95\%))$

For DC System:

- a. If Actual Transmission System Availability for the month m of contract year n is greater than or equal to 95% and less than or equal to 96%;

Monthly Transmission Charges $MTC(m) = Tmn * 1$

- b. If Actual Transmission System Availability for the month m of contract year n exceeds 96% and less than or equal to 99.75%;

Monthly Transmission Charges $MTC(m) = Tmn * (AA/ 96\%)$

- c. If Actual Transmission System Availability for the month m of contract year n is greater than 99.75%;

Monthly Transmission Charges $MTC(m) = Tmn * (99.75\% / 96\%)$

- d. If Actual Transmission System Availability for the month m of contract year n is less than 95% and greater than or equal to 92.00%;

Monthly Transmission Charges $MTC(m) = Tmn * (AA/ 95\%)$

- e. If Actual Transmission System Availability for the month m of contract year falls below 92%;

Monthly Transmission Charges $MTC(m) = Tmn * (AA/ 95\%) - 0.02 * (Tmn * (AA/ 92\%))$

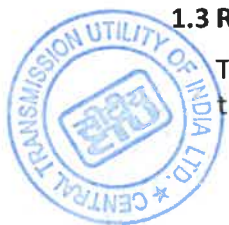
where:

- AA is the actual Availability, as certified by RPC, as per procedure provided in Schedule 6.
- m is the month in Contract Year 'n'
- $Tmn = \text{Transmission Charges for the month 'm' in Contract Year 'n'} = (\text{Transmission Charge/ no. of days in the Year n}) * \text{no. of days in month m}$

Provided, no Transmission Charges shall be paid during the period for which the RLDC has not allowed the operation of the Element/Project due to the failure of the TSP to operate it as per the provisions of the Grid Code.

1.3 RLDC Fee & Charges

The payment of RLDC fee & charges, in accordance with relevant regulations of CERC, shall be the responsibility of the TSP.



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Transmission Service Agreement

Schedule: 5

Quoted Transmission Charges

[Quoted Transmission Charges from Annexure - 21 of the RFP of the Selected Bidder to be inserted here]

[To be incorporated from the Bid of the Selected Bidder submitted during the e-reverse auction after its selection]

Quoted Transmission Charges: Rs. 1,799.74 Million per annum

Proportionate Transmission Charges payable for each Element of the Project:

S. No.	Name of the Transmission Element	Scheduled COD as per Gazette Notification	% of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring the commercial operation (COD) of the respective Element
1.	Establishment of Kakinada 765/400 kV, 3x1500 MVA substation (GIS) alongwith 240 MVar bus reactor.	30 months (December 29, 2028)	100%	All the elements are interdependent and therefore shall be commissioned simultaneously
2.	LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation {with 240 MVar SLR at Kakinada GH end on Srikakulam – Kakinada section			
3.	± 300 MVar STATCOM with 2x125 MVar MSC at Kakinada 765/400 kV GIS S/s with control switching arrangement for proposed 1x240 MVar bus reactor			



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Schedule: 6

Appendix –IV to Central Electricity Regulatory Commission (Terms and Conditions of
Tariff) Regulations, 2024

Procedure for Calculation of Transmission System Availability Factor
for a Month

1. Transmission system availability factor for nth calendar month ("TAFPn") shall be calculated by the respective transmission licensee, verified by the concerned Regional Load Dispatch Centre (RLDC) and certified by the Member-Secretary, Regional Power Committee of the region concerned, separately for each AC and HVDC transmission system and grouped according to sharing of transmission charges. In the case of the AC system, transmission System Availability shall be calculated separately for each Regional Transmission System and inter-regional transmission system. In the case of the HVDC system, transmission System Availability shall be calculated on a consolidated basis for all inter-state HVDC systems.
2. Transmission system availability factor for nth calendar month ("TAFPn") shall be calculated by considering the following:
 - i) **AC transmission lines:** Each circuit of AC transmission line shall be considered as one element;
 - ii) **Inter-Connecting Transformers (ICTs):** Each ICT bank (three single- phase transformers together) shall form one element;
 - iii) **Static VAR Compensator (SVC):** SVC, along with SVC transformer, shall form one element;
 - iv) **Bus Reactors or Switchable line reactors:** Each Bus Reactors or Switchable line reactors shall be considered as one element;
 - v) **HVDC Bi-pole links:** Each pole of the HVDC link, along with associated equipment at both ends, shall be considered as one element;
 - vi) **HVDC back-to-back station:** Each block of the HVDC back-to-back station shall be considered as one element. If the associated AC line (necessary for the transfer of inter-regional power through the HVDC back-to-back station) is not available, the HVDC back-to-back station block shall also be considered unavailable;
 - vii) **Static Synchronous Compensation ("STATCOM"):** Each STATCOM shall be considered as a separate element.



The Availability of the AC and HVDC portion of the Transmission system shall be calculated by considering each category of transmission elements as under:

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TAFPa (in %) for AC system:

$$= \frac{(o \times AV_o) + (p \times AV_p) + (q \times AV_q) + (r \times AV_r) + (u \times AV_u)}{(o + p + q + r + u)} \times 100$$

Where,

o	=	Total number of AC lines.
AV _o	=	Availability of o number of AC lines
p	=	Total number of bus reactors/switchable line reactors
AV _p	=	Availability of p number of bus reactors/switchable line reactors
q	=	Total number of ICTs
AV _q	=	Availability of q number of ICTs
r	=	Total number of SVCs
AV _r	=	Availability of r number of SVCs
u	=	Total number of STATCOM
AV _u	=	Availability of u number of STATCOM

TAFMn (in %) for HVDC System:

$$= \frac{\sum_{x=1}^s C_{xpb}(\text{act}) \times AV_{xpb} + \sum_{y=1}^t C_{ybtb}(\text{act}) \times AV_{ybtb}}{\sum_{x=1}^s C_{xpb} + \sum_{y=1}^t C_{ybtb}} \times 100$$

Where

C _{xpb} (act)	=	Total actual operated capacity of x th HVDC pole
C _{xpb}	=	Total rated capacity of x th HVDC pole
AV _{xpb}	=	Availability of x th HVDC pole
C _{ybtb} (act)	=	Total actual operated capacity of y th HVDC back-to-back station block
C _{ybtb}	=	Total rated capacity of y th HVDC back-to-back station block
AV _{ybtb}	=	Availability of y th HVDC back-to-back station block
s	=	Total no of HVDC poles
t	=	Total no of HVDC Back to Back blocks



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4. The availability for each category of transmission elements shall be calculated based on the weightage factor, total hours under consideration and non-available hours for each element of that category. The formulae for calculation of the Availability of each category of the transmission elements are as per **Appendix-V**. The weightage factor for each category of transmission elements shall be considered as under:
- (a) For each circuit of the AC line – The number of sub-conductors in the line multiplied by ckt-km;
 - (b) For each HVDC pole- The rated MW capacity x ckt-km;
 - (c) For each ICT bank – The rated MVA capacity;
 - (d) For SVC- The rated MVAR capacity (inductive and capacitive);
 - (e) For Bus Reactor/switchable line reactors – The rated MVAR capacity;
 - (f) For HVDC back-to-back stations connecting two Regional grids- Rated MW capacity of each block; and
 - (g) For STATCOM – Total rated MVAR Capacity.
5. The transmission elements under outage due to the following reasons shall be deemed to be available:
- i. Shut down availed for maintenance of another transmission scheme or construction of new element or renovation/upgradation/additional capitalization in an existing system approved by the Commission. If the other transmission scheme belongs to the transmission licensee, the Member Secretary, RPC may restrict the deemed availability period to that considered reasonable by him for the work involved. In case of a dispute regarding deemed availability, the matter may be referred to the Chairperson, CEA, within 30 days.
 - ii. Switching off of a transmission line to restrict over-voltage and manual tripping of switched reactors as per the directions of the concerned RLDC.
 - iii. Shut down of a transmission line due to the Project(s) of NHAI, Railways and Border Road Organization, including for shifting or modification of such transmission line or any other infrastructure project approved by Ministry of Power. Member Secretary, RPC may restrict the deemed availability period to that considered reasonable by him for the work involved; Provided that apart from the deemed availability, any other costs involved in the process of such shutdown of transmission line shall not be borne by the DICs.
- Provided that such deemed availability shall be considered only for the period for which DICs are not affected by the shutdown of such transmission line.



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6. For the following contingencies, the outage period of transmission elements, as certified by the Member Secretary, RPC, shall be excluded from the total time of the element under the period of consideration for the following contingencies:

- i) Outage of elements due to force majeure events beyond the control of the transmission licensee. However, whether the same outage is due to force majeure (not design failure) will be verified by the Member Secretary, RPC. A reasonable restoration time for the element shall be considered by the Member Secretary, RPC, and any additional time taken by the transmission licensee for restoration of the element beyond the reasonable time shall be treated as outage time attributable to the transmission licensee. Member Secretary, RPC may consult the transmission licensee or any expert for estimation of reasonable restoration time. Circuits restored through ERS (Emergency Restoration System) shall be considered as available;
- ii) Outage caused by grid incident/disturbance not attributable to the transmission licensee, e.g. faults in a substation or bays owned by another agency causing an outage of the transmission licensee's elements, and tripping of lines, ICTs, HVDC, etc., due to grid disturbance. However, if the element is not restored on receipt of direction from RLDC while normalizing the system following grid incident/disturbance within reasonable time, the element will be considered not available for the period of outage after issuance of RLDC's direction for restoration;
- iii) The outage period which can be excluded for the purpose of sub-clause (i) and (ii) of this clause shall be declared as under:
 - a. Maximum up to one month by the Member Secretary, RPC;
 - b. Beyond one month and up to three months after the decision at RPC;
 - c. Beyond three months by the Commission for which the transmission license shall approach the Commission along with reasons and steps taken to mitigate the outage and restoration timeline.

7. Time frame for certification of transmission system availability: (1) The following schedule shall be followed for certification of availability by the Member Secretary of the concerned RPC:

- Submission of outage data along with documentary proof (if any) and TAFPn calculation by Transmission Licensees to RLDC/ constituents
– By the 5th of the following month;
- Review of the outage data by RLDC / constituents and forward the same to respective RPC – by 20th of the month;
- Issue of availability certificate by respective RPC – by the 3rd of the next month.



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Appendix-V

FORMULAE FOR CALCULATION OF AVAILABILITY OF EACH CATEGORY OF TRANSMISSION ELEMENTS

For AC transmission system

$$AV_o(\text{Availability of } o \text{ no. of AC lines}) = \frac{\sum_{i=1}^o W_i(T_i - TNA_i)/T_i}{\sum_{i=1}^o W_i}$$

$$AV_q(\text{Availability of } q \text{ no. of ICTs}) = \frac{\sum_{k=1}^q W_k(T_k - TNA_k)/T_k}{\sum_{k=1}^q W_k}$$

$$AV_r(\text{Availability of } r \text{ no. of SVCs}) = \frac{\sum_{l=1}^r W_l(T_l - TNA_l)/T_l}{\sum_{l=1}^r W_l}$$

$$AV_p(\text{Availability of } p \text{ no. of Switched Bus reactors}) = \frac{\sum_{m=1}^p W_m(T_m - TNA_m)/T_m}{\sum_{m=1}^p W_m}$$

$$AV_u(\text{Availability of } u \text{ no. of STATCOMs}) = \frac{\sum_{n=1}^u W_n(T_n - TNA_n)/T_n}{\sum_{n=1}^u W_n}$$

$$AV_{x_{bp}}(\text{Availability of an individual HVDC pole}) = \frac{(T_x - TN)}{T_x}$$

$AV_{y_{bb}}$ (Availability of an individual HVDC

$$\text{Back-to-back Blocks}) = \frac{(T_y - TNA_y)}{T_y}$$



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For the HVDC transmission system

For the new HVDC commissioned but not completed twelve months:

For first 12 months: $[(AV_{xby} \text{ or } AV_{ybtb}) \times 95\% / 85\%]$, subject to a ceiling of 95%.

Where,

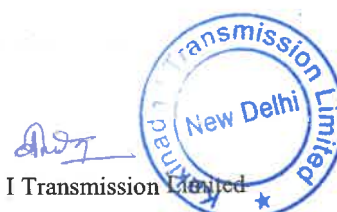
o	=	Total number of AC lines;
AV_o	=	Availability of o number of AC lines;
p	=	Total number of bus reactors/switchable line reactors;
AV_p	=	Availability of p number of bus reactors/switchable line reactors;
q	=	Total number of ICTs;
AV_q	=	Availability of q number of ICTs;
r	=	Total number of SVCs;
AV_r	=	Availability of r number of SVCs;
U	=	Total number of STATCOM;
AV_u	=	Availability of u number of STATCOMs;
W_i	=	Weightage factor for i^{th} transmission line;
W_k	=	Weightage factor for k^{th} ICT;
W_l	=	Weightage factors for inductive & capacitive operation of l^{th} SVC;
W_m	=	Weightage factor for m^{th} bus reactor;
W_n	=	Weightage factor for n^{th} STATCOM;
T_i, T_k, T_l	=	The total hours of i^{th} AC line, k^{th} ICT, l^{th} SVC, m^{th} Switched Bus Reactor
T_m, T_n, T_x, T_y	=	& n^{th} STATCOM, x^{th} HVDC pole, y^{th} HVDC back-to-back blocks during the period under consideration (excluding time period for outages not attributed to transmission licensee for the reasons given in Para 5 of the procedure)
T_{NAi}, T_{NAk}	=	The non-availability hours (excluding the time period for outages not T_{NAi}, T_{NAk} , attributable to transmission licensee taken as deemed availability as $T_{NAi}, T_{NAk}, T_{NAx}, T_{NAy}$ per Para 5 of the procedure) for i^{th} AC line, k^{th} ICT, l^{th} SVC, m^{th} Switched Bus Reactor, n^{th} STATCOM, x^{th} HVDC pole and y^{th} HVDC back-to-back block.



[Signature]

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[Signature]

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Schedule: 7

Entire Bid (both financial bid and technical bid) of the Selected Bidder to be attached here

Bid dated 08.05.2026 and 06.06.2026 shall be an integral part of this agreement.





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Schedule: 8

Contract Performance Guarantee

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution. Foreign entities submitting Bids are required to follow the applicable law in their country.)

In consideration of the KAKINADA I TRANSMISSION LIMITED, Urjanidhi, First Floor, Barakhamba Lane- 1, Connaught Place, New Delhi, Central Delhi- 110001, Delhi agreeing to undertake the obligations under the Transmission Service Agreement datedand the other RFP Project Documents and the Nodal Agency and the PFC Consulting Limited, agreeing to execute the *RFP Project Documents* with the Selected Bidder, regarding setting up the Project, the [Insert name and address of the bank issuing the guarantee and address of the head office] (hereinafter referred to as "Guarantor Bank") hereby agrees unequivocally, irrevocably and unconditionally to pay to (being the Nodal Agency) _at[Insert the Place from the address of the Nodal Agency indicated in the TSA] forthwith on demand in writing from the Nodal Agency or any Officer authorized by it in this behalf, any amount up to and not exceeding Rupees Crores (Rs.) only [Insert the amount of the bank guarantee] on behalf of KAKINADA I TRANSMISSION LIMITED.

This guarantee shall be valid and binding on the Guarantor Bank up to and includingand shall not be terminable by notice or any change in the constitution of the Bank or the term of the Transmission Service Agreement or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rs. Crores (Rs.) only. Our Guarantee shall remain in force until [Insert the date of validity of the Guarantee as per Article 3.1.2 of this Agreement]. The Nodal Agency, shall be entitled to invoke this Guarantee up to three hundred sixty five (365) days of the last date of the validity of this Guarantee.

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand from (in its roles as the Nodal Agency).



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made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to Nodal Agency.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by [Insert name of the Selected Bidder], [Insert name of the TSP] and / or any other person. The Guarantor Bank shall not require Nodal Agency to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against Nodal Agency in respect of any payment made hereunder.

THIS BANK GUARANTEE shall be interpreted in accordance with the laws of India.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

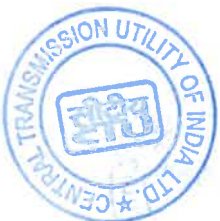
THIS BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring, liquidation, winding up, dissolution or any other change in the constitution of the Guarantor Bank.

THIS BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly Nodal Agency shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against **KAKINADA I TRANSMISSION LIMITED** or the Selected Bidder, as the case may be, to make any claim against or any demand on **KAKINADA I TRANSMISSION LIMITED** or the Selected Bidder, as the case may be, or to give any notice to **KAKINADA I TRANSMISSION LIMITED** or the Selected Bidder, as the case may be, or to enforce any security held by the Nodal Agency or to exercise, levy or enforce any distress, diligence or other process against **KAKINADA I TRANSMISSION LIMITED** or the Selected Bidder, as the case may be.

The Guarantor Bank acknowledges that this BANK GUARANTEE is not personal to Nodal Agency and may be assigned, in whole or in part, (whether absolutely or by way of security) by Nodal Agency to any entity to whom the Nodal Agency is entitled to assign its rights and obligations under the Transmission Service Agreement.

The Guarantor Bank hereby agrees and acknowledges that Nodal Agency shall have a right to invoke this Bank Guarantee either in part or in full, as it may deem fit.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rs. Crores (Rs.) only and it shall remain in force until[Date to be inserted on the basis of Article 3.1.2 of the Transmission Service Agreement], with an additional claim period of three hundred sixty five (365) days thereafter. This BANK GUARANTEE shall be extended from time to time for such period, as may be desired by **KAKINADA I TRANSMISSION LIMITED**.



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We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if Nodal Agency serves upon us a written claim or demand.

In witness where of:

Signature

Name:

Power of attorney No.:

For:

..... [Insert Name of the Bank]

Banker's Seal and Full Address, including mailing address of the Head Office



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SCHEDULE 8A: FORMAT FOR SURETY INSURANCE CONTRACT

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.)

Foreign entities submitting Bids are required to follow the applicable law of India)

In consideration of the.....[Insert name of the SPV or Selected Bidder on behalf of SPV or Lead Member in case of the Consortium, with address] (hereinafter referred to as the '**Principal Debtor**' for the purposes of this Surety Insurance Contract as provided in Section 126 of the Indian Contract Act, 1872) having been selected to undertake the Transmission Project on the terms and conditions contained in the Transmission Service Agreement dated/ to be executed as per the Model Transmission Service Agreement provided along with the Request for Proposal ('**RFP**') and other RFP Project Documents, subject to the condition of providing a Performance Bank Guarantee or a Surety Insurance Contract guaranteeing/insuring the due performance of the obligations under the Transmission Service Agreement, to the Central Transmission Utility of India Limited ('**CTUIL**') [herein after referred to as the Nodal Agency], the [Insert name and address of the Insurance Company issuing the Surety Insurance Contract and address of the head office] (hereinafter referred to as "**Surety**") hereby agrees unequivocally, irrevocably, absolutely and unconditionally, without demur, to pay to the Nodal Agency at[Insert Place and Address of the Nodal Agency indicated in Transmission Service Agreement, or to the designated Bank Account of the Nodal Agency, namely.....] forthwith on demand in writing from the Nodal Agency, or any Officer authorized by it in this behalf, intimated to the Surety at the address mentioned above, any amount as may be decided by the Nodal Agency not exceeding RupeesCrores (Rs.....) only [Insert the amount of the Surety Insurance Contract]

The Surety hereby acknowledges, accepts and confirms that the Surety has received from the Principal Debtor, by way of premium the entire consideration for the Surety to execute, in favour of the Nodal Agency, this Surety Insurance Contract, as extended by the Surety from time to time and assuming the obligation to pay to the Nodal Agency the amount in terms hereof, without any requirement for payment of any other consideration to the Surety by the Principal Debtor, or otherwise.

This Surety Insurance Contract shall be valid and binding on the Surety, as the principal obligation of the Surety to pay on demand by the Nodal Agency, and shall not be terminable by notice or any change in the constitution of the Surety or the term of the Transmission Service Agreement or by any other reasons whatsoever and the liability hereunder of the Surety shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed (with or without the knowledge or consent of the Surety) by or between the Principal Debtor and the Nodal Agency.

The liability of the Surety under this Surety Insurance Contract is restricted to Rupees Crores (Rs) only. The Surety Insurance Contract shall remain in force until [Insert the date of validity of the Surety Insurance Contract]. The Nodal Agency shall be entitled to invoke this Surety Insurance Contract up to three hundred sixty five (365) days after the last date of the validity of this Surety Insurance Contract.



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The Surety hereby expressly agrees that it shall not require any proof except for the written demand from the Nodal Agency, containing the statement that the contractor has failed to meet its contractual obligations raised at the above mentioned address of the Surety (address of Surety office should be a place in NCR only) and the Surety shall pay the amount without reference to the Principal Debtor.

Any such demand made by the Nodal Agency on the Surety shall be conclusive and binding notwithstanding any difference between the Nodal Agency and the Principal Debtor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Surety undertakes not to revoke this guarantee during its currency without previous consent of the Nodal Agency and further agrees that the Surety Insurance Contract herein contained shall continue to be enforceable till the Nodal Agency discharges this contract or till the expiry of tenor(including Claim period) whichever is earlier.

The Surety shall make payment hereunder within two (02) working days on first demand without restriction or conditions and notwithstanding any objection by the Principal Debtor, namely, [Insert name of SPV], or [Insert name of the Selected Bidder], or [Insert name of the TSP] and/or any other person. The Surety shall not require the Nodal Agency to justify the invocation of this Surety Insurance Contract, nor shall the Surety have any recourse against the Nodal Agency in respect of any payment made hereunder.

This SURETY INSURANCE CONTRACT shall be interpreted in accordance with the laws of India.

This SURETY INSURANCE CONTRACT is being executed by the Surety in terms of the IRDAI (Surety Insurance Contract) Guidelines, 2022 and the Surety hereby acknowledges, accepts and confirms that this Surety Insurance Contract shall be a Contract of Guarantee as provided under Section 126 of the Indian Contract Act, 1872 and further shall be covered by Section 14(3) (b) of the Insolvency and Bankruptcy Code, 2016 (as amended) shall be enforceable as such.

The Surety represents that this Surety Insurance Contract has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Surety in the manner provided herein.

This SURETY INSURANCE CONTRACT shall not be affected in any manner by reason of merger, amalgamation, restructuring, liquidation, winding up, dissolution or any other change in the constitution of the Surety.

In order to give effect to this surety Bond, the Nodal Agency shall be entitled to act as if the surety insurer were the principal debtor and any change in the constitution of the contractor and/or the surety insurer, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the surety insurer under this surety Bond.

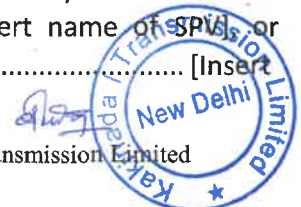
This SURETY INSURANCE CONTRACT shall be a primary obligation of the Surety as a Principal to pay on demand by the Nodal Agency and the Nodal Agency shall not be obliged before enforcing this Surety Insurance Contract to take any action in any court or arbitral proceedings against the Principal Debtor, namely, [Insert name of SPV] or



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name of the Selected Bidder], or [Insert name of the TSP] and/or any other person, as the case may be, to make any claim against or any demand on the Principal Debtor, namely, [Insert name of SPV], or [Insert name of the Selected Bidder], or [Insert name of the TSP] and/or any other person, as the case may be, or to give any notice to Principal Debtor, namely..... [Insert name of SPV], or [Insert name of the Selected Bidder], or [Insert name of the TSP] and/or any other person, as the case may be, or to enforce any security held by the Nodal Agency or to exercise, levy or enforce any distress, diligence or other process against the Principal Debtor, namely, [Insert name of SPV], or [Insert name of the Selected Bidder], or [Insert name of the TSP] and/or any other person, as the case may be.

The Surety acknowledges that this Surety Insurance Contract is not personal to the Nodal Agency and may be assigned, in whole or in part, (whether absolutely or by way of security) by Nodal Agency to any entity to whom the Nodal Agency is entitled to assign its rights and obligations under the Transmission Service Agreement Provided that any such assignment shall be in compliance with the relevant provisions of the Insurance Act 1938

The Surety hereby agrees and acknowledges that the Nodal Agency shall have a right to invoke this Surety Insurance Contract either in part or in full, as it may deem fit. In case of invocation of this Surety Insurance Contract in part, besides making payment for the part of Surety Insurance Contract invoked, surety at the request of nodal agency shall amend the value of Surety Insurance Contract to the extent of balance amount.

The Surety undertakes not to revoke this Surety Contract during its currency, except with the previous express consent of the Nodal Agency in writing and declares and warrants that it has the power to issue this Surety Contract and the undersigned has full powers to do so on behalf of the Surety

In witness where of:

Signature.....

Name:

Power of attorney No/ Employee No. as applicable. :

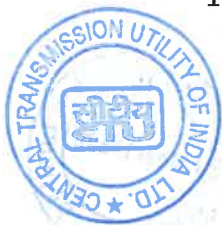
For:

..... [Insert Name of the Surety-Insurance Company]

Banker's Seal and Full Address, including mailing address of the Head Office

Notes:

1. The Stamp Paper should be in the name of the Executing Insurance Company.



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SCHEDULE 8B: FORMAT FOR ISSUANCE OF PAYMENT ON ORDER INSTRUMENT

Dear Sir,

1. Indian Renewable Energy Development Agency Limited ("IREDA")/PFC/REC has sanctioned a non-fund based limit loan of Rs. (Rupees..... Only) to M/s. [Insert name of SPV or selected Bidder] under the Loan Agreement executed on to execute Transmission System Projects.
2. In consideration of the [Insert name of the SPV or Selected Bidder on behalf of SPV or Lead Member in case of the Consortium, with address] for the purposes of this Payment on Order Instrument ("POI") having been selected to undertake the Transmission Project on the terms and conditions contained in the Transmission Service Agreement dated/ to be executed as per the draft of the Model Transmission Service Agreement provided along with the Request for Proposal („RFP“) and other RFP Project Documents, subject to the condition of providing a POI guaranteeing the due performance of the obligations under the Transmission Service Agreement to the Nodal Agency/Central Transmission Utility of India Limited („CTUIL“), the.....[Insert name and address of the non-banking financial institutions(IREDA/PFC/REC) issuing the POI and address of the head office] (hereinafter referred to as **“Guarantor”**) hereby agrees unequivocally, irrevocably, absolutely and unconditionally, without demur, to pay to the Nodal Agency at.....[Insert Place and Address of the Nodal Agency indicated in Transmission Service Agreement, or to the designated Bank Account of the Nodal Agency, namely.....] forthwith on demand in writing from the Nodal Agency, or any Officer authorized by it in this behalf, intimated to the Guarantor at the address mentioned above, any amount as may be decided by the Nodal Agency not exceeding Rupees Crores (Rs.....) only [Insert the amount of Payment on Order Instrument]
3. At the request ofand on behalf of M/s., [Insert name of SPV or selected Bidder] this Payment on Order Instrument (POI) for an amount of Rs. (Rupees) is being issued with IREDA/PFC/REC assuming the obligations to remit such amount to CTUIL from the sanctioned loan.
4. This Payment on Order Instrument comes into force immediately and IREDA/PFC/REC confirms that it has sufficient amount out of the sanctioned loan and shall maintain the required amount to pay under this Payment on Order Instrument, during the validity and claim period of this Payment on Order Instrument.
5. This POI has been issued by IREDA/PFC/REC utilizing the credit limit of M/s.....[Insert name of SPV or selected Bidder]. IREDA/PFC/REC confirms that its liability to pay under this Payment on Order Instrument shall be primary and independent of whether at the time of



Central Transmission Utility of India Limited

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Kakinada I Transmission Limited



Transmission Service Agreement

invocation of Payment on Order Instrument, the sanctioned funds are available or not and notwithstanding, the status of M/s. [Insert name of SPV or selected Bidder] at the relevant time and to whether IREDA/PFC/REC is able to recover the amount advanced by it to the said developer.

6. IREDA/PFC/REC and M/s. [Insert name of SPV or selected Bidder] hereby acknowledges, accepts and confirms that this Payment on Order Instrument shall be a Contract of Guarantee as provided under Section 126 of the Indian Contract Act, 1872 and further shall be covered by Section 14(3) (b) of the Insolvency and Bankruptcy Code, 2016 (as amended) shall be enforceable as such.
7. IREDA/PFC/REC liability under this POI is restricted to Rupees Crores (Rs.....) only. This POI shall remain in force until..... [Insert the date of validity of the POI]. The Nodal Agency shall be entitled to invoke this POI up to three hundred sixty-five (365) days after the last date of the validity of this POI. This POI shall be extended from time to time for such period, as may be desired by the TSP.
8. The Guarantor hereby expressly agrees that it shall not require any proof except for the written demand from the Nodal Agency, raised at the above-mentioned address of the Guarantor (address of Guarantor office should be in NCR only) and the Guarantor shall pay the amount to the Nodal Agency without reference to the TSP.
9. Any such demand made by the Nodal Agency on the Guarantor shall be conclusive and binding notwithstanding any difference between the Nodal Agency and the TSP or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Guarantor undertakes not to revoke this guarantee during its currency without previous consent of the Nodal Agency and further agrees that the POI herein contained shall continue to be enforceable till the Nodal Agency discharges this contract or till the expiry of tenure or (including Claim period) whichever is earlier.
10. The Guarantor shall make payment hereunder within two (02) working days on first demand without restriction or conditions and notwithstanding any objection or disputes raised by the TSP, namely, [Insert name of SPV], or [Insert name of the Selected Bidder], or [Insert name of the TSP] and/or any other person. The Guarantor shall not require the Nodal Agency to justify the invocation of this POI, nor shall the Guarantor have any recourse against the Nodal Agency in respect of any payment made hereunder.
11. This POI shall be interpreted in accordance with the laws of India.
12. The Guarantor represents that this POI Contract has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor in the manner provided herein.
13. This POI shall not be affected in any manner by reason of merger, amalgamation,



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restructuring, liquidation, winding up, dissolution or any other change in the constitution of the Guarantor.

14. This POI Contract shall be a primary obligation of the Guarantor as a Principal to pay on demand by the Nodal Agency and the Nodal Agency shall not be obliged before enforcing this POI Contract to take any action in any court or arbitral proceedings against the TSP, namely,..... [Insert name of SPV], or [Insert name of the Selected Bidder], or..... [Insert name of the TSP] and/or any other person, as the case may be to make any claim against or any demand on the TSP, namely, [Insert name of SPV], or [Insert name of the Selected Bidder], or [Insert name of the TSP] and/or any other person, as the case may be, or to give any notice to TSP, namely..... [Insert name of SPV], or..... [Insert name of the Selected Bidder], or [Insert name of the TSP] and/or any other person, as the case may be, or to enforce any security held by the Nodal Agency or to exercise, levy or enforce any distress, diligence or other process against the TSP, namely, [Insert name of SPV], or [Insert name of the Selected Bidder], or [Insert name of the TSP] and/or any other person, as the case may be.

15. The Guarantor acknowledges that this POI Contract is not personal to the Nodal Agency and may be assigned, in whole or in part, (whether absolutely or by way of security) by Nodal Agency to any entity to whom the Nodal Agency is entitled to assign its rights and obligations under the Transmission Service Agreement.

16. The Guarantor hereby agrees and acknowledges that the Nodal Agency shall have a right to invoke this POI Contract either in part or in full, as it may deem fit. In case of invocation of this POI Contract in part, besides making payment for the part of POI Contract invoked, Guarantor at the request of Nodal Agency shall amend the value of POI Contract to the extent of balance amount.

IN WITNESS WHERE OF the non- banking financial institutions through its authorized officer, has set its hand and stamp on this..... day of.....at.....

Signature..... Name:

..... Power of

attorney No.: For:

.....[Insert Name of the non- banking financial institutions Company]

Seal and Full Address, including mailing address of the Head Office




Central Transmission Utility of India Limited

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Schedule: 9

Methodology for determining the Relief Under Force Majeure Event & Change in Law during Construction Period

The relief in the form of revision in tariff due to Force Majeure Event leading to extension of Scheduled COD for a period beyond one hundred eighty (180) days and/ or Change in Law during the construction period shall be as under:

$$\Delta T = [(P \times d)] \div [1 - (1 + d)^{-n}]$$

Where,

ΔT = Change in Transmission Charges for each year

P = Sum of cumulative increase or decrease in the cost of the Project due to Change in Law and interest cost during construction corresponding to the period exceeding one hundred eighty (180) due to Force Majeure Event leading to extension of Scheduled COD for a period beyond one hundred eighty (180) days

n = number of years over which the Transmission Charges has to be paid

d = Discount rate as notified by the CERC, applicable on the Bid Deadline

The increase in Transmission Charges as stated above shall be applicable only if the value of increase in Transmission Charges as calculated above exceeds 0.30% (zero point three percent) of the quoted Transmission Charges of the TSP.



Ref. No.: 04/26-27/ITP-99/RFP

April 30, 2026

To,
Mr. Pankaj Pandey, ED (TBCB)
Power Grid Corporation of India Limited,
"Saudamini" Plot No 2, Sector 29,
Gurgaon-122001

E-mail: ppandey@powergrid.in

Subject: Transmission Scheme "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)" – Regarding Estimated Acquisition Price

Dear Sir,

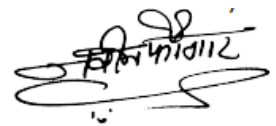
In line with the requirement of the RFP document specified in Clause 1.6.2.1 (5), the following may be noted with respect to the Acquisition Price:

"The estimated Acquisition Price payable by the selected Bidder to the PFC Consulting Limited for the acquisition of one hundred percent (100%) of the equity shareholding of "KAKINADA I TRANSMISSION LIMITED", along with all its related assets and liabilities is **Rs.20,42,91,760/- (Rupees Twenty Crore Forty Two Lakh Ninety One Thousand Seven Hundred Sixty Only).**"

This is for your information and further action, please.

Thanking you,

Yours faithfully



(Naveen Phougat)
General Manager

Ref. No. 04/26-27/ITP-99/RFP

June 15, 2026

To,
Mr. Pankaj Pandey, ED (TBCB)
Power Grid Corporation of India Limited,
"Saudamini" Plot No 2, Sector 29,
Gurgaon-122001

E-mail: ppandey@powergrid.in

Sub.: Inter-State Transmission Scheme "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)"- Regarding submission of CPG and Due Diligence for transfer of SPV.

Dear Sir,

In line with the provisions of Clause 2.15.2 (a), (b) & (c) of the RFP Document, Contract Performance Guarantee in favour of Nodal Agency i.e. Central Transmission Utility of India Limited (CTUIL) has to be provided, the Share Purchase Agreement has to be executed and the SPV namely, '**Kakinada I Transmission Limited**' has to be acquired by the selected bidder i.e., '**Power Grid Corporation of India Limited**' along with all its related assets and liabilities for an Acquisition Price.

It may be noted that the SPV is tentatively scheduled to be transferred in June, 2026. You are therefore requested to arrange for due diligence process accordingly.

It is intimated that the Acquisition Price of the SPV '**Kakinada I Transmission Limited**' is **Rs.20,50,66,293/- (Rupees Twenty Crore Fifty Lakh Sixty Six Thousand Two Hundred Ninety Three Only)**. The break-up for this amount is given below:

S. No.	Description	Amount (in INR)
1.	PFCCL Management Fees	15,00,00,000
2.	Goods and Service Tax on PFCCL Management Fees	2,70,00,000
3.	Borrowings from PFCCL	2,79,66,293
4.	Share Capital	1,00,000
	Total	20,50,66,293

The payment of the Acquisition Price may be made as detailed hereunder:

Name : **PFC Consulting Limited**
PFCCL Goods and Service Tax No. : 07AAECP6182F1ZC
PFCCL PAN No. : AAEC6182F
Mode of Payment : RTGS

पंजीकृत कार्यालय : प्रथम तल, "उर्जानिधि", 1 बाराखम्बा लेन, कनॉट प्लेस, नई दिल्ली-110001

Regd. Office : First Floor, "Urjanidhi", 1, Barakhamba Lane, Connaught Place, New Delhi-110001

कंपनी मुख्यालय : नौवौं तल (ए विंग), स्टेट्समैन हाउस, कनॉट प्लेस, नई दिल्ली - 110001 दूरभाष : 011 - 23443900 फैक्स : 011 - 23443990

Corporate Office : 9th Floor (A Wing), Statesman House, Connaught Place, New Delhi - 110001 Phone : 011 - 23443900 Fax : 011 - 23443990

वेबसाइट / Website : www.pfcclindia304 CIN : U74140DL2008GOI175858

Bank Details:

Bank Name	ICICI Bank, 9A, Phelps Building, Connaught Place, New Delhi
Name of Account	PFC CONSULTING LIMITED
A/C No.	000705036117
IFSC Code	ICIC0000007

It is requested that TDS may be deducted against the above payment as per I.T. rules. Copy of PAN Card and Cheque of the above bank are enclosed herewith.

You are requested to make the above payment as per the details provided above through RTGS at the earliest.

You are requested to provide the Contract Performance Guarantee as per the details provided in RFP documents, at the earliest.

Further, it is requested to provide the Contract Performance Guarantee (CPG) in favour of Nodal Agency i.e. Central Transmission Utility of India Limited (CTUIL) as per the details provided at **Annexure –A** at the earliest.

With kind regards,

Yours sincerely,

Nirmala
15/06/26
(Nirmala Meena)
DGM

Contract Performance Guarantee (CPG)

**Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area
(Phase-I)**

S No.	Name of Nodal Agency	Address	Amount of CPG
1	Central Transmission Utility of India Limited	5 th to 10 th Floor, Ircon International Tower-1, Sector-32, Gurugram-122001	Rs.37.25 Crore (Rupees Thirty Seven Crore Twenty Five Lakh Only)

Dated 29.06.2026

SHARE PURCHASE AGREEMENT

BETWEEN

PFC CONSULTING LIMITED

AND

KAKINADA I TRANSMISSION LIMITED

AND

POWER GRID CORPORATION OF INDIA LIMITED





सत्यमेव जयते

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

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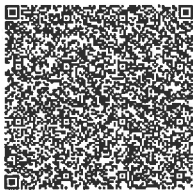
e-Stamp

₹500 ₹500 ₹500 ₹500

Certificate No.
Certificate Issued Date
Account Reference
Unique Doc. Reference
Purchased by
Description of Document
Property Description
Consideration Price (Rs.)
First Party
Second Party
Stamp Duty Paid By
Stamp Duty Amount(Rs.)

: IN-DL39920952011409Y
: 25-Jun-2026 02:24 PM
: IMPACC (IV)/ di716803/ DELHI/ DL-WSD
: SUBIN-DL71680388941233627832Y
: PFC CONSULTING LIMITED
: Article 5 General Agreement
: Not Applicable
: 0
: (Zero)
: PFC CONSULTING LIMITED
: Not Applicable
: PFC CONSULTING LIMITED
: 500
: (Five Hundred only)

सत्यमेव जयते



Please write or type below this line

IN-DL39920952011409Y

This Stamp Paper Forms Part of enclosed Share Purchase Agreement
executed between PFC CONSULTING LIMITED, KAKINADA I
TRANSMISSION LIMITED and POWER GRID CORPORATION OF INDIA
LIMITED



Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.



Government of National Capital Territory of Delhi

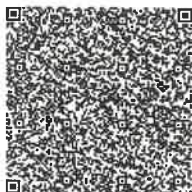
₹500

e-Stamp

Certificate No.
Certificate Issued Date
Account Reference
Unique Doc. Reference
Purchased by
Description of Document
Property Description
Consideration Price (Rs.)
First Party
Second Party
Stamp Duty Paid By
Stamp Duty Amount(Rs.)

IN-DL39920647975329Y
25-Jun-2026 02:23 PM
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SUBIN-DL71680388941734907203Y
PFC CONSULTING LIMITED
Article 5 General Agreement
Not Applicable
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(Zero)
PFC CONSULTING LIMITED
Not Applicable
PFC CONSULTING LIMITED
500
(Five Hundred only)

सत्यमेव जयते



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IN-DL39920647975329Y

This Stamp Paper Forms Part of enclosed Share Purchase Agreement executed between **PFC CONSULTING LIMITED, KAKINADA I TRANSMISSION LIMITED** and **POWER GRID CORPORATION OF INDIA LIMITED**



Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding.
2. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

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सत्यमेव जयते

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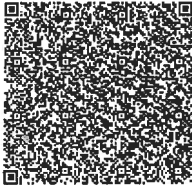
Government of National Capital Territory of Delhi

₹200

e-Stamp

Certificate No. : IN-DL39916745628844Y
 Certificate Issued Date : 25-Jun-2026 02:20 PM
 Account Reference : IMPACC (IV)/dl716803/ DELHI/ DL-WSD
 Unique Doc. Reference : SUBIN-DL71680388940322285656Y
 Purchased by : PFC CONSULTING LIMITED
 Description of Document : Article 5 General Agreement
 Property Description : Not Applicable
 Consideration Price (Rs.) : 0
 (Zero)
 First Party : PFC CONSULTING LIMITED
 Second Party : Not Applicable
 Stamp Duty Paid By : PFC CONSULTING LIMITED
 Stamp Duty Amount(Rs.) : 200
 (Two Hundred only)

सत्यमेव जयते



Please write or type below this line

IN-DL39916745628844Y

This Stamp Paper Forms Part of enclosed Share Purchase Agreement
 executed between **PFC CONSULTING LIMITED, KAKINADA** &
TRANSMISSION LIMITED and **POWER GRID CORPORATION OF INDIA**
LIMITED



Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

SHARE PURCHASE AGREEMENT

This **SHARE PURCHASE AGREEMENT** ('Agreement') made on June 29, 2026, at New Delhi by and between:

PFC CONSULTING LIMITED (a wholly owned subsidiary of Power Finance Corporation Ltd.), a company incorporated under the Companies Act, 1956, with CIN No. U74140DL2008GOI175858, having its registered office at First Floor, "Urjanidhi", 1 Barakhamba Lane, Connaught Place, New Delhi – 110 001, (hereinafter referred to as "**PFCCL**", which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to mean and include its successors and permitted assigns) of the **FIRST PART**;

AND

KAKINADA I TRANSMISSION LIMITED, a company incorporated under the Companies Act, 2013, with CIN U42201DL2025GOI442994, and having its registered office at, "Urjanidhi", First Floor, 1, Barakhamba Lane, Connaught Place, Central Delhi, New Delhi - 110 001, (hereinafter referred to as "**Company**" which expression shall, unless repugnant to the context or meaning thereof, be deemed to mean and include its successors and permitted assigns) of the **SECOND PART**;

AND

POWER GRID CORPORATION OF INDIA LIMITED, a company incorporated under the Companies Act, 1956 with CIN L40101DL1989GOI038121, and having its registered office at B – 9, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110 016, (hereinafter referred to as "**Selected Bidder**" which expression shall, unless repugnant to the context or meaning thereof, be deemed to mean and include its successors and permitted assigns) of the **THIRD PART**.

WHEREAS:

- A. Ministry of Power vide Gazette Notification No. CG-DL-E-01012025-259785 dated 26.12.2024 had notified PFC Consulting Limited (PFCCL) as the Bid Process Coordinator (BPC) for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish transmission scheme "**Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)**" through Tariff Based Competitive Bidding (TBCB) process.
- B. In accordance with the Bidding Guidelines, PFCCL had initiated a Bid Process through issuance of RFP documents for selecting a Successful Bidder to build, own, operate and transfer the Project in accordance with and on the terms and conditions mentioned in the RFP Project Documents (as defined hereinafter).
- C. PFCCL has incorporated the **Company** and PFCCL along with the Nominees hold One hundred per cent (100 %) of total issued and paid-up equity share capital of the Company.
- D. PFCCL has initiated the development of the Project and has obtained survey report, certain clearances, consents and permits as specified in the RFP regarding the Project.



- E. Pursuant to the said Bid Process, **Power Grid Corporation of India Limited** has been identified as the Selected Bidder vide Letter of Intent dated 12th June, 2026 issued by the PFCCIL in favor of the Selected Bidder.
- F. As envisaged in the RFP, the Shares Seller (as defined hereinafter) has agreed to sell the Sale Shares (as defined hereinafter) to the Selected Bidder and the Selected Bidder has agreed to purchase the Sale Shares from the Shares Seller, subject to and on the terms and conditions set forth in this Agreement.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL COVENANTS AND AGREEMENTS SET FORTH IN THIS AGREEMENT AND FOR OTHER GOOD AND VALUABLE CONSIDERATION, THE PARTIES HEREBY AGREE AS FOLLOWS:

1. DEFINITIONS

- 1.1 Capitalized terms in this Agreement, unless defined in this Agreement shall, in so far as the context admits, have the same meaning in this Agreement as has been ascribed to them in the Transmission Service Agreement.
- 1.2 Additionally, the following terms shall have the meaning hereinafter respectively assigned to them herein below:
- (i) **"Acquisition Price"** shall mean **INR 20,50,66,293/- (Twenty Crore Fifty Lakh Sixty Six Thousand Two Hundred Ninety Three Only)**, which is the aggregate consideration payable by the Selected Bidder towards purchase of the **Sale Shares at par** along with assets and liabilities of the Company as on the Closing Date subject to adjustment as per the audited accounts of the Company as on the Closing Date;
 - (ii) **"Agreement"** or **"the Agreement"** or **"this Agreement"** shall mean this Share Purchase Agreement and shall include the recitals and/or annexures attached hereto, and the contracts, certificates, disclosures and other documents to be executed and delivered pursuant hereto, if any, and any amendments made to this Agreement by Parties in writing;
 - (iii) **"Bid Process"** shall mean the competitive bidding process initiated by the Company, by issuance of RFP Documents for selecting a Successful Bidder to build, own, operate and transfer the Project in accordance with and on the terms and conditions mentioned in the RFP Project Documents;
 - (iv) **"Board"** shall mean the board of directors of the Company
 - (v) **"Closing Date"** shall mean a mutually agreed date between the Parties falling within the period as mentioned in Clause 2.4 of RFP or on failure of such mutual agreement between the Parties shall be the date falling on the last date of such period;
 - (vi) **"CTU"** or **"Central Transmission Utility of India Limited"** shall have same meaning as defined in the Electricity Act, 2003;



- (vii) **"Encumbrance"** shall mean any mortgage, pledge, lien, charge, security assignment, hypothecation, trust, encumbrance or any other agreement having the effect of creating security interest;
- (viii) **"Letter of Intent"** shall have the meaning ascribed thereto under the RFP;
- (ix) **"Nominees"** shall mean the Persons, who are named in Annexure A, holding the Sale Shares as nominees of PFCCL.
- (x) **"Party"** shall mean PFCCL, Company and the Selected Bidder, referred to individually, and **"Parties"** shall mean PFCCL, Company and the Selected Bidder collectively referred to, as relevant;
- (xi) **"Person"** shall include an individual, an association, a corporation, a partnership, a joint venture, a trust, an unincorporated organization, a joint stock company or other entity or organization, including a government or political subdivision, or an agency or instrumentality thereof, and/or any other legal entity;
- (xii) **"RFP Project Documents"** shall mean the following documents, referred to collectively:
 - a) Transmission Services Agreement;
 - b) this Agreement; and
 - c) Any other agreement(s) as may be required.
- (xiii) **"Representations and Warranties"** shall mean the representations and warranties mentioned in **Clause 4** hereto;
- (xiv) **"Sale Shares"** shall mean 10,000 **[Ten Thousand Only]** Equity Shares, representing 100 percent of the total issued, subscribed and fully paid-up equity share capital of the Company held by the Shares Seller and Nominees as more particularly described in Annexure A attached hereto;
- (xv) **"Shares"** shall mean the fully paid-up equity shares of Company, of face value Rs. 10 each;
- (xvi) **"Shares Seller"** shall mean PFCCL;
- (xvii) **"Transmission Services Agreement"** or **"TSA"** means the agreement titled 'Transmission Services Agreement' dated 29.06.2026 entered into between Central Transmission Utility of India Limited and Kakinada I Transmission Limited the TSP pursuant to which the TSP shall build, own, operate and transfer the Project and make available the assets of the Project to Central Transmission Utility of India Limited on a commercial basis, as may be amended from time to time;
- (xviii) **"Transmission Service Provider"** or **"TSP"** shall mean KAKINADA I TRANSMISSION LIMITED which has executed the Transmission Service Agreement, and which shall be acquired by the Selected Bidder.



1.3 Interpretation Clause

Unless the context otherwise requires, the provisions of the TSA relating to the interpretation of the TSA shall apply to this Agreement as if they were set out in full in this Agreement and to this end are incorporated herein by reference.

2. TRANSFER OF SHARES

- 2.1 Subject to the terms and conditions of this Agreement, the Shares Seller agrees to sell and transfer to the Selected Bidder and the Selected Bidder hereby agrees to purchase from the Shares Seller, the Sale Shares of the Company free from Encumbrances with rights and benefits attached thereto in consideration of the Acquisition Price and the covenants, undertakings and the agreements of the Selected Bidder contained in this Agreement.
- 2.2 The Shares Seller hereby undertakes to cause the Nominees to transfer part of the Sale Shares held by them as Nominees of the Shares Seller to the Selected Bidder and execute any documents required to deliver good title to the Sale Shares to the Selected Bidder.

3. CLOSING

- 3.1 Prior to the Closing Date, the Selected Bidder shall provide to the Shares Seller, valid share transfer forms ("Share Transfer Forms") duly stamped with requisite amount of stamp duty payable on the transfer of Sale Shares.
- 3.2 On the Closing Date, the Shares Seller shall hand over to the Selected Bidder or its authorised representative, the original share certificates representing the Sale Shares ("Sale Share Certificates") along with the Share Transfer Forms duly executed by the Shares Seller and the Nominees in favour of the Selected Bidder, simultaneously against the Selected Bidder handing over to the Shares Seller demand drafts drawn in favour of the Shares Seller for the Acquisition Price payable to it.

Provided that prior to the handing over of the Sale Share Certificates to the Selected Bidder as mentioned above, the Selected Bidder shall provide satisfactory evidence to PFCCL that on or before the Closing Date, the Selected Bidder has furnished the Performance Bank Guarantee to Central Transmission Utility of India Limited and is in a position to comply with all other requirements of Clause 2.4 of the RFP.

- 3.3 The Selected Bidder shall immediately upon receiving the Sale Share Certificates and the Share Transfer Forms, duly execute the Share Transfer Forms and duly lodge the Share Transfer Forms and the Sale Share Certificates with the Company. The Selected Bidder may also propose the names of its nominees to be appointed on the Board of the Company and the address outside the jurisdiction of the Registrar of Companies Delhi - II, which would be the new registered office of the Company. The Company shall, upon receipt of the said documents from the Selected Bidder, do the following:

- (i) Immediately on the Closing Date convene a meeting of the Board, wherein the Board shall pass the following necessary resolutions:



- (a) approving the transfer of the Shares constituting the Sale Shares from the Shares Seller and the Nominees to the name of the **Power Grid Corporation of India Limited and its nominees and transfer of all assets and liabilities of the Company as on Closing Date;**
- (b) Approving the **Power Grid Corporation of India Limited and its nominees** as a member of the Company and entering the name of the **Power Grid Corporation of India Limited and its nominees** in the register of members.
- (c) Changing the address of the registered office of the Company to the new address, outside the jurisdiction of the Registrar of Delhi - II, as may be provided by the Selected Bidder.
- (d) appointing the nominees of the Selected Bidder on the Board and accepting the resignations of the other existing Directors on the Board and the Chair of the meeting which was taken by one of the existing Directors shall be vacated and appointment of a new Chairman who shall be one of the newly appointed Director, for the rest of the meeting.

Pursuant to the acceptance of resignation of the existing Directors and appointment of new Chairman, the newly constituted Board of Directors shall hold a meeting and pass the following resolution:

- (a) terminating all the authorizations granted regarding the business and/or operations of the Company or the operations of the bank accounts of the Company, with prospective effect; and
 - (b) Acknowledging and accepting the terms and conditions as contained in the executed copies of the RFP Project Documents and to abide by the provisions contained therein.
- (ii) Enter the name of the **Power Grid Corporation of India Limited and its nominees** as the legal and beneficial owner of the Sale Shares, free of all Encumbrances, in the register of members of the Company;
 - (iii) Make the necessary endorsements on the Sale Share Certificates, indicating the name of the **Power Grid Corporation of India Limited and its nominees** as the legal and beneficial owner of the Sale Shares evidenced there under;
 - (iv) Return the original Sale Share Certificates, duly endorsed in the name of the **Power Grid Corporation of India Limited and its nominees**, to the **Power Grid Corporation of India Limited and its nominees**, as the case may be or its authorized representative;
 - (v) Handover all the statutory registers and records, if any, of the Company to the Selected Bidder.
 - (vi) Handover certified true copies of the Board resolution passed by the Company as per (i)(a) to (d) of Clause 3.3 (i) to Central Transmission Utility of India Limited.



- 3.4 The Parties to this Agreement agree to take all measures that may be required to ensure that all the events contemplated in the **Clauses 3.1 to 3.3** above on the Closing Date are completed on the same day.

Notwithstanding the provisions of **Clause 3.3** hereto, all proceedings to be taken and all documents to be executed and delivered by the Parties at the Closing Date shall be deemed to have been taken and executed simultaneously and no proceedings shall be deemed to have been taken nor documents executed or delivered until all have been taken, executed and delivered.

- 3.5 The Selected Bidder hereby acknowledges and agrees that after the date of acquisition of one hundred percent (100%) of the equity shareholding of the Company, by the Selected Bidder as per Clause 3.3, (a) the authority, rights and obligations of the PFCCL/Company in respect of the Bid Process shall forthwith cease and any actions to be taken thereafter regarding the Bid Process will be undertaken by Central Transmission Utility of India Limited themselves or through their any other authorized representative(s), (b) all rights and obligations of the PFCCL/Company shall be of the Selected Bidder and (c) any decisions taken by the PFCCL/Company prior to the date of its acquisition by the Selected Bidder shall continue to be binding on the Selected Bidder. The Parties hereby agree that this provision shall survive the termination of this Agreement.
- 3.6 This agreement shall be effective from the date of its signing by the Parties and shall remain in force until all the obligations of the respective Parties under Clause 3.3 hereto are fulfilled.

4. REPRESENTATIONS AND WARRANTIES

- 4.1 The Selected Bidder hereby represents and warrants to the Shares Seller that:
- 4.1.1 The Selected Bidder has full legal right, power and authority to enter into, execute and deliver this Agreement and to perform the obligations, undertakings and transactions set forth herein, and this Agreement has been duly and validly executed and delivered by the Selected Bidder and constitutes its legal, valid and binding obligations, enforceable against it in accordance with its terms;
- 4.1.2 The execution, delivery and performance of this Agreement by the Selected Bidder (i) will not violate or contravene any provision of the Memorandum of Association or Articles of the Selected Bidder, (ii) will not violate or contravene any law, statute, rule, regulation, licensing requirement, order, writ, injunction or decree of any court, governmental instrumentality or other regulatory, governmental or public body, agency or authority by which the Selected Bidder are bound or by which any of its and/or their properties or assets are bound, and (iii) except to the extent that the same have been duly and properly completed or obtained, will not require any filing with, or permit, consent or approval of or license from, or the giving of any notice to, any court, governmental instrumentality or other regulatory, governmental or public body, agency or authority, joint venture party, or any other entity or person whatsoever; and
- 4.1.3 The Selected Bidder is not restricted in any manner whatsoever, including without limitation, on account of any judicial or governmental order, action or proceeding, or any



contractual obligation assumed by the Selected Bidder, from purchasing the Sale Shares from the Shares Seller in the manner provided for in this Agreement.

- 4.2 The Shares Seller hereby represents and warrants to the Selected Bidder that;
- 4.2.1 The Shares Seller and the Nominees are the legal and beneficial owners of the Sale Shares, free and clear of any Encumbrance and the delivery to the Selected Bidder of the Sale Shares pursuant to the provisions of this Agreement will transfer to the Selected Bidder a good title to the Sale Shares.
- 4.2.2 The Shares Seller has full legal right, power and authority to enter into, execute and deliver this Agreement and to perform the obligations, undertakings and transactions set forth herein. The execution, delivery and performance of this Agreement will not violate the Memorandum and Articles of Association of the Shares Seller or contravene any contract by which it is bound.
- 4.2.3 The Shares Seller has obtained requisite authorizations to sell and transfer the Sale Shares to the Selected Bidder. The Shares Seller also represent that it is not prevented from transferring and selling the Sale Shares. Also, to the best of its knowledge, the Sale Shares are not the subject matter of any claim or pending proceeding or threatened by any legal proceeding made by any third party.
- 4.3 Except as specified in Clause 4.2, above the Shares Seller shall not be deemed to have, made any representation or warranty whatsoever, whether express or implied, in relation to the Sale Shares or Company, including but not limited to any implied warranty or representation as to the business or affairs of the Company.
- 4.4 The Representations and Warranties are given as at the date of this Agreement except that where a Representation and Warranty is expressed to be made as at another date, the Representation and Warranty is given with respect to that date only.
- 4.5 Each Representation and Warranty is to be construed independently of the others and is not limited by reference to any other Warranty. The Representations, Warranties and undertakings contained in this **Clause 4** hereto or in any document delivered pursuant to or in connection with this Agreement are continuing in nature and shall survive the Closing Date for one (1) year.
- 4.6 The Parties represent to each other that all Representations and Warranties provided herein by the respective Party shall be true as of Closing Date.

5. OBLIGATIONS OF THE SELECTED BIDDER

The Selected Bidder agrees that the Shares Seller shall not be liable in any manner, nor shall it assume any responsibility or liability whatsoever, in respect of the business of the Company and its operations or activities, arising after Closing Date, to any Person or any authority, central, state, local or municipal or otherwise and the same shall be the sole responsibility of the Selected Bidder.



6. MISCELLANEOUS

6.1 NOTICES

- a) All notices to be given under this Agreement shall be in writing and in the English language.
- b) All notices must be delivered personally or by registered or speed post or by recognised courier to the addresses below:

Selected Bidder (Lead Member in case of Consortium)	Company Secretary Power Grid Corporation of India Limited B – 9, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110 016, India
Name of the Holding Company of the SPV	Company Secretary PFC Consulting Limited Urjanidhi, First Floor, 1, Barakhamba Lane, Connaught Place, Central Delhi, New Delhi – 110 001
Company (Before Closing Date)	Project in-charge KAKINADA I TRANSMISSION LIMITED Urjanidhi, First Floor, 1, Barakhamba Lane, Connaught Place, Central Delhi, New Delhi – 110 001
Company (After Closing Date)	KAKINADA I TRANSMISSION LIMITED B – 9, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110 016, India

- c) Any Party may by notice of at least fifteen (15) days to the other Parties change the address and / or addresses to which such notices and communications to it are to be delivered or mailed.

6.2 RESOLUTION OF DISPUTES

- 6.2.1 If any dispute arises between the Parties, in connection with the validity, interpretation, implementation or alleged breach of any provision of this Agreement ("Dispute"), the disputing Parties hereto shall endeavor to settle such Dispute amicably. The attempt to bring about an amicable settlement shall be considered to have failed if not resolved within 60 days from the date of the Dispute.



- 6.2.2 If the Parties are unable to amicably settle the Dispute in accordance with Clause 6.2.1 within the period specified therein, any of the Parties shall be entitled to within 30 days after expiry of the aforesaid period, refer the Dispute to the Company Secretary of PFCCCL and Chief Executive/ Managing Director of the Selected Bidder for resolution of the said Dispute. The attempt to bring about such resolution shall be considered to have failed if not resolved within 30 days from the date of receipt of a written notification in this regard.
- 6.2.3 In the event the Dispute is not settled in accordance with Clause 6.2.2 above, any Party to the Dispute shall be entitled to serve a notice invoking this Clause and making a reference to a sole arbitrator. If the Parties to the Dispute cannot agree as to the appointment of the sole arbitrator within 30 days of receipt of the notice of the Party making the reference, then the Shares Seller along with the Company shall appoint one arbitrator and the Selected Bidder shall appoint one arbitrator and the two arbitrators, so appointed shall appoint a third arbitrator. However, after the Closing Date, in such an event the Shares Seller shall appoint one arbitrator and the Selected Bidder along with the Company shall appoint one arbitrator and the two arbitrators, so appointed shall appoint the third arbitrator.
- 6.2.4 The place of the arbitration shall be New Delhi. The Arbitration proceedings shall be governed by the Arbitration and Conciliation Act, 1996.
- 6.2.5 The proceedings of arbitration shall be in English language.
- 6.2.6 The arbitrator's award shall be substantiated in writing. The arbitrators shall also decide on the costs of the arbitration proceedings. In case the arbitrators have not decided on the costs of the arbitration proceedings, each Party to the Dispute shall bear its own costs, in relation to the arbitration proceedings.
- 6.3 AUTHORISED PERSON

For the purposes of this Agreement, the Selected Bidder is represented by Arup Kumar Samanta, General Manager, Company Secretariat, POWERGRID, pursuant to an authorization granted to Arup Kumar Samanta, General Manager, Company Secretariat, POWERGRID through necessary Board resolutions. Further, Arup Kumar Samanta, General Manager, Company Secretariat, POWERGRID is also authorized by such resolutions to take any decision which may be required to be taken, do all acts and execute all documents which are or may be required by the Selected Bidder for the proper and effective fulfillment of the rights and obligations under this Agreement. Any action taken or document executed by Arup Kumar Samanta, General Manager, Company Secretariat, POWERGRID shall be deemed to be acts done or documents executed by the Selected Bidder and shall be binding on the Selected Bidder.

6.4 RESERVATION OF RIGHTS

No forbearance, indulgence or relaxation or inaction by any Party at any time to require performance of any of the provisions of this Agreement shall in any way affect, diminish or prejudice the right of such Party to require performance of that provision, and any waiver



or acquiescence by any Party of any breach of any of the provisions of this Agreement shall not be construed as a waiver or acquiescence of any continuing or succeeding breach of such provisions, a waiver of any right under or arising out of this Agreement or acquiescence to or recognition of rights other than that expressly stipulated in this Agreement.

6.5 CUMULATIVE RIGHTS

All remedies of either Party under this Agreement whether provided herein or conferred by statute, civil law, common law, custom or trade usage, are cumulative and not alternative and may be enforced successively or concurrently.

6.6 PARTIAL INVALIDITY

If any provision of this Agreement or the application thereof to any person or circumstance shall be invalid or unenforceable to any extent, the remainder of this Agreement and the application of such provision to persons or circumstances other than those as to which it is held invalid or unenforceable shall not be affected thereby, and each provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law. Any invalid or unenforceable provision of this Agreement shall be replaced with a provision, which is valid and enforceable and most nearly reflects the original intent of the unenforceable provision.

6.7 TERMINATION

If (i) the Closing does not occur on the Closing Date for any reason whatsoever, or (ii) the Letter of Intent is withdrawn or terminated for any reason, or (iii) due to termination of the TSA by Central Transmission Utility of India Limited in accordance with Article 3.3.2 or Article 13 of the TSA thereof, PFCCIL shall have a right to terminate this Agreement forthwith by giving a written notice to the other Parties hereto.

6.8 AMENDMENTS

No modification or amendment of this Agreement and no waiver of any of the terms or conditions hereof shall be valid or binding unless made in writing and duly executed by all the Parties.

6.9 ASSIGNMENT

This Agreement and the rights and liabilities hereunder shall bind and inure to the benefit of the respective successors of the Parties hereto, but no Party hereto shall assign or transfer its rights and liabilities hereunder to any other Person without the prior written consent of the other Parties, which will not be unreasonably withheld.

6.10 ENTIRE AGREEMENT



This Agreement constitutes the entire Agreement between the Parties with respect to the subject matter herein and supersedes and cancels any prior oral or written agreement, representation, understanding, arrangement, communication or expression of intent relating to the subject matter of this Agreement.

6.11 COSTS

Each of the Parties hereto shall pay their own costs and expenses relating to the negotiation, preparation and execution of this Agreement and the transactions contemplated by this Agreement.

The Selected Bidder shall be liable to bear and pay the stamp duty and other costs in respect of this Agreement and the Share Transfer Forms.

6.12 RELATIONSHIP

None of the provisions of this Agreement shall be deemed to constitute a partnership between the Parties hereto and no Party shall have any authority to bind the other Party otherwise than under this Agreement or shall be deemed to be the agent of the other in any way.

6.13 GOVERNING LAW AND JURISDICTION

This Agreement shall be governed by and construed in accordance with the laws of India and shall be subject to the exclusive jurisdiction of the courts of Delhi.

6.14 COUNTERPARTS

This Agreement may be executed in counterparts by the Parties and each fully executed counterpart shall be deemed to be original.

6.15 CONFIDENTIALITY

The Parties undertake to hold in confidence and not to disclose the terms and conditions of the transaction contemplated hereby to third parties, except:

- (a) to their professional advisors;
- (b) to their officers, employees, agents or representatives, who need to have access to such information for the proper performance of their activities;
- (c) disclosures required under Law;

Without the prior written consent of the other Parties.



Provided that Central Transmission Utility of India Limited and PFCCL may at any time, disclose the terms and conditions of transactions contemplated hereby to any person, to the extent stipulated under the law or the Bidding Guidelines.

6.16 INDEMNIFICATION

- The Parties hereby agree that transfer of Sale Shares to the Selected Bidder shall vest all the rights, privileges, licenses, responsibilities, liabilities and other obligations pertaining to the Company in the Selected Bidder.
- The Selected Bidder hereby agrees that the Selected Bidder shall not be entitled to any claims or initiate any legal proceedings, by itself or through the Transmission Service Provider against the Share Sellers, its directors, officers, employees and the subscribers including the members of any committees appointed by them in respect of any actions or decisions taken by any of them up to the Closing Date in furtherance of the Project referred to in recital A of this Agreement.
- Further, the Selected Bidder hereby indemnifies and holds harmless at all times the Share Seller against all losses, damages, charges, and expenses which the Share Seller may sustain or incur towards contractual obligations with respect to the contracts awarded by the Share Seller or any other liability arising with regard to any action/ activity undertaken by the Share Seller for and on behalf of the Company in furtherance of the Project referred to above or otherwise concerning the Company. All such actions shall be defended by the Selected Bidder either itself or through the TSP at its own cost.
- The Parties hereby agree that the provisions of this clause shall survive the termination of this Agreement.

IN WITNESS WHEREOF, THE PARTIES HERETO HAVE CAUSED THIS AGREEMENT TO BE DULY EXECUTED AND DELIVERED AS OF THE DAY AND YEAR FIRST ABOVE WRITTEN


SIGNED AND DELIVERED

BY THE WITHIN NAMED **PFC CONSULTING LIMITED "PFCCL"**

BY THE HAND OF **SHRI SACHIN ARORA, COMPANY SECRETARY**

PURSUANT TO THE RESOLUTION PASSED BY THE BOARD OF DIRECTORS ON 16TH JUNE, 2026

ON THE 29TH DAY OF JUNE, 2026

IN THE PRESENCE OF:


Suman Kumar
E1, Amar Colony, Leipat Nagar-4, N.D-24



WITNESS:

NAME, SIGNATURE, DESIGNATION AND ADDRESS:

SIGNED AND DELIVERED

BY THE WITHIN NAMED "KAKINADA I TRANSMISSION LIMITED"

BY THE HAND OF SHRI NAVEEN KUMAR, DIRECTOR

PURSUANT TO THE

RESOLUTION PASSED BY THE BOARD OF DIRECTORS ON 12TH JUNE, 2026

ON THE 29TH DAY OF JUNE, 2026

IN THE PRESENCE OF: ESHTI KAPOOR
eshti

WITNESS:

NAME, SIGNATURE, DESIGNATION AND ADDRESS:

SIGNED AND DELIVERED

BY THE WITHIN NAMED "POWER GRID CORPORATION OF INDIA LIMITED"

BY THE HAND OF SHRI ARUP KUMAR SAMANTA, GENERAL MANAGER, POWERGRID

PURSUANT TO THE

RESOLUTION PASSED BY THE BOARD OF DIRECTORS ON 01ST MAY 2025

ON THE 29TH DAY OF JUNE, 2026

IN THE PRESENCE OF:

WITNESS:

NAME, SIGNATURE, DESIGNATION AND ADDRESS:

ROHIT JAIN
POWERGRID



ANNEXURE A**DESCRIPTION OF THE SALE SHARES**

S. NO.	NAME OF THE SHAREHOLDER	NUMBER OF EQUITY SHARES HELD	PERCENTAGE OF THE TOTAL PAID UP EQUITY CAPITAL
1.	PFC Consulting Limited	9400	94%
2.	Shri Rakesh Mohan *	100	1%
3.	Shri Neeraj Singh *	100	1%
4.	Shri Sanjay Kumar Nayak *	100	1%
5.	Shri Sachin Shukla *	100	1%
6.	Shri Naveen Kumar *	100	1%
7.	Shri Rishab Jain *	100	1%
	Total		100%

*Nominee of PFC Consulting Limited



No. 25-17/41/2025-PG
Government of India
Ministry of Power

Shram Shakti Bhawan, Rafi Marg
New Delhi/ Dated 5th May, 2025

To,

Shri Naveen Kumar, Director
M/s KAKINADA I TRANSMISSION LIMITED,
9th Floor (A-Wing), Statesman House,
Connaught Place, New Delhi – 110001.
Email-naveen.phougat@pfcindia.com

Subject: Prior approval of the Government of India under Section 68 (1) of the Electricity Act, 2003, for installation of overhead transmission line under the transmission scheme "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)" to M/s KAKINADA I TRANSMISSION LIMITED, a wholly owned subsidiary of PFC Consulting Limited (PFCCL) – regarding.

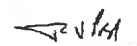
Sir,

I am directed to refer to M/s PFCCL's online application on NSWS portal dated 26.03.2025, seeking prior approval of Government of India under Section 68 (1) of the Electricity Act 2003, for installation of the following overhead transmission line under the transmission scheme "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)", in favour of 'KAKINADA I TRANSMISSION LIMITED', a wholly owned subsidiary of PFCCL, who shall own the transmission scheme project:

- LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation
2. Ministry of Power vide Gazette no. CG-DL-E-01012025-259785 dated 26.12.2024 has appointed PFC Consulting Limited (PFCCL) as the Bid Process Coordinator for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish the transmission scheme "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)" to be implemented through Tariff Based Competitive Bidding (TBCB) route. PFCCL, the Bid Process Coordinator, has incorporated the SPV, 'KAKINADA I TRANSMISSION LIMITED', for implementation of the transmission scheme "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)".
3. Based on the recommendation of Central Electricity Authority (CEA); Ministry of Power, Government of India conveys the prior approval under Section 68 (1) of the Electricity Act, 2003 to the SPV, M/s KAKINADA I TRANSMISSION LIMITED for installation of the following overhead transmission line under the transmission scheme "Transmission system for proposed Green Hydrogen / Green Ammonia projects in Kakinada area (Phase-I)":

- LILO of Vemagiri – Srikakulam 765 kV D/c line at Kakinada substation

Contd/...



4. The approval would be subject to compliance of:

(i) The relevant provisions of the Electricity Act, 2003, as amended from time to time and the rules and regulations made there under, and

(ii) CEA (Measures relating to Safety and Electric Supply) Regulations, 2023, and any subsequent amendments made thereto.

5. The approval would also be subject to the following conditions:

(i) The implementing agency will commence construction of the project within three years of grant of approval, unless this term is extended by Ministry of Power.

(ii) Ministry of Power may withdraw the approval before the expiry of the period of three years after giving a one-month notice.

(iii) The implementing agencies shall abide by the provisions of Works of Licensees Rules, 2006 notified by the Govt. of India, Ministry of Power in the Gazette of India, extraordinary Part-II, Section 3(i) dated 18-04-2006 (vide GSR 217 (E) dated 18-04-2006).

Yours faithfully,



(M.V.N. Vara Prasad)

Under Secretary to the Government of India

Tele: 011-23730264

Copy to:

The Chairperson

Central Electricity Authority

Sewa Bhawan, R.K. Puram, New Delhi 110066.



भारतीय स्टेट बैंक
STATE BANK OF INDIA

25-06-2026

To
POWER GRID CORPORATION OF INDIA LTD
SAUDIMINI PLOT NO 2
SECTOR 29
GURGAON INDIA
07AAACP0252G1ZV

Madam / Dear Sir,

INLAND BG - ISSUANCE DEBIT ADVICE

Greetings from SBI,

We have debited your Account No XXXXXXXX8670 for INR 121761.84 towards BG issuance as per the details mentioned below:

1. e-Trade Ref. No.	:	1731326PG3100054
2. BG No.	:	1731326BG0Y00538
3. Amount in Rs.	:	372,500,000.00
4. Beneficiary	:	Central Transmission Utility of

DETAILS OF CHARGES	AMOUNT (INR)	GST (INR)	
Guarantee Commission for Perf.	102438.00	18438.84	
Guarantee Commission for Fin.			
Stamp Charges			
Postage Charges	250.00	45.00	
Other Charges			
SFMS Charges	500.00	90.00	
Total charges	103188.00	18573.84	121761.84

At your request, the commission will be recovered periodically as detailed below. The commission for the first period has been debited to your account. Please ensure there is an adequate balance in your operative account on the respective due dates as per details below: -

RECOVERY FREQUENCY	COMMISSION AMOUNT	NEXT DUE DATE
Quarterly	1,02,372.00	25-09-2026
Quarterly	1,02,372.00	25-12-2026
Quarterly	1,02,372.00	25-03-2027
Quarterly	1,02,372.00	25-06-2027
Quarterly	1,02,372.00	25-09-2027
Quarterly	1,02,372.00	25-12-2027
Quarterly	1,02,372.00	25-03-2028
Quarterly	1,02,372.00	25-06-2028
Quarterly	1,02,372.00	25-09-2028
Quarterly	1,02,372.00	25-12-2028
Quarterly	1,02,372.00	25-03-2029
Quarterly	1,02,372.00	25-06-2029
Quarterly	1,02,372.00	25-09-2029
Quarterly	1,02,372.00	25-12-2029
Quarterly	34,124.00	25-03-2030
Total Charges to be Recovered	1,467,332.00	

Please note that the commission amount may undergo a change in case there is upward revision in service charges, in future.

Jun 25, 2026 8:59 PM



Yours faithfully,

Authorized Signatory

This document is system generated and does not require signature.

“For a better digital experience and faster processing, we recommend you to please contact your home / dealing branch to guide you for enabling access to Trade Finance facility in YONO Business, SBI’s online banking platform for Business Customers.”

CORPORATE ACCOUNTS GROUP NEW DELHI
4TH AND 5TH FLOOR REDFORT
CAPITAL PARSVANATH TOWERS,GOLE MARK
NEW DELHI
sbi.17313@sbi.co.in



सत्यमेव जयते

INDIA NON JUDICIAL

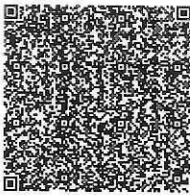
Government of National Capital Territory of Delhi

₹100

e-Stamp

Certificate No. : IN-DL30211799466855Y
Certificate Issued Date : 10-Jun-2026 08:55 PM
Account Reference : IMPACC (IV)/ dl736003/ DELHI/ DL-WSD
Unique Doc. Reference : SUBIN-DL73600370533266829231Y
Purchased by : STATE BANK OF INDIA
Description of Document : Article Bank Guarantee
Property Description : Not Applicable
Consideration Price (Rs.) : 0
 (Zero)
First Party : STATE BANK OF INDIA
Second Party : Not Applicable
Stamp Duty Paid By : STATE BANK OF INDIA
Stamp Duty Amount(Rs.) : 100
 (One Hundred only)

सत्यमेव जयते



₹100

Please write or type below this line

IN-DL30211799466855Y

कृते भारतीय स्टेट बैंक / For State Bank of India

प्रबन्धक (सी.एस.) / Manager (C.S.)
 कॉरपोरेट लेखा समूह शाखा, नई दिल्ली / CAG Branch, New Delhi

रश्मि श्रीवास्तव
 RASHMI SRIVASTVA
 SS No.: S-1734

This Stamp Paper forms an Integral Part of

BGNo. 173326340700538

Dated 25.06.2026

Amount 37,25,00,000/-

कृते भारतीय स्टेट बैंक / For State Bank of India

प्रबन्धक (सी.एस.) / Manager (C.S.)
 कॉरपोरेट लेखा समूह शाखा, नई दिल्ली / CAG Branch, New Delhi

ANKIT KUMAR
 P.F.: 7518900
 SS No. K-16031

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shoestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.



Eximbills Enterprise SWIFT

View RAW

Main Reference NO: 1731326BG0Y00538 Transaction Reference NO: 1731326BG0Y00538
Unit Code: 17313 Operator: VDE0115
Module Name: BGIF Function Name: Issue_After_RegBG
Transaction Date: 25-06-2026 Transaction Time: 20:55:59
Event Time: 4 Release by: 4596072
Release Date: 25-06-2026 Release Time: 20:59:26

MT760COV AckFlag :Waiting for Ack/Nak NotifyFlag :

B1: Outgoing SWIFT Header 1

F01SBIN0017313500000000000

B2: Receiver's BIC Code

I760SBIN0017313N

7020: Transaction Reference Number (Issuing Bank Guarantee Number)

1731326BG0Y00538

7022: Guarantee Form Number

OTH DOMST BANKS

7024: Type of Bank Guarantee : Performance, Financial, Others

PERFORMANCE

7025: Amount of Guarantee Currency Code Amount

INR372500000,00

7026: Guarantee Validity Guarantee From Date Guarantee To Date

2026062520290329

7027: Guarantee Effective Date

20260625

7029: End date for lodgement of claim

20300329

7030: Place of lodgement of claim

CORPORATE ACCOUNTS GROUP NEW DELHI

7031: Issuing Branch IFSC

SBIN0017313

7032: Issuing branch name and address

CORPORATE ACCOUNTS GROUP NEW DELHI
4TH AND 5TH FLOOR REDFORT
CAPITAL PARSVANATH TOWERS,GOLE MARK
NEW DELHI

7033: Name of applicant and his details

POWER GRID CORPORATION OF INDIA LTD
SAUDIMINI PLOT NO 2
SECTOR 29
GURGAON INDIA

7034: Name of Counter party and his details



CENTRAL TRANSMISSION UTILITY OF
INDIA LTD IRCON INTERNATIONAL
TOWERS TOWER-1
PLOT NO. 16, INSTITUTIONAL AREA
SECTOR 32, GURGAON

7035: Counter party IFSC

SBIN0017313

7036: Counter party branch name and address

STATE BANK OF INDIA
4TH AND 5TH FLR RED FORT CAPITAL
PARSVNATH TOWER GOLE MARKET

7039: Reference/Description of the underlined contract

25062026

7040: Stamp Duty Electronically Paid (Y/N)

N

7048: e-Bank Guarantee to be held in Demat Form(Y/N)

N

20Z: Transaction Reference Number

NON-REGULAR





भारतीय स्टेट बैंक
STATE BANK OF INDIA

STATE BANK OF INDIA

Form No. 1731326BG0Y00538 Date 25-06-2026

Central Transmission Utility of
India Ltd Ircon International Towers Tower-1
Plot No. 16, Institutional area
Sector 32, Gurgaon

Dear Sir,

Guarantee No 1731326BG0Y00538

Amount of Guarantee Rs. 372,500,000.00 /- Guarantee cover from 25-06-2026 to 29-03-2029 Last date for lodgement of claim – 29-03-2030

This Deed of guarantee executed by the State Bank of India constituted under the State Bank of India Act, 1955 having its Central Office at Nariman Point, Mumbai and amongst other places, a branch at CORPORATE ACCOUNTS GROUP NEW DELHI in favour of Central Transmission Utility of for an amount not exceeding Rs. 372,500,000.00 /- (Rupees Thirty Seven Crore Twenty Five Lakh Rupees only) at the request of POWER GRID CORPORATION OF INDIA LTD

This Guarantee is issued subject to the condition that the liability of the bank under this Guarantee is limited to a maximum of Rs. 372,500,000.00 /- (Rupees Thirty Seven Crore Twenty Five Lakh Rupees only) and the Guarantee shall remain in full force up to 29-03-2029 and cannot be invoked otherwise than by a written demand or claim under this Guarantee served on the Bank on or before the 29-03-2030

The beneficiaries are advised in their own interest to verify the genuineness of the Guarantee with the BG issuing Branch.

CORPORATE ACCOUNTS GROUP NEW DELHI
4TH AND 5TH FLOOR REDFORT
CAPITAL PARSVANATH TOWERS, GOLE MARK
NEW DELHI
sbi.17313@sbi.co.in

कृते भारतीय स्टेट बैंक / For State Bank of India


प्रबन्धक (सी.एस.) / Manager (C.S.)
कॉर्पोरेट लेखा समूह शाखा, नई दिल्ली / CAG Branch, New Delhi

रश्मि श्रीवास्तव
RASHMI SRIVASTVA
SS No.: S-1734

कृते भारतीय स्टेट बैंक / For State Bank of India


प्रबन्धक (सी.एस.) / Manager (C.S.)
कॉर्पोरेट लेखा समूह शाखा, नई दिल्ली / CAG Branch, New Delhi

 **ANKIT KUMAR**
P.F.: 7518900
SS No. K-16031

1731326BG0Y00538

25-06-2026



To,
Central Transmission Utility of India Limited
Iron International Towers Tower-1
Plot No. 16, Institutional area
Sector 32, Gurgaon 122003
Haryana

BANK GUARANTEE NO.: 1731326BG0Y00538
DATE: 25.06.2026

In consideration of the Power Grid Corporation of India Limited having its registered office at B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110 016 agreeing to undertake the obligations under the Transmission Service Agreement to be executed on 29.06.2026 and the other RFP Project Documents and the Nodal Agency and the PFC Consulting Limited, agreeing to execute the RFP Project Documents with the Selected Bidder, regarding setting up the Project, the State Bank of India having our registered office at State Bank of India, Corporate Accounts Group Branch, 5th Floor, Red Fort Capital Parsvnath Towers, Bhai Veer Singh Marg, Gole Market, New Delhi-110001, A Bank Constituted/Registered under the SBI Act 1955 having our Corporate Centre at Madame Cama Road, Nariman Point, Mumbai (hereinafter referred to as "Guarantor Bank") hereby agrees unequivocally, irrevocably and unconditionally to pay to Central Transmission Utility of India Limited (being the Nodal Agency) at Gurgaon forthwith on demand in writing from the Nodal Agency or any Officer authorized by it in this behalf, any amount up to and not exceeding Rupees Thirty Seven Crore Twenty Five Lakh (Rs. 37,25,00,000/-) Only on behalf of M/s. POWER GRID CORPORATION OF INDIA LIMITED.

This guarantee shall be valid and binding on the Guarantor Bank up to and including 29.03.2029 and shall not be terminable by notice or any change in the constitution of the Bank or the term of the Transmission Service Agreement or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rupees Thirty Seven Crore Twenty Five Lakh (Rs. 37,25,00,000/-) Only. Our Guarantee shall remain in force until 29.03.2029. The Nodal Agency shall be entitled to invoke this Guarantee up to three hundred sixty five (365) days of the last date of the validity of this Guarantee i.e 29.03.2030.

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand from Central Transmission Utility of India Limited (in its roles as the Nodal Agency), made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to Nodal Agency.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by POWER GRID CORPORATION OF INDIA LIMITED, KAKINADA I TRANSMISSION LIMITED and / or any other person. The Guarantor Bank shall not require Nodal Agency to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against Nodal Agency in respect of any payment made hereunder.

THIS BANK GUARANTEE shall be interpreted in accordance with the laws of India.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

THIS BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring, liquidation, winding up, dissolution or any other change in the constitution of the Guarantor Bank.

To,
Central Transmission Utility of India Limited
Iron International Towers Tower-1
Plot No. 16, Institutional area

1731326BG0Y00538

2026-06-25

कृतो भारतीय स्टेट बैंक / For State Bank of India


प्रबन्धक (सी.एस.) / Manager (C.S.)
कॉर्पोरेट लेखा समूह शाखा, नई दिल्ली / CAG Branch, New Delhi

रश्मि श्रीवास्तव
RASHMI SRIVASTVA
SS No.: S-1734

कृतो भारतीय स्टेट बैंक / For State Bank of India


प्रबन्धक (सी.एस.) / Manager (C.S.)
कॉर्पोरेट लेखा समूह शाखा, नई दिल्ली / CAG Branch, New Delhi

 ANKIT KUMAR
P.F.: 7518900
SS No. K-16031

1 / 2

Sector 32, Gurgaon 122003
Haryana

BANK GUARANTEE NO.: 1731326BG0Y00538
DATE: 25.06.2026

THIS BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly Nodal Agency shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against KAKINADA I TRANSMISSION LIMITED or the Selected Bidder, as the case may be, to make any claim against or any demand on KAKINADA I TRANSMISSION LIMITED or the Selected Bidder, as the case may be, or to give any notice to KAKINADA I TRANSMISSION LIMITED or the Selected Bidder, as the case may be, or to enforce any security held by the Nodal Agency or to exercise, levy or enforce any distress, diligence or other process against KAKINADA I TRANSMISSION LIMITED or the Selected Bidder, as the case may be.

The Guarantor Bank acknowledges that this BANK GUARANTEE is not personal to Nodal Agency and may be assigned, in whole or in part, (whether absolutely or by way of security) by Nodal Agency to any entity to whom the Nodal Agency is entitled to assign its rights and obligations under the Transmission Service Agreement.

The Guarantor Bank hereby agrees and acknowledges that Nodal Agency shall have a right to invoke this Bank Guarantee either in part or in full, as it may deem fit.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rupees Thirty Seven Crore Twenty Five Lakh (Rs. 37,25,00,000/-) Only and it shall remain in force until 29.03.2029, with an additional claim period of three hundred sixty five (365) days thereafter i.e. 29.03.2030. This BANK GUARANTEE shall be extended from time to time for such period, as may be desired by POWER GRID CORPORATION OF INDIA LIMITED. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if Nodal Agency serves upon us a written claim or demand on or before 29.03.2030.

In witness where of the Bank, through its authorized officer, has set its hand and stamp on this 25th day of June 2026 at New Delhi.

कृते भारतीय स्टेट बैंक / For State Bank of India

प्रबन्धक (सी.एस.) / Manager (C.S.)
कॉर्पोरेट लेखा समूह शाखा, नई दिल्ली / CAG Branch, New Delhi

रश्मि श्रीवास्तव
RASHMI SRIVASTVA
SS No.: S-1734

Witness-A



PARTH

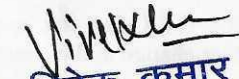
SS- P13347

कृते भारतीय स्टेट बैंक / For State Bank of India

प्रबन्धक (सी.एस.) / Manager (C.S.)
कॉर्पोरेट लेखा समूह शाखा, नई दिल्ली / CAG Branch, New Delhi

 ANKIT KUMAR
P.F.: 7518900
SS No. K-16031

Witness-2


विवेक कुमार
VIVEK KUMAR
SS No.: V-5272

1731326BG0Y00538

2026-06-25

2 / 2



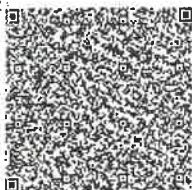
सत्यमेव जयते

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

Certificate No.	: IN-DL42299550007515Y
Certificate Issued Date	: 29-Jun-2026 03:38 PM
Account Reference	: IMPACC (PF)/ dl766013/ DELHI/ DL-NDD
Unique Doc. Reference	: SUBIN-DL76601393225523562814Y
Purchased by	: KAKINADA I TRANSMISSION LIMITED
Description of Document	: Article Others
Property Description	: Not Applicable
Consideration Price (Rs.)	: 0 (Zero)
First Party	: KAKINADA I TRANSMISSION LIMITED
Second Party	: Not Applicable
Stamp Duty Paid By	: KAKINADA I TRANSMISSION LIMITED
Stamp Duty Amount(Rs.)	: 100 (One Hundred only)



Please write or type below this line

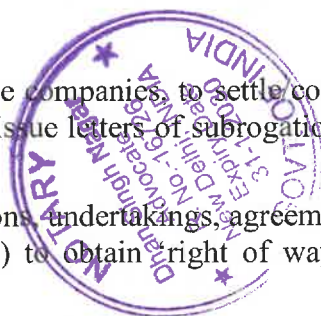
General Power of Attorney

Know all men by these presents, we **Kakinada I Transmission Limited** (hereinafter referred to as KITL which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, and assigns) having its Registered Office at B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110 016 do hereby constitute, appoint and authorize Shri Bipin Bihari Rath, Project Incharge of KITL residing at Flat B4/8, Chandrama Complex, Unit-3, Kharavela Nagar, Bhubaneswar, Odisha- 751001 as our true and lawful attorney, to do in our name and our behalf, all of the acts or things hereinafter mentioned, that is to say:-

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

1. To constitute, and defend legal cases, sign and verify plaints, written statements, petitions and objections, memorandum of appeal, claims, affidavits, applications, re-applications and pleadings of all kinds and to file them in Central Electricity Regulatory Commission (CERC), State Electricity Regulatory Commissions (SERCs), Appellate Tribunal for Electricity (ATE), Civil, Criminal or Revenue courts, Arbitration, Labour Court, Industrial Tribunal, High Court and Supreme Court, whether having original or appellate jurisdiction and before Government or Local Authorities or Registration Authorities, Tax Authorities, Tribunals, etc.
2. To appear, before various Courts / Tribunals / CERC / SERCs / Appellate Tribunal for Electricity.
3. To appoint any Advocate, Vakil, Pleader, Solicitor or any other legal practitioner as Attorney to appear and conduct case proceedings on behalf of the company and to sign Vakalatnama.
4. To compromise, compound or withdraw cases from any Court / Tribunal / CERC / SERCs / Appellate Tribunal for Electricity.
5. To file petitions/applications or affidavits before the Supreme Court / High Court / CERC / SERCs / Appellate Tribunal for Electricity and to obtain the copies of documents, papers, records etc.
6. To file and receive back documents, to deposit and withdraw money from Courts, Tribunal, Registrar's Office and other Government or Local Authorities and to issue valid receipts thereof.
7. To apply for and obtain refund of stamp duty or court fee, etc.
8. To issue notices and accept service of any summons, notices or orders issued by any Court / Tribunal / CERC / SERCs / Appellate Tribunal for Electricity on behalf of the Company.
9. To execute deeds, agreements, bonds and other documents and returns in connection with the affairs of the company and file them or cause to be filed for Registration, whenever necessary.
10. To issue Project Authority Certificate(s) in respect of contracts for Load Despatch & Communication Systems, Transmission Systems etc. and to lodge claims with the Railways, Transporters, Shipping Agents and Clearing Agents and to settle/compromise such claims.
11. To lodge claims with the Insurance companies, to settle/compromise such claims and on satisfactory settlement thereof, to issue letters of subrogation/power of attorney in favour of Insurance companies.
12. To execute, sign and file applications, undertakings, agreements etc. to or with the Central / State Government(s) / Body(ies) to obtain 'right of way' or any of other Right(s) / Privilege(s) etc.
13. To execute, sign and file applications, undertakings, agreements, bills, documents etc. to or with the Central / State Government(s) / Body(ies) and other authorities / entities including Central Transmission Utility (CTU)/Power System Operation Corporation Limited (POSOCO) / Central Electricity Authority (CEA)/ CERC with respect to Commissioning



of the Project, realization of Transmission charges, to obtain 'right of way' or any of other Right(s) / Privilege(s) etc.

14. To execute Transmission Service Agreement (TSA) with Central Transmission Utility of India Limited (CTUIL)
15. To execute Consultancy, Funding and other Agreements.
16. To act as administrator for e-filing process with CERC and other Statutory authorities.
17. Generally to do all lawful acts, necessary for the above mentioned purposes.

The Company hereby agrees to ratify and confirm all and whatsoever the said Attorney shall lawfully do execute or perform or cause to be done, executed or performed in exercise of the power or authority conferred under and by virtue of this Power of Attorney.

•
Signed by the within named
Kakinada I Transmission Limited
through the hand of
Duly authorized by the Board to issue such Power of Attorney

Dated this 29th day of June, 2026

Accepted

•
Signature of Attorney
Name: Shri Bipin Bihari Rath
Designation: Project Incharge, **Kakinada I Transmission Limited**
Address: Flat B4/8, Chandrama Complex, Unit-3, Kharavela Nagar, Bhubaneswar,
Odisha- 751001

•
Attested

•
(Signature of the Executant)
Name: Satyaprakash Dash
Designation: Director
Address: B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110 016

.....
Signature and Stamp of Notary of the place of execution

WITNESS



ATTESTED
NOTARY PUBLIC
DELHI

29 JUN 2026

BIPIN
BIHARI
RATH
Digitally signed
by BIPIN BIHARI
RATH
Date: 2026.07.03
20:10:34 +05'30'