

I/28785/2023

सत्यमेव जयते
भारत सरकारGovernment of India
विद्युत मंत्रालयMinistry of Power
केंद्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग- II

Power System Planning & Appraisal Division-II

सेवा में/To

As per list of Addresses

विषय : ट्रांसमिशन पर राष्ट्रीय समिति (एनसीटी) की चौदहवीं बैठक का कार्यवृत्त - के सम्बन्ध में ।

Subject: Minutes of the 14th Meeting of National Committee on Transmission (NCT) –
regarding.

महोदया (Madam) / महोदय (Sir),

The 14th meeting of the "National Committee on Transmission" (NCT) was held on 09th June, 2023. Minutes of the meeting are enclosed herewith.

भवदीय/Yours faithfully,

(ईशान शरण / Ishan Sharan)

मुख्य अभियंता एवं सदस्य सचिव, एनसीटी
/Chief Engineer & Member Secretary (NCT)प्रतिलिपि / Copy to:

Joint Secretary (Trans), Ministry of Power, New Delhi

I/28785/2023

List of Addressees:

1.	Chairperson, Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.	2.	Member (Power System), Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.
3.	Member (Economic & Commercial), Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.	4.	Director (Trans), Ministry of Power Shram Shakti Bhawan, New Delhi-110001.
5.	Sh. Ajay Yadav, Joint Secretary Room no 403, Atal Akshay Urja Bhawan, Opposite CGO Complex gate no 2, Lodhi Road, New Delhi – 110003	6.	Chief Operating Officer, CTUIL, Saudamini, Plot No. 2, Sector-29, Gurgaon – 122 001.
7.	Sh. Rajnath Ram, Adviser (Energy), NITI Aayog, Parliament Street, New Delhi – 110 001.	8.	CMD, Grid Controller of India, B-9, Qutub, Institutional Area, Katwaria Sarai, New Delhi – 110010
9.	Dr. Radheshyam Saha, Ex. Chief Engineer, Central Electricity Authority	10	Ms. Seema Gupta, Ex. Director (Operations), POWERGRID

Special Invitee

Chief Engineer (PCD), CEA

Index

1	Confirmation of the minutes of the 13 th meeting of National Committee on Transmission.....	4
2	Status of the transmission schemes noted/approved/recommended to MoP in the 13 th meeting of NCT:.....	4
3	New Transmission Schemes:.....	4
4	Modification in the earlier approved/notified transmission schemes:.....	43
5	Comprehensive presentation by CTU apprising NCT of measures taken for ensuring development of an efficient, co-ordinated and economical ISTS for smooth flow of electricity.....	49
6	Five-year rolling plan for ISTS capacity addition.....	49
7	Any other issues, with permission of chair.....	49
	Summary of the deliberations of the 14th meeting of NCT held on 09th June, 2023.....	50
	Annex-I.....	71

I/28785/2023

Minutes of the 14th meeting of National Committee on Transmission

List of Participants is enclosed at Annex-I.

1 Confirmation of the minutes of the 13th meeting of National Committee on Transmission.

1.1 The minutes of the 13th meeting of NCT held on 12.05.2023 were issued vide CEA letter no CEA-PS-12-13/3/2019-PSPA-II dated 19.05.2023. Comments/observations were not received on the minutes.

1.2 Accordingly, members confirmed the minutes.

2 Status of the transmission schemes noted/approved/recommended to MoP in the 13th meeting of NCT:

2.1 The status of the transmission schemes noted/approved/recommended in the 13th meeting of NCT is tabulated below:

Sl. No.	Name of the Transmission Scheme	Noted/ Recommended / Approved	Survey Agency	MoP approval	Remarks
1.	Establishment of State-of the Art Unified Network Management System (U-NMS) for ISTS and State Utility Communication System for Southern Region	Approved	Not Applicable	Not Applicable (Cost of the scheme being less than Rs. 500 Crore)	Under RTM route
2.	Eastern Region Expansion Scheme-XXXVII (ERES-XXXVII)	Approved	Not Applicable	Not Applicable (Cost of the scheme being less than Rs. 500 Crore)	Under RTM route

3 New Transmission Schemes:

3.1 Augmentation of transformation capacity by 1x1500 MVA, 765/400 kV ICT (3rd) at Maheshwaram (PG) substation in Telangana

3.1.1 As per SRLDC, augmentation of transformation capacity at Maheshwaram by 1x1500 MVA, 765/400 kV ICT is required as existing ICTs (2x1500 MVA) at Maheshwaram (GIS) are over loaded and 'N-1' criterion is not getting satisfied. Additionally, as per the studies carried out as part of the Rolling Plan exercise for the year 2026-27, under N-1 contingency of one ICT, loading on the other is around 114% of the rating and therefore augmentation by 1x1500 MVA, 765/400 kV ICT (3rd) at Maheshwaram is required.

Accordingly, augmentation of transformation capacity at Maheshwaram (PG) by 1x1500 MVA (3rd) for improving reliability and meeting the peak demand of Telangana was discussed and agreed in the 14th CMETS-SR meeting held on 26.12.2022.

3.1.2 After detailed deliberations, augmentation of transformation capacity by 1x1500 MVA (3rd), 765/400 kV ICT at Maheshwaram (PG) substation in Telangana was agreed to be implemented under RTM route by POWERGRID.

3.1.3 Summary of the scheme is given below:

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Augmentation of transformation capacity by 1x1500 MVA, 765/400 kV ICT (3 rd) at Maheshwaram (PG) substation in Telangana Implementation timeframe: 21 months from the date of allocation	123.12	Approved to be implemented under RTM route by POWERGRID.

3.1.4 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity / Route length
1.	Augmentation by 1x1500 MVA, 765/400 kV ICT at Maheshwaram(PG) S/s	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA ICT – 1 No. • 765 kV ICT bays – 1 No. (GIS) • 400 kV ICT bays – 1 No. (GIS) • 400 kV GIS duct along with associated support structure – 710 m (total length for three phases) • 765 kV GIS duct along with associated support structure – 800 m (total length for three phases)

3.2 Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW)

3.2.1 Transmission system for evacuation of 15 GW power from Khavda RE Park has already been evolved in 3 phases (Phase-I: 3 GW, Phase-II: 5 GW & Phase-III: 7 GW). Phase I and Phase II transmission schemes are under construction and Phase III transmission scheme is under bidding.

3.2.2 Stage-II connectivity applications for 18.605 GW (KPS-I: 9 GW, KPS-II: 3.755 GW & KPS-III: 5.85 GW) have already been received till January, 2023. Considering the rapid pace of connectivity applications being received in Khavda area and request from GPCL vide e-mail dated 23.12.2022 to consider 30 GW RE potential in Khavda for planning the power evacuation system, transmission system for balance 15 GW Khavda REZ has now been planned in two phases (Phase-IV: 7 GW AC & Phase-V: 8 GW HVDC). The present scheme has been planned to enable the evacuation of additional 7 GW RE power from Khavda RE park under Phase IV.

3.2.3 Member Secretary, NCT, stated that the modified scheme as per deliberations in 12th NCT meeting held on 28.03.2023 and meetings held on 20.04.2023 & 09.05.2023 amongst CEA, CTUIL & GRID-INDIA, had been sent by CTUIL to WRPC vide letter dated 12.05.2023 for views/observations within 10 days. However, no views were received from WRPC in this regard.

3.2.4 After detailed deliberations, the transmission scheme was agreed to be implemented subject to views of WRPC. Subsequently, in the 47th WRPC meeting held on 15.06.2023, the subject scheme was deliberated. However, minutes of WRPC meeting are yet to be issued. Details of the packages formulated for implementation of the scheme is given below:

Sl. No.	Name of the scheme	Implementation mode
1.	Part A	TBCB
2.	Part B	TBCB
3.	Part C	TBCB
4.	Part D	TBCB
5.	Part E1	RTM
6.	Part E2	TBCB
7.	Part E3	RTM
8.	Part E4	RTM

Package wise details of the scheme are given below:

3.2.5 Phase-IV: Part A - Summary

Sl. No.	Name of the transmission scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda RE park of Gujarat under Phase-IV (7 GW): Part A Tentative Implementation timeframe: 24 months from SPV transfer and matching with Parts B, C & D of Khavda Ph-IV (7 GW)	4091	Recommended to be implemented through TBCB route.

3.2.6 Detailed scope of Part A Scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
	Creation of 765 kV bus section-II at KPS3 (GIS) along with 765 kV Bus Sectionaliser & 1x330 MVAR, 765 kV Bus Reactors on Bus Section-II Bus section – II shall be created at 765 kV & 400 kV level both with 3x1500 MVA, 765/400 kV ICTs at Bus Section-II	Bus Section-II at KPS3 765 kV Bus Sectionaliser – 1 set 1500 MVA, 765/400 kV ICT – 3 Nos. 330 MVAR, 765 kV Bus Reactor – 1 No. 765 kV reactor bay – 1 No. 765 kV ICT bays – 3 Nos.
	Creation of 400 kV bus Section-II at KPS3 (GIS) along with 400 kV Bus Sectionaliser & 1x125 MVAR, 420 kV Bus Reactors on Bus Section-II and 3 Nos. 400 kV bays at Bus Section-II for RE interconnection	Bus Section-II at KPS3 400 kV Bus Sectionaliser – 1 set 125 MVAR, 420 kV Bus Reactors – 1 No.

I/28785/2023

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
		400 kV reactor bay – 1 No. 400 kV ICT bays – 3 Nos. (for ICTs at Sl. 1 above) 400 kV line bays – 3 Nos. (for RE interconnection)
	KPS3 (GIS) – Lakadia (AIS) 765 kV D/C line	Route length: 185 km
	2 Nos. of 765 kV line bays each at KPS3 (GIS) & Lakadia (AIS) for KPS3 (GIS) – Lakadia (AIS) 765 kV D/C line	<ul style="list-style-type: none"> • 765 kV line bays (GIS) – 2 Nos. (at KPS3 end Bus section-II) • 765 kV line bays (AIS) – 2 Nos. (at Lakadia end)
	±300 MVAR STATCOM with 1x125 MVAR MSC, 2x125 MVAR MSR at KPS3 400 kV Bus section-II	<ul style="list-style-type: none"> • ±300 MVAR STATCOM (with 1x125 MVAR MSC, 2x125 MVAR MSR) • 400 kV bay – 1 No.
	KPS1 (GIS)– Bhuj PS 765 kV 2 nd D/C line	<ul style="list-style-type: none"> • Route length: 110 km
	2 Nos. of 765 kV line bays each at KPS1 (GIS) & Bhuj PS for KPS1 (GIS) – Bhuj PS 765 kV D/C line	<ul style="list-style-type: none"> • 765 kV line bays (GIS) – 2 Nos. (at KPS1 end Bus section-II) • 765 kV line bays (AIS) – 2 Nos. (at Bhuj end)
	330 MVAR switchable line reactors at KPS3 end of KPS3 (GIS) – Lakadia 765 kV D/C line (with NGR bypass arrangement)	<ul style="list-style-type: none"> • 330 MVAR, 765 kV switchable line reactor- 2 Nos. • Switching equipment for 765 kV line reactor- 2 Nos. • 1x110 MVAR spare switchable reactor unit at KPS3 (GIS) end

Note:

- i. Bay(s) required for completion of diameter (GIS) in one-and-half breaker scheme, shall also be executed by the TSP.
- ii. TSP of KPS3 shall provide space for work envisaged at Sl. 1, 2, 4, 5 & 8.
- iii. The TSP of the present scheme shall arrange for additional land for installation of STATCOM (with MSC/MSR) as specified at Sl. No. 5 at KPS3 and TSP of KPS3 shall provide space for 1 No. 400 kV bay for termination of STATCOM.
- iv. TSP of KPS1 and Bhuj PS shall provide space for work envisaged at Sl. No. 7.
- v. The TSP of the present scheme shall arrange for additional land adjoining Lakadia S/s for creation of 2 Nos. 765 kV diameter consisting of 1 main bay & 1 Tie bay (for each diameter)

in one-and-half breaker AIS scheme, towards implementation of 2 Nos. 765 kV line bays at Lakadia S/s (at Sl. No. 4) associated with KPS3 – Lakadia 765 kV D/c line and the same shall be extendable in future for integration of 2nd main bay (future line with switchable line reactor) for diameter completion.

- vi. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- vii. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.2.7 Phase-IV: Part B - Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part B Tentative Implementation timeframe: 24 months from SPV transfer and matching with Parts A, C & D of Khavda Ph-IV (7 GW)	4,766	Recommended to be implemented through TBCB route.

3.2.8 Detailed scope of Part B Scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1	Establishment of 2x1500 MVA, 765/400 kV & 2x500 MVA, 400/220 kV GIS S/s at a suitable location South of Olpad (between Olpad and Ichhapore) with 2x330 MVAR, 765 kV & 1x125 MVAR, 420 kV bus reactors Future Provisions: Space for <ul style="list-style-type: none"> ➤ 765/400 kV ICT along with bays- 4 Nos. ➤ 765 kV line bays along with switchable line reactors – 8 Nos. ➤ 765 kV Bus Reactor along with bay: 	765/400 kV, 1x1500 MVA ICT-2 Nos. (7x500 MVA single phase units including one spare unit) 400/220 kV, 500 MVA ICT – 2 Nos. 765 kV ICT bays- 2 Nos. 400 kV ICT bays- 4 Nos. 220 kV ICT bays- 2 Nos. 220 kV BC bay – 1 No. 330 MVAR, 765 kV bus

I/28785/2023

	<p>2 Nos.</p> <ul style="list-style-type: none"> ➤ 765 kV Sectionaliser bay: 1 - set ➤ 400 kV line bays along with switchable line reactor – 8 Nos. ➤ 400/220 kV ICT along with bays - 8 Nos. ➤ 420 kV Bus Reactor along with bay: 3 Nos. ➤ 400 kV Sectionalization bay: 1- set ➤ 220 kV line bays: 18 Nos. ➤ 220 kV Sectionalization bay: 1 set ➤ 220 kV BC: 1 Nos. ➤ Establishment of 2500 MW, \pm 500 kV South Olpad (HVDC) [VSC] terminal station (2x1250 MW) 	<p>reactor-2 Nos.</p> <p>125 MVAR, 420 kV bus reactor-1 No.</p> <p>765 kV reactor bay- 2 Nos.</p> <p>765 kV line bay- 4 Nos.</p> <p>400 kV reactor bay- 1 No.</p> <p>400 kV line bay- 4 Nos.</p> <p>110 MVAR, 765 kV, 1-ph reactor (spare unit for line/bus reactor)-1 No.</p>
2	Vadodara (GIS) –South Olpad (GIS) 765 kV D/C line	Route length: 140 km
3	240 MVAR switchable line reactors on each ckt at Vadodara(GIS) end of Vadodara(GIS) –South Olpad (GIS) 765 kV D/C line (with NGR bypass arrangement)	<ul style="list-style-type: none"> • 240 MVAR, 765 kV switchable line reactor- 2 Nos. • Switching equipment for 765 kV line reactor- 2 Nos. • 1x80 MVAR spare bus reactor available at Vadodara (GIS) to be used as spare
4	2 Nos. of 765 kV line bays at Vadodara (GIS) for Vadodara(GIS) – South Olpad (GIS) 765 kV D/C line	<ul style="list-style-type: none"> • 765 kV line bays (GIS) – 2 Nos. (at Vadodara end)
5	LILO of Gandhar – Hazira 400 kV D/c line at South Olpad (GIS) using twin HTLS conductor with minimum capacity of 1700 MVA per ckt at nominal voltage	LILO route length ~ 10 km.
6	Ahmedabad – South Olpad (GIS) 765 kV D/c line	Route length: 250 km
7	240 MVAR switchable line reactors on each ckt at Ahmedabad & South Olpad (GIS) end of Ahmedabad – South Olpad (GIS) 765 kV D/c line (with NGR bypass arrangement)	<ul style="list-style-type: none"> • 240 MVAR, 765 kV switchable line reactor- 4 Nos. [2 for Ahmedabad end and 2 for South Olpad (GIS) end] • Switching equipment for 765 kV line reactor- 4 Nos. [2 for Ahmedabad end and 2 for South Olpad (GIS) end] • 1x80 MVAR, 765 kV 1-ph spare line reactor – 1 No. (for South Olpad end)

I/28785/2023

		<ul style="list-style-type: none"> 1x80 MVAR, 765 kV 1-ph spare line reactor being implemented for Lakadia – Ahmedabad line (under Khavda Ph-II Part B scheme) at Ahmedabad S/s to be used as spare
8	2 Nos. of 765 kV line bays at Ahmedabad S/s for Ahmedabad – South Olpad (GIS) 765 kV D/c line	<ul style="list-style-type: none"> 765 kV line bays (AIS) – 2 Nos. (at Ahmedabad end)

Note:

- TSP of Vadodara S/s shall provide space for work envisaged at Sl. No. 3 & 4 given above
- TSP of Ahmedabad S/s shall provide space for work envisaged at Sl. No. 7 & 8 given above
- The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.2.9 Phase-IV: Part C - Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part C Tentative Implementation timeframe: 24 months from SPV transfer and matching with Parts A, B & D of Khavda Ph-IV (7 GW)	5,340	Recommended to be implemented through TBCB route.

3.2.10 Detailed scope of Part C Scheme is given below:

S l o o	Scope of the Transmission Scheme	Capacity / Route length
1	Establishment of 4x1500 MVA, 765/400 kV & 2x500 MVA, 400/220 kV Boisar-II (GIS) S/s with 2x330 MVAR, 765 kV bus reactors and 2x125 MVAR, 420 kV bus	765/400 kV, 1500 MVA ICT- 4 Nos. (13x500 MVA single phase units)

I/28785/2023

S I N O	Scope of the Transmission Scheme	Capacity / Route length
	<p>reactors.</p> <p>(2x1500 MVA, 765/400 kV ICTs shall be on each 400 kV section and 2x500 MVA, 400/220 kV ICTs shall be on 400 kV Bus Section-II. 2x125 MVAR Bus reactors shall be such that one bus reactor is placed on each 400 kV bus section. 400 kV Bus Sectionalizer to be kept under normally OPEN condition)</p> <p>Future Provisions:</p> <p>Space for</p> <ul style="list-style-type: none"> ➤ 765/400 kV ICT along with bays- 2 No. ➤ 765 kV line bays along with switchable line reactors – 8 Nos. ➤ 765 kV Bus Reactor along with bay: 2 No. ➤ 765 kV Sectionalizer bay: 1 - set ➤ 400 kV line bays along with switchable line reactor – 8 Nos. ➤ 400/220 kV ICT along with bays - 6 Nos. ➤ 420 kV Bus Reactor along with bay: 2 No. ➤ 220 kV line bays: 12 Nos. ➤ 220 kV Sectionalization bay: 1 set ➤ 220 kV BC: 1 No. 	<p>including one spare unit)</p> <p>400/220 kV, 500 MVA ICT – 2 Nos.</p> <p>765 kV ICT bays- 4 Nos.</p> <p>400 kV ICT bays- 6 Nos. (2 Nos. on Bus Section-I and 4 Nos. on Bus Section-II)</p> <p>400 kV Bus Sectionalizer-1 set</p> <p>220 kV ICT bays- 2 Nos.</p> <p>220 kV BC bay – 1 No.</p> <p>330 MVAR, 765 kV bus reactor-2 Nos.</p> <p>125 MVAR, 420 kV bus reactor-2 Nos.</p> <p>765 kV reactor bays- 2 Nos.</p> <p>765 kV line bays- 6 Nos.</p> <p>400 kV reactor bays- 2 Nos. (one on each bus section)</p> <p>400 kV line bay- 6 Nos. (4 Nos. on bus Section-I and 2 Nos. on bus Section-II)</p>

I/28785/2023

S I N O	Scope of the Transmission Scheme	Capacity / Route length
		110 MVAR, 765 kV, 1-ph reactor (spare unit for line/bus reactor)-1 No.
	South Olpad (GIS) – Boisar-II (GIS) 765 kV D/c line	Route length: 225 km
	2 Nos. of 765 kV line bays at South Olpad (GIS) for termination of South Olpad (GIS) – Boisar-II (GIS) 765 kV D/c line	765 kV line bays (GIS) – 2 Nos. (for South Olpad end)
	240 MVAR switchable line reactors on each ckt at South Olpad (GIS) & Boisar-II (GIS) end of South Olpad (GIS) – Boisar-II (GIS) 765 kV D/c line (with NGR bypass arrangement)	<ul style="list-style-type: none"> • 240 MVAR, 765 kV switchable line reactor- 4 [2 for Boisar-II (GIS) and 2 for South Olpad (GIS)] • Switching equipment for 765 kV line reactor- 4 (2 for Boisar-II (GIS) and 2 for South Olpad (GIS)) • 1x80 MVAR, 765 kV 1-ph spare line reactor – 1 No. (for Boisar-II end) • 1x80 MVAR, 765 kV 1-ph spare line reactor proposed for Ahmedabad – South Olpad (GIS) 765 kV line (under Khavda Ph-IV Part B scheme) at South Olpad (GIS) S/s to be used as spare
	LILO of Navsari (New) – Padghe (PG) 765 kV D/c line at Boisar-II	LILO route length: 25 km.
	Boisar-II (Sec-II) – Velgaon (MH) 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent) line	Route length: 10 km.
	2 Nos. of 400 kV line bays at Velgaon (MH) for termination of Boisar-II – Velgaon (MH) 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent) line	400 kV line bays (GIS) – 2 Nos. [for Velgaon (MH) end]
	LILO of Babhaleswar – Padghe (M) 400 kV D/c line at Boisar-II (Sec-I) using twin HTLS conductor with a minimum capacity of 1700 MVA per ckt at	LILO route length: 65 km.

I/28785/2023

Sl. No.	Scope of the Transmission Scheme	Capacity / Route length
	nominal voltage	
	80 MVAR switchable line reactors at Bosar-II end of Boisar-II – Babhaleswar 400 kV D/c line (with NGR bypass arrangement) formed after above LILO	• 80 MVAR, 420 kV switchable line reactor including switching equipment- 2 Nos.
	±200 MVAR STATCOM with 2x125 MVAR MSC, 1x125 MVAR MSR at 400 kV bus section-I of Boisar-II and ±200 MVAR STATCOM with 2x125 MVAR MSC, 1x125 MVAR MSR at 400 kV bus section-II of Boisar-II	<ul style="list-style-type: none"> • ±200 MVAR STATCOM (with MSC/MSR) on 400 kV Section-I • 400 kV bay – 1 No. on Section-I • ±200 MVAR STATCOM (with MSC/MSR) on 400 kV section-II • 400 kV bay – 1 No. on Section-II
	± 300 MVAR STATCOM with 3x125 MVAR MSC, 1x125 MVAR MSR at 400 kV level of Navsari (New)(PG) S/s with 1 No. of 400 kV bay (GIS)	<ul style="list-style-type: none"> • ±300 MVAR STATCOM (with MSC/MSR) • 400 kV bay – 1 No.

Note:

- i. Bay(s) required for completion of diameter (GIS) in one-and-half breaker scheme shall also be executed by the TSP.
- ii. MSETCL shall carry out reconductoring of the balance portion of Padghe (M) – Boisar-II 400 kV D/c line (i.e. from LILO point upto Padghe(M)) and shall also carry out corresponding upgradation of 400 kV bays at Padghe (M) as may be required in matching time-frame of the LILO line. MSETCL has confirmed the maximum capacity of the line which can be achieved after reconductoring considering clearances in existing towers of Babhaleswar – Padghe (M) 400 kV D/c line as 1700 MVA per ckt.
- iii. MSETCL shall implement the LILO of both circuits of Boisar-II – Velgaon 220 kV D/c line at Boisar-II (ISTS) S/s along with 4 Nos. 220 kV GIS bays at Boisar-II in matching time-frame of Boisar-II (ISTS) S/s.
- iv. TSP of South Olpad (GIS) S/s shall provide space for work envisaged at Sl. No. 3 & 4.
- v. MSETCL shall provide space for the work envisaged at Sl. No. 7 at Velgaon S/s.
- vi. TSP of the subject scheme shall implement Inter-tripping scheme on South Olpad (GIS) – Boisar-II (GIS) 765 kV D/c line (for tripping of the switchable line reactor at either end along with the main line breaker).
- vii. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- viii. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.2.11 Phase-IV: Part D - Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	<p>Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part D</p> <p>Tentative Implementation timeframe: 24 months from SPV transfer and matching with Parts A, B & C of Khavda Ph-IV (7 GW)</p>	3,455	Recommended to be implemented under TBCB route.

3.2.12 Detailed scope of Part D Scheme is given below:

S l o o f	Scope of the Transmission Scheme	Capacity/ Route length
1	<p>Establishment of 2x1500 MVA, 765/400 kV & 3x500 MVA, 400/220 kV Pune-III (GIS) S/s with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor.</p> <p>Future Provisions:</p> <p>Space for</p> <ul style="list-style-type: none"> ➤ 765/400 kV ICT along with bays- 4 No. ➤ 765 kV line bays along with switchable line reactors – 8 Nos. ➤ 765 kV Bus Reactor along with bay: 2 No. ➤ 765 kV Sectionalizer bay: 1 -set ➤ 400 kV line bays along with switchable line reactor – 12 Nos. ➤ 400/220 kV ICT along with bays -5 Nos. ➤ 400 kV Bus Reactor along with bay: 2 No. ➤ 400 kV Sectionalization bay: 1 set ➤ 220 kV line bays: 12 Nos. ➤ 220 kV Sectionalization bay: 1 set ➤ 220 kV BC: 1 No. 	<p>765/400 kV, 1500 MVA ICT-2 Nos. (7x500 MVA including one spare unit)</p> <p>400/220 kV, 500 MVA ICT – 3 Nos.</p> <p>765 kV ICT bays- 2 Nos.</p> <p>400 kV ICT bays- 5 Nos.</p> <p>220 kV ICT bays- 3 Nos.</p> <p>220 kV BC bay – 1 No.</p> <p>330 MVAR, 765 kV bus reactor-2 Nos.</p> <p>125 MVAR, 420 kV bus reactor-2 Nos.</p> <p>765 kV reactor bay- 2 Nos.</p>

I/28785/2023

S I N O	Scope of the Transmission Scheme	Capacity/ Route length
	<ul style="list-style-type: none"> ➤ STATCOM (± 300 MVAR) along with MSC (3x125 MVAR) & MSR (1x125 MVAR): alongwith 1 No. 400 kV bay: 1 No. ➤ 80 MVAR, 765 kV, 1-ph reactor (spare unit for line reactor)-1 No. 	<p>765 kV line bay- 6 Nos.</p> <p>400 kV reactor bay- 2 Nos.</p> <p>400 kV line bay- 2 Nos.</p> <p>110 MVAR, 765 kV, 1-ph reactor (spare unit for line/ bus reactor)-1 No.</p>
	Boisar-II – Pune-III 765 kV D/c line	Route length: 200 km
	330 MVAR switchable line reactors at Pune-III end of Boisar-II – Pune-III 765 kV D/c line (with NGR bypass arrangement).	<ul style="list-style-type: none"> • 330 MVAR, 765 kV switchable line reactor- 2 Nos. • Switching equipment for 765 kV line reactor- 2 Nos. • 1x110 MVAR spare bus reactor available at Pune-III (GIS) to be used as spare
	42 Nos. of 765 kV line bays at Boisar-II for termination of Boisar-II – Pune-III 765 kV D/c line	<ul style="list-style-type: none"> • 765 kV line bays (GIS) – 2 Nos. (for Boisar-II end)
	LILO of Narendra (New) – Pune (GIS) 765 kV D/c line at Pune-III	LILO route length: 10 km.
	330 MVAR switchable line reactors at Pune-III end of Narendra (New) – Pune-III(GIS) 765 kV D/c line (with NGR bypass arrangement).	<ul style="list-style-type: none"> • 330 MVAR, 765 kV switchable line reactor- 2. • Switching equipment for 765 kV line reactor- 2 • 1x110 MVAR spare bus reactor (1-ph) available at Pune-III (GIS) to be used as spare
	LILO of Hinjewadi-Koyna 400 kV S/c line at Pune-III (GIS) S/s	LILO route length: 40 km.
	80 MVAR, 420 kV switchable Line Reactors on each ckt at Pune-III (GIS) end of Pune-III (GIS) – Koyna 400 kV line formed after above LILO (with	<ul style="list-style-type: none"> • 80 MVAR, 420 kV switchable line reactor along with switching equipment- 2 Nos.

I/28785/2023

S I N O	Scope of the Transmission Scheme	Capacity/ Route length
	NGR bypass arrangement).	

Note:

- i. Bay(s) required for completion of diameter (GIS) in one-and-half breaker scheme, shall also be executed by the TSP.
- ii. Logic for Inter-tripping scheme for tripping of the 330 MVAR switchable line reactor along with main line breaker at Pune (GIS) end of Pune (GIS) – Narendra (New) 765 kV D/c line shall be implemented by the owner of the line after LILO of Narendra (New) – Pune (GIS) 765 kV D/c line at Pune-III
- iii. MSETCL shall implement the following 220 kV lines along with 5 Nos. 220 kV GIS bays at Pune-III (GIS) S/s in matching time-frame of Pune-III S/s:
 - a. LILO of both circuits of Jejuri-Phursungi 220 kV D/c line at Pune-III S/s with HTLS conductor (twin zebra equivalent) along with reconductoring of balance line section viz. LILO point to Phursungi and LILO points to Jejuri with HTLS conductor (twin zebra equivalent)
 - b. Nanded City - Pune PG III 220 kV S/c line with HTLS conductor (twin zebra equivalent)
- iv. TSP of Boisar-II S/s shall provide space for work envisaged at Sl. No. 4.
- v. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- vi. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.2.13 Phase-IV: Part E1 - Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E1 Implementation timeframe: 24 months from the date of allocation	216	Approved to be implemented under RTM by Adani Transmission Limited (the TSP implementing KPS 1)

I/28785/2023

3.2.14 Detailed scope of Part E1 Scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1	Augmentation of transformation capacity at KPS1 (GIS) by 1x1500 MVA, 765/400 kV ICT (8 th) on bus section-I	1500 MVA, 765/400 kV ICT – 1 No. 765 kV bays – 2 Nos. on bus Section-I (including 1 No. bay for Dia completion) 400 kV bays – 2 Nos. on bus section-I (including 1 No. bay for Dia completion)

Note:

- i. The TSP shall implement one complete diameter consisting of 2 main bays & 1 Tie bay at both 765 kV & 400 kV levels of KPS1 (GIS) for completion of diameter (GIS) in one-and-half breaker scheme.
- ii. Further, TSP of KPS1 shall provide space to carry out the above augmentation work.

3.2.15 Phase-IV: Part E2 - Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E2 Tentative Implementation timeframe: 21 months from SPV transfer	697	Recommended to be implemented under TBCB route.

3.2.16 Detailed scope of Part E2 Scheme is given below:

S I N O	Scope of the Transmission Scheme	Capacity/ Route length
	Augmentation of transformation capacity at KPS2 (GIS) by 2x1500 MVA, 765/400 kV ICT on Bus section-I (5 th & 6 th) & 2x1500 MVA, 765/400 kV ICT on Bus section-II (7 th & 8 th) & 2 Nos. 400 kV bays at Bus Section-I for RE interconnection and 3 Nos. 400 kV bays at Bus Section-II for RE interconnection	1500 MVA, 765/400 kV ICT – 4 Nos. 765 kV bays – 4 Nos. [2 Nos. complete Dia for 2 ICTs (one on each bus section) and balance 2 ICTs to be terminated in spare bays (one on each section)] 400 kV bays– 10 Nos. [4 Nos. ICT bays (2 on each section) & 5 Nos. line bays (2 on bus section-I & 3 on bus section-II) along with 1 No. bay on Bus Section-II for Dia completion]

Note:

- i. The TSP shall implement two complete diameters (1 on Bus Section-I & 1 on bus section-II) at 765 kV level of KPS2 (GIS) consisting of 2 Main Bays & 1 Tie Bay required for completion of diameter (GIS) in one-and-half breaker scheme.
- ii. The TSP shall implement five complete diameters (2 on Bus Section-I & 3 on Bus Section-II) at 400 kV level of KPS2 (GIS) consisting of 2 Main Bays & 1 Tie bay required for completion of diameter (GIS) in one-and-half breaker scheme.
- iii. Further, TSP of KPS2 shall provide space to carry out the above augmentation work.
- iv. 2 Nos. 400 kV bays at Bus Section-I for RE interconnection and 1 No. 400 kV bays at Bus Section-II for RE interconnection are already under implementation at KPS2.
- v. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.2.17 Phase-IV: Part E3 - Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E3	216	Approved to be implemented under RTM by the TSP implementing KPS 3.

I/28785/2023

	Implementation timeframe: 24 months from date of allocation		
--	---	--	--

3.2.18 Detailed scope of Part E3 Scheme is given below:

No.	Scope of the Transmission Scheme	Capacity/ Route length
	Augmentation of transformation capacity at KPS3 (GIS) by 1x1500 MVA, 765/400 kV ICT (7 th) on Bus section-I	1500 MVA, 765/400 kV ICT – 1 No. 765 kV bays – 2 Nos. on Bus Section-I (including 1 No. bay for Dia completion) 400 kV bays – 2 Nos. on Bus section-I (including 1 No. bay for Dia completion)

Note:

1. The TSP shall implement one complete diameter consisting of 2 Main Bays & 1 Tie Bay at both 765 kV & 400 kV levels of KPS3 (GIS) required for completion of diameter (GIS) in one-and-half breaker scheme.
2. Further, TSP of KPS3 shall provide space to carry out above augmentation work.

3.2.19 Phase-IV: Part E4 - Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E4 Implementation timeframe: 24 months from date of allocation	235	Approved to be implemented under RTM route by POWERGRID

3.2.20 Detailed scope of Part E4 Scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1.	Augmentation of transformation capacity at Padghe (PG) (GIS) by 1x1500 MVA,	1500 MVA, 765/400 kV ICT – 1

I/28785/2023

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
	765/400 kV ICT (4 th)	No. 765 kV bays – 2 Nos. (including 1 No. bay for Dia completion) 400 kV bays – 2 Nos. (including 1 No. bay for Dia completion) 765 kV GIB Duct (single phase) – 510 m (approx.) for three phases 400 kV GIB Duct (single phase) – 500 m (approx.) for three phases

Note:

- i. POWERGRID shall implement one complete diameter consisting of 2 main bays & 1 Tie bay at both at 765 kV & 400 kV levels Padghe (PG)(GIS) required for completion of diameter (GIS) in one-and-half breaker scheme.

3.3 Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW)

3.3.1 The Phase V (HVDC) transmission scheme has been planned for evacuation of additional 8 GW RE power from Khavda RE park.

3.3.2 Member Secretary, NCT, stated that the modified scheme as per deliberations in 12th NCT meeting held on 28.03.2023 and meetings held on 20.04.2023 & 09.05.2023 amongst CEA, CTUIL & GRID-INDIA had been by CTUIL to WRPC vide letter dated 12.05.2023 for views/observations within 10 days. However, no views were received from WRPC in this regard.

3.3.3 After detailed deliberations, the following was agreed w.r.t. the transmission schemes, subject to views/observations of WRPC. Subsequently, in the 47th WRPC meeting held on 15.06.2023, the subject scheme was deliberated. Minutes of WRPC meeting is to be issued.

Sl. No.	Name of the scheme	Mode of implementation
1.	Part A	TBCB

I/28785/2023

2.	Part A1	RTM
3.	Part B	To be reviewed.
4.	Part C	TBCB

3.3.4 Phase-V: Part A- Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW): Part A Tentative Implementation timeframe: 48 months for Bipole-1 (2x1500 MW) and 54 months for Bipole-2 (2x1500 MW)	24,819	Recommended to be implemented through TBCB route.

3.3.5 Detailed scope of Part A Scheme is given below:

Sl. No.	Scope	Capacity/ Route length
1.	Establishment of 6000 MW, \pm 800 kV KPS2 (HVDC) [LCC] terminal station (4x1500 MW) along with associated interconnections with 400 kV HVAC Switchyard*.	6000 MW, \pm 800 kV KPS2 (HVDC) [LCC] Terminal station
2.	Establishment of 6000 MW, \pm 800 kV Nagpur (HVDC) [LCC] terminal station (4x1500 MW) along with associated interconnections with 400 kV HVAC Switchyard*	6000 MW, \pm 800 kV Nagpur (HVDC) [LCC] terminal station
3.	\pm 800 kV HVDC Bipole line (Hexa lapwing) between KPS2 (HVDC) and Nagpur (HVDC) (1200 km) (with Dedicated Metallic Return) (capable to evacuate 6000 MW with overload as specified)	Route length: 1200 km.
4.	Establishment of 6x1500 MVA, 765/400 kV ICTs at Nagpur-S/s along with 2x330 MVAR (765 kV) & 2x125 MVAR, 420 kV bus reactors along with associated interconnections with HVDC Switchyard*. The 400 kV bus shall be established in 2 sections through 1 set of 400 kV bus sectionaliser so that 3x1500 MVA ICTs are placed in each section. The bus sectionaliser shall be normally closed and may be opened based on Grid	<ul style="list-style-type: none"> ○ 765/400 kV, 1500 MVA ICT-6 (3 on each 400 kV section) (19 single phase units including one spare unit) ○ 765 kV ICT bays- 6 Nos. ○ 400 kV ICT bays- 6 Nos. (3 on each section) ○ 330 MVAR 765 kV bus reactor-2 Nos. ○ 125 MVAR 420 kV bus

I/28785/2023

Sl. No.	Scope	Capacity/ Route length
	<p>requirement.</p> <p>Future Provisions at Nagpur:</p> <p>Space for:</p> <ul style="list-style-type: none"> ○ 765/400 kV, 1500 MVA ICT- 4 (1 on 400 kV bus section-II & 3 on future 400 kV bus section-III) ○ 765 kV line bays along with switchable line reactors – 10 Nos. ○ 765 kV Bus Reactor along with bay: 2 No. ○ 765 kV Sectionalizer bay: 1 -set ○ 400 kV line bays along with switchable line reactor – 12 Nos. ○ 400 kV Bus sectionaliser- 1 Set ○ 400/220 kV ICT along with bays -9 Nos. (3 Nos. on 400 kV bus sections II & 6 Nos. on future bus section-III) ○ 400 kV Bus Reactor along with bay: 4 No. (1 each on 400 kV bus sections I & II and 2 on future 400 kV bus section-III) ○ 220 kV line bays: 16 Nos. ○ 220 kV Sectionalization bay: 2 set ○ 220 kV BC & TBC: 3 Nos. ○ 80 MVAR, 765 kV, 1-ph reactor (spare unit for line reactor)-1 	<ul style="list-style-type: none"> reactor-2 Nos. (one on each section) ○ 765 kV reactor bay- 2 Nos. ○ 765 kV line bay- 4 Nos. ○ 400 kV reactor bay- 2 Nos. (one on each section) ○ 400 kV Bus sectionaliser - 1 Set ○ 110 MVAR, 765 kV, 1-ph reactor (spare unit for line/bus reactor) - 1 No.
5.	LILO of Wardha – Raipur 765 kV one D/c line (out of 2xD/c lines) at Nagpur	LILO route length: 30 km.
6.	Installation of 240 MVAR switchable line reactor at Nagpur end on each ckt of Nagpur – Raipur 765 kV D/c line	<ul style="list-style-type: none"> ● 240 MVAR, 765 kV switchable line reactors- 2 Nos. (at Nagpur end) ● Switching equipment for 765 kV line reactor- 2 Nos. (at Nagpur end) ● 80 MVAR, 765 kV, 1-ph reactor (spare unit for line reactor)-1 No.

* The 400 kV interconnections (along with all associated equipment/ bus extension, etc.) between HVDC & HVAC switchyards shall be implemented by the TSP

Note:

- i. The 2x1500 MW poles shall emanate from 400 kV bus section 1 of KPS2 and terminate at bus section 1 of Nagpur. Similarly, the other 2x1500 MW poles shall emanate from 400 kV bus section 2 of KPS2 and terminate at bus section 2 of Nagpur.

- ii. HVDC System will be designed considering 100% power reversal capability. The rated power transmission capacity as well as the rated transmission voltage shall be defined and guaranteed at the rectifier end of the AC yard.
- iii. TSP of KPS2 shall provide space for the establishment of the HVDC system as per above scope.
- iv. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- v. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.3.6 Phase-V: Part A1- Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW): Part A1 Implementation timeframe: Matching with implementation of Khavda Phase-V Part A scheme viz. Bipole-1 (2x1500 MW) ± 800 kV Nagpur (HVDC) [LCC] which is 48 months from SPV transfer.	21	Approved to be implemented under RTM by POWERGRID i.e. owner of Wardha S/s.

3.3.7 Detailed scope of Part A1 is given below:

Sl. No.	Scope	Capacity/ Route length
1.	Conversion of 330 MVAR Fixed LR at Wardha (on each ckt of Wardha – Raipur 765 kV D/c line being LILOed at Nagpur) into Bus Reactors at Wardha S/s	765 kV reactor bays- 2 Nos. & Conversion of 330 MVAR Fixed LR at Wardha (on each ckt of Wardha – Raipur 765 kV D/c line being LILOed at Nagpur) into Bus Reactors through creation of 2 new diameters and shifting of Reactors

Note:

- i. POWERGRID shall implement two new diameters consisting of 1 main bay & 1 Tie bay at 765 kV level of Wardha S/s required in one-and-half breaker AIS scheme for termination of 2 Nos. of 330 MVAR Bus reactors & the same shall be extended in future for integration of 2nd main bay (future line with switchable line reactor) for diameter completion.

3.3.8 **Phase-V: Part B:** Augmentation of transformation capacity at KPS2 (GIS) by 1x1500 MVA, 765/400 kV ICT on Bus Section I (9th) and at KPS 3 (GIS) by 1x1500 MVA, 765/400 kV ICT on Bus Section-II (8th)

It was deliberated that the above ICTs would be required in the matching timeframe of VSC based HVDC (Part C) and hence would be reviewed and taken up subsequently.

3.3.9 CTUIL had proposed ± 525 kV VSC based HVDC system. It was deliberated that ± 500 kV HVDC systems are already existing in the country and tested tower design for ± 500 kV systems are already available. In order to reduce the time involved in engineering and testing, it was opined that already proven design of ± 500 kV may be adopted in this case also. Hence, the rating of HVDC system was revised to ± 500 kV, 2500 MW.

3.3.10 Summary of Phase-V: Part C scheme is given below:

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW): Part C Tentative Implementation timeframe: 48 months from SPV transfer	12,000	Recommended to be implemented through TBCB route.

3.3.11 Detailed scope of Part C is given below:

Sl. No.	Scope	Capacity/ Route length
1.	Establishment of 2500 MW, ± 500 kV KPS3 (HVDC) [VSC] terminal station (2x1250 MW) at a suitable location near KPS3 substation with associated interconnections with 400 kV HVAC Switchyard*	2500 MW, ± 500 kV KPS3 (HVDC) [VSC] Terminal station
2.	Establishment of 2500 MW, ± 500 kV South Olpad (HVDC) [VSC] terminal station (2x1250 MW) along with associated interconnections with 400 kV HVAC Switchyard of South Olpad S/s*	2500 MW, ± 500 kV South Olpad (HVDC) [VSC] terminal station
3.	Establishment of KPS3 (HVDC) S/s along with 2x125 MVAR, 420 kV bus reactors along with associated interconnections with HVDC Switchyard*. The 400 kV bus shall be established in 2 sections through 1 set of 400 kV bus sectionaliser to be kept normally OPEN. 400/33 kV, 2x50 MVA transformers for	<ul style="list-style-type: none"> ○ 400/33 kV, 1x50 MVA ICT along with bays- 2 Nos. ○ 125 MVAR 420 kV bus reactor-2 Nos. (one on each section) ○ 400 kV reactor bay- 2 Nos. (one on each section)

I/28785/2023

Sl. No.	Scope	Capacity/ Route length
	<p>exclusively supplying auxiliary power to HVDC terminal. MVAR</p> <p style="text-align: center;">Future Provisions at KPS3 (HVDC) S/s</p> <p style="text-align: center;">Space for:</p> <ul style="list-style-type: none"> ○ 400 kV line bays – 6 Nos. (3 on each section) ○ 400 kV reactor bay- 2 Nos. (one on each section) 	<ul style="list-style-type: none"> ○ 400 kV Bus sectionaliser- 1 Set
4.	KPS3 – KPS3 (HVDC) 400 kV 2xD/c (Quad ACSR/AAAC/AL59 moose equivalent) line along with the line bays at both substations	<p>Route length- 2 km</p> <p>400 kV GIS line bays - 4 Nos. at KPS3 (2 Nos. on each bus section)</p> <p>400 kV GIS line bays - 4 Nos at KPS3 (HVDC) (2 Nos. on each bus section)</p>
5.	±500 kV HVDC Bipole line between KPS3 (HVDC) and South Olpad (HVDC) (with Dedicated Metallic Return) (capable to evacuate 2500 MW)	Route length: 600 km

* The 400 kV interconnections (along with all associated equipment/ bus extension, etc.) between HVDC & HVAC switchyards shall be implemented by the TSP

Note:

- i. The 1250 MW pole-1 shall emanate from 400 kV bus section 1 of KPS3 (HVDC) and terminate at South Olpad S/s. Similarly, the 1250 MW pole-2 shall emanate from 400 kV bus section 2 of KPS3 (HVDC) and terminate at South Olpad S/s.
- ii. HVDC System will be designed with 100% power reversal capability as well as black start, automatic grid restoration & dynamic reactive power support capability.
- iii. The rated power transmission capacity as well as the rated transmission voltage shall be defined and guaranteed at the rectifier end of the AC yard.
- iv. TSP of KPS3 shall provide space for scope at Sl. No. 4 as per the above scope
- v. TSP of South Olpad S/s shall provide space for scope at Sl. No. 2 as per above scope
- vi. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- vii. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

I/28785/2023

3.4 400 kV Western Region Network Expansion scheme in Kallam area of Maharashtra

3.4.1 Transmission System for evacuation of power from RE Projects in Osmanabad area (1 GW) in Maharashtra is presently under implementation by Kallam Transmission Ltd. (expected by Oct'23). Further, augmentation of transformation capacity at Kallam PS by 2x500 MVA, 400/220 kV ICTs (3rd& 4th) along with 220 kV bays for RE interconnection is also under implementation which shall enable injection of additional 1 GW at 220 kV level of Kallam PS.

Additional connectivity has also been granted to M/s Torrent at 400 kV level (1 No. bay) and hence there is a cumulative requirement of evacuation of about 3.25 GW (2 GW at 220 kV level and 1.25 GW at 400 kV level) from Kallam PS. The subject Transmission system shall enable evacuation of upto 3.25 GW power from Kallam PS.

3.4.2 CTUIL stated that generally a minimum implementation schedule of 24 months is specified for transmission schemes. However, as a special case, considering the small length of LILO line and no visible forest/wildlife involvement, reduced implementation time-frame of 18 months may be specified in this case in order to match the commissioning of transmission scheme and associated RE generation.

3.4.3 After detailed deliberations, it was decided that the transmission scheme Western Region Network Expansion scheme in Kallam area of Maharashtra, will be implemented under TBCB route with an implementation timeframe of 18 months.

3.4.4 Summary of the scheme is as given below:

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Western Region Network Expansion scheme in Kallam area of Maharashtra. Tentative Implementation timeframe: 18 months from SPV transfer	160	Approved to be implemented through TBCB route.

3.4.5 Detailed scope of the scheme is given below:

Scope of the Transmission Scheme	Capacity/ Route length
LILO of both circuits of Parli(M) – Karjat(M)/Lonikand-II (M) 400 kV D/c	LILO route length~ 15 km.

I/28785/2023

	line (twin moose) at Kallam PS	
	4 Nos. 400 kV line bays at Kallam PS for LILO of both circuits of Parli(M) – Karjat(M)/Lonikand-II(M) 400 kV D/c line (twin moose) at Kallam PS	400 kV line bays (AIS) – 4 Nos. (for Kallam PS end)
	63 MVAR, 420 kV switchable line reactor (with NGR bypassing arrangement) on each ckt at Kallam PS end of Karjat – Kallam 400 kV D/c line (~140km.)	63 MVAR, 420 kV switchable line reactor including Switching equipment - 2 Nos. (at Kallam end)

Note:

- i. TSP of Kallam PS (Kallam Transmission Ltd.) shall provide requisite space at Kallam PS for above scope of work
- ii. The 50 MVAR fixed line reactor on each ckt at Parli (M) end of Kallam – Parli (M) 400 kV D/c line shall be converted into switchable (with NGR bypass arrangement & provision of inter-tripping scheme to trip the line reactors along with the main line breakers) by MSETCL in matching time-frame of the above scheme. MSETCL vide email dated 08.06.2023 has informed that conversion of fixed 50 MVAR line reactor at 400 kV Parli (M) (Girwali) end into switchable reactor is feasible.
- iii. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- iv. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

I/28785/2023

3.5 Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex)

3.5.1 The transmission scheme was earlier proposed for evacuation of about 7.5 GW power from Jaisalmer/Barmer Complex. The scheme was deliberated in the 12th NCT meeting held on 24.03.23. In the meeting, various issues like system strength (SCR), requirement of Barmer-I PS as well as high angular separation in the proposed 765 kV Jalore-Mandsaur D/C (length 320 kms) inter-regional transmission line were raised. Subsequently, various joint study meetings were held for review and phasing of transmission scheme among CEA, CTUIL and GRID-INDIA and revised studies were carried out.

3.5.2 Accordingly, revised studies were carried out incorporating the increased electricity demand of Rajasthan as suggested by Grid-India, and it was observed that the transmission system was adequate for evacuation of about 5.5 GW RE power (solar) in summer & winter scenario.

3.5.3 The modified transmission scheme was discussed and agreed in the 65th NRPC meeting held on 21.04.23. The scheme was further agreed in the 46th WRPC meeting held on 03.02.23.

3.5.4 Further, transmission scheme for evacuation of power from Neemuch/Mandsaur 2 GW WEZ was proposed as transmission system in Western Region whereas creation of Mandsaur 765 kV S/s was envisaged as a part of Rajasthan REZ Ph-IV (Part-2) Scheme. As deliberated in the 12th NCT meeting, it was decided to combine the transmission scheme for Neemuch/Mandsaur with Rajasthan Ph-IV Part- C Scheme which involves the creation of 765 kV Mandsaur S/s.

3.5.5 GRID-INDIA requested to review the reactive compensation of Sirohi PS - Rishabdeo 765 kV D/c line (170 km) and Rishabdeo - Mandsaur 765 kV D/c (160 km) line as reactive compensation seemed to be on the higher side. CTUIL stated that with the proposed line length reactive compensation on Sirohi PS- Rishabdeo 765 kV D/c line is about 73% and Rishabdeo-Mandsaur 765 kV D/c is about 78%. CTUIL also mentioned that in view of high voltages in night off-peak scenario specially for RE evacuation lines, reactive compensation is to be kept adequate to address reactive management issues, however, it was observed that the reactive compensation on Rishabdeo-Mandsaur 765 kV D/c line is about 78% which has some scope for reduction. Grid-India stated that if possible, reactive compensation of Rishabdeo-Mandsaur 765 kV D/c line may be reduced. Hence, it was decided that 330 MVAR line reactor at Rishabdeo end on above line may be replaced with 240 MVAR reactor.

3.5.6 After detailed deliberations, the following was decided w.r.t. the transmission schemes:

Sl. No.	Scheme	Remarks
1.	Part A	TBCB
2.	Part B	TBCB

I/28785/2023

3.	Part C	Scheme of 2 GW Neemuch / Mandsaur to be merged with Part C. Combined scheme to be implemented under TBCB.
4.	Part D	TBCB
5.	Part E	TBCB
6.	Part F1	Part F1 and F2 to be combined.
7.	Part F2	Combined scheme (Part F i.e. Part F1+F2) to be implemented under TBCB.
8.	Part G	Deferred. To be taken up based on GIB clearance of dedicated transmission line associated with RE generation at Fatehgarh-II PS along with GIB clearance of Fatehgarh-II PS- Bhadla-III PS 400 kV D/C line
9.	Part H1	TBCB
10.	Part H2	RTM

3.5.7 Part A: Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part A Tentative Implementation timeframe: 24 months from SPV transfer	2,206	Recommended to be implemented through TBCB route.

3.5.8 Detailed scope of Part A scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1	Establishment of 4x1500 MVA, 765/400 kV & 5x500 MVA, 400/220 kV Fatehgarh-IV (Section-2) Pooling Station along with 2x240 MVAR (765 kV) Bus Reactor & 2x125 MVAR (420 kV) Bus Reactor [Future space provisions already approved at Fatehgarh-IV in 8 th NCT meeting dated 25.03.22 would be utilized for the present scheme]	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA ICT- 4 Nos. (13x500 MVA including one spare unit) • 765 kV ICT bays- 4 Nos. • 240 MVAR, 765 kV Bus Reactor- 2 Nos. (7x80 MVAR including one spare unit) • 765 kV Bus reactor bays-2 Nos. • 765 kV line bays - 4 Nos. [for LILO of Fatehgarh-III - Beawer 765 kV D/c (2nd) line at Fatehgarh-IV (Section-2) PS] • 400/220 kV, 500 MVA ICT -5 Nos. • 400 kV ICT bays- 9 Nos. • 400 kV line bays - 2 Nos. [For Fatehgarh-IV (Sec-2) - Bhinmal (PG) D/c line] • 125 MVAR, 420 kV Bus Reactor-2 Nos. • 400 kV Bus reactor bays- 2 Nos.

I/28785/2023

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
		<ul style="list-style-type: none"> • 400 kV Sectionalisation bay: 1 set • 220 kV ICT bays- 5 Nos. • 220 kV line bays: 6 Nos. (for RE connectivity) • 220 kV BC (2 Nos.) and 220 kV TBC (2 Nos.) • 220 kV Sectionalisation bay: 1 set
2	Fatehgarh-IV (Section-2) PS – Bhinmal (PG) 400 kV D/c line (Twin HTLS) along with 50 MVAR switchable line reactor on each ckt at each end	Route Length: 200 km <ul style="list-style-type: none"> • 50 MVAR, 420 kV switchable line reactors at Fatehgarh-IV (Section-2) PS – 2 Nos. • 50 MVAR, 420 kV, switchable line reactors at Bhinmal (PG) – 2 Nos. • Switching equipment for 420 kV, 50 MVAR switchable line reactors at Fatehgarh-IV (Section-2) PS – 2 Nos. • Switching equipment for 420 kV, 50 MVAR switchable line reactors at Bhinmal (PG) – 2 Nos.
3	LILO of both ckts of 765 kV Fatehgarh-III- Beawar D/c line (2nd) at Fatehgarh-IV (Section-2) PS along with 330 MVAR switchable line reactor at Fatehgarh-IV PS end of each ckt of 765 kV Fatehgarh-IV-Beawar D/c line (formed after LILO)	LILO length: 15 km <ul style="list-style-type: none"> • 330 MVAR, 765 kV switchable line reactors at Fatehgarh-IV (Section-2) PS – 2 Nos. • Switching equipment for 330 MVAR, 765 kV switchable line reactors at Fatehgarh-IV (Section-2) PS – 2 Nos. • 110 MVAR (765 kV) spare reactor single phase unit at Fatehgarh-IV (Section-2) PS end – 1 No.
4	2 Nos. of 400 kV line bays at Bhinmal (PG)	400 kV line bays - 2 Nos.

Note:

- i. Transmission system for evacuation of about 2 GW RE power from REZ in Rajasthan (20 GW) under Phase-III Part A1 at Fatehgarh-IV (Section-1) is under bidding.
- ii. Transmission system under Phase-IV (Part 2) is for evacuating 4-5 GW RE potential at Fatehgarh-IV (Section 2), which is utilising the future provision (approved in 8th NCT meeting dated 25.03.22) at Fatehgarh-IV approved under Phase-III scheme.
- iii. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey
- iv. POWERGRID to provide space for 2 Nos. of 400 kV line bays at Bhinmal (PG) along with the space for switchable line reactors without any cost implications.
- v. Implementation of A, B, C, D, E, F, H1, H2 packages shall be aligned
- vi. Switchable line reactors to be implemented with NGR bypass arrangement.
- vii. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

I/28785/2023

3.5.9 Part B: Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part B Tentative Implementation timeframe: 24 months from SPV transfer	3,279	Recommended to be implemented through TBCB route.

3.5.10 Detailed scope of Part B scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1	Establishment of 2x1500 MVA, 765/400 kV Substation at suitable location near Sirohi along with 2x240 MVAR (765 kV) & 2x125 MVAR (420 kV) Bus Reactor Future provisions: Space for <ul style="list-style-type: none"> • 765/400 kV ICT along with bays- 4 Nos. • 765 kV line bays along with switchable line reactors – 10 Nos. • 765 kV Bus Reactor along with bay: 1 Nos. • 400 kV line bays along with switchable line reactor –4 Nos. • 400 kV line bays –4 Nos. • 400 kV Bus Reactor along with bay: 1 No. • 400 kV Sectionalization bay: 2 sets • 400/220 kV ICT along with bay - 6 Nos. • 220 kV line bays -10 Nos. • 220 kV Sectionalization bay: 2 sets • 220 kV BC (3 Nos.) & TBC (3 Nos.) • STATCOM (2x±300 MVAR) along with MSC (4x125 MVAR) & MSR (2x125 MVAR) along with two number 400 kV bays. 	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA ICT- 2 Nos. (7x500 MVA including one spare unit) • 765 kV ICT bays-2 Nos. • 240 MVAR, 765 kV Bus Reactor-2 Nos. (7x80 MVAR including one spare unit) • 765 kV Bus reactor bays-2 Nos. • 765 kV line bays- 2 Nos. [for D/c line to Fatehgarh-IV (Section-2) PS] • 400 kV ICT bays- 2 Nos. • 400 kV line bays - 2 Nos. [for D/c line to Chittorgarh (PG) S/s] • 125 MVAR, 420 kV Bus Reactor-2 Nos. • 400 kV Bus reactor bays- 2 Nos.
2	Fatehgarh-IV (Section-2) PS – Sirohi PS 765 kV D/c line along with 240 MVAR switchable line reactor for each circuit at each end	Route Length – 240 km <ul style="list-style-type: none"> • 765 kV, 240 MVAR switchable line reactors at Fatehgarh-IV (Section-2) PS – 2 Nos. • 765 kV, 240 MVAR switchable line reactors

I/28785/2023

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
		at Sirohi PS– 2 Nos. <ul style="list-style-type: none"> Switching equipment for 765 kV, 240 MVAR switchable line reactors at Fatehgarh-IV (Section-2) PS – 2 Nos. Switching equipment for 765 kV, 240 MVAR switchable line reactors at Sirohi PS – 2 Nos.
3	Sirohi PS-Chittorgarh (PG) 400 kV D/c line (Quad) along with 80 MVAR switchable line reactor for each circuit at Sirohi PS end	Route Length ~160 km <ul style="list-style-type: none"> 420 kV, 80 MVAR switchable line reactors at Sirohi PS – 2 Nos. Switching equipment for 420 kV, 80 MVAR switchable line reactors at Sirohi PS – 2 Nos.
4	2 No. of 400 kV line bays at Chittorgarh (PG) S/s	400 kV line bays at Chittorgarh (PG) S/s - 2 Nos.
5	2 No. of 765 kV line bays at Fatehgarh-IV (Section-2) PS	765 kV line bays at Fatehgarh-IV (Section-2) PS – 2 Nos.

Note:

- The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- POWERGRID to provide space for 2 Nos. of 400 kV line bays at Chittorgarh (PG).
- Developer of Fatehgarh-IV S/s (Section-2) to provide space for 2 Nos. of 765 kV line bays at Fatehgarh-IV(Section-2) PS along with the space for switchable line reactor
- Implementation of A, B, C, D, E, F, H1, H2 packages shall be aligned
- Switchable line reactors to be implemented with NGR bypass arrangement.
- The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.5.11 **Part C: Summary**

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part C Tentative Implementation timeframe: 24 months from SPV transfer	2,708	Recommended to be implemented through TBCB route.

I/28785/2023

3.5.12 Detailed scope of Part C scheme is given:

S l o t	Scope of the Transmission Scheme	Capacity/ Route length
	<p>Establishment of 3x1500 MVA, 765/400 kV & 5x500 MVA, 400/220 kV Mandsaur Pooling Station along with 2x330 MVAR (765 kV) Bus Reactors & 2x125 MVAR, 420 kV Bus Reactor</p> <p>Future Provisions:</p> <p>Space for:</p> <ul style="list-style-type: none"> • 765/400 kV ICT along with bays- 3 No. • 765 kV line bays along with switchable line reactors – 12 Nos. • 765 kV Bus Reactor along with bay: 2 No. • 765 kV Sectionalizer bay: 1 -set • 400 kV line bays along with switchable line reactor – 12 Nos. • 400/220 kV ICT along with bays -5 Nos. • 400 kV Bus Reactor along with bay: 2 No. • 400 kV Sectionalization bay: 1- set • 220 kV line bays: 11 Nos. • 220 kV Sectionalization bay: 1 set • 220 kV BC and TBC: 1 Nos. • STATCOM (\pm 300 MVAR) along with MSC (2x125 MVAR) & MSR (1x125 MVAR) along with one 400 kV bay. 	<p>765/400 kV, 1500 MVA ICT – 3 Nos. (10x500 MVA single phase units including one spare unit)</p> <p>400/220 kV, 500 MVA ICT – 5 Nos. (3 Nos. on 220 kV bus section-1 & 2 Nos. on 220 kV bus section-2)</p> <p>765 kV ICT bays – 3 Nos.</p> <p>400 kV ICT bays – 8 Nos.</p> <p>330 MVAR 765 kV bus reactor-2 Nos. (7x110 MVAR single phase units including one spare unit)</p> <p>765 kV bus reactor bay- 2 Nos.</p> <p>765 kV line bay- 2 Nos. (for Indore line)</p> <p>80 MVAR, 765 kV, 1-ph reactor (spare unit)-1 No.</p> <p>125 MVAR, 420 kV bus reactor-2 Nos.</p> <p>400 kV reactor bay- 2 Nos.</p> <p>220 kV ICT bays – 5 Nos.</p> <p>220 kV line bays – 7 Nos. (4 Nos. on bus section-1 and 3 Nos. on bus section-2)</p> <p>220 kV Bus Sectionalizer – 1 set</p> <p>220 kV TBC bay – 2 Nos.</p> <p>220 kV BC bay – 2 Nos.</p>
	Mandsaur PS – Indore(PG) 765 kV D/c Line	Route Length ~ 200 km
	3x330 MVAR switchable line reactor (SLR) on each ckt at Mandsaur end of Mandsaur PS – Indore(PG) 765 kV D/c Line	<ul style="list-style-type: none"> • 330 MVAR, 765 kV switchable line reactor- 2 Nos. • Switching equipment for 765 kV line reactor- 2 Nos.
	42 Nos. of 765 kV line bays at Indore(PG) for termination of Mandsaur PS – Indore(PG) 765 kV D/c Line	<ul style="list-style-type: none"> • 765 kV line bays – 2 Nos. (for Indore (PG) end)

Note:

- i. The line lengths mentioned above are approximate as the exact length shall be obtained after detailed survey
- ii. POWERGRID to provide space for 2 Nos. of 765 kV line bays at Indore S/s

I/28785/2023

- iii. Implementation of A, B, C, D, E, F, H1, H2 packages shall be aligned
- iv. Switchable line reactors to be implemented with NGR bypass arrangement
- v. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.5.13 Part D: Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part D Tentative Implementation timeframe: 24 months from SPV transfer	2,227	Recommended to be implemented through TBCB route.

3.5.14 Detailed scope of Part D scheme is given below:

S. No.	Scope of the Transmission Scheme	Capacity/ Route length
1	Beawar- Mandsaur PS 765 kV D/c line along with 240 MVAR switchable line reactor for each circuit at each end	Route Length – 260 km <ul style="list-style-type: none"> • 765 kV, 240 MVAR switchable line reactors at Beawar – 2 Nos. • 765 kV, 240 MVAR switchable line reactors at Mandsaur PS – 2 Nos. • Switching equipment for 765 kV, 240 MVAR switchable line reactors at Beawar – 2 Nos. • Switching equipment for 765 kV, 240 MVAR switchable line reactors at Mandsaur PS – 2 Nos.
2	2 No. of 765 kV line bays each at Beawar S/s & Mandsaur S/s	765 kV line bays - 4 Nos. (2 Nos. each at Beawar S/s and Mandsaur PS)

Note:

- i. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey
- ii. Developer of Mandsaur PS to provide space for 2 Nos. of 765 kV line bays at Mandsaur S/s along with the space for switchable line reactor.
- iii. Developer of Beawar S/s to provide space for 2 Nos. of 765 kV line bays at Beawar S/s along with the space for switchable line reactor.
- iv. Implementation of A, B, C, D, E, F, H1, H2 packages shall be aligned
- v. Switchable line reactors to be implemented with NGR bypass arrangement
- vi. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

I/28785/2023

3.5.15 Part E: Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part E Tentative Implementation timeframe: 24 months from SPV transfer	3,251	Recommended to be implemented through TBCB route.

3.5.16 Detailed scope of Part E scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1	Establishment of 765 kV Substation at suitable location near Rishabdeo (Distt. Udaipur) along with 2x240 MVAR (765 kV) Bus Reactor Future Provisions: Space for ➤ 765/400 kV ICT along with bays- 5 No. along with spare unit ➤ 765 kV line bays along with switchable line reactors – 6 Nos. ➤ 765 kV Bus Reactor along with bay: 1 No. ➤ 400 kV line bays along with switchable line reactor – 4 Nos. ➤ 400 kV line bays – 4 Nos. ➤ 400 kV Bus Reactor along with bay: 3 Nos. ➤ 400 kV Sectionalization bay: 2 sets ➤ 400/220 kV ICT along with bay - 6 Nos. ➤ 220 kV line bays -10 Nos. ➤ 220 kV Sectionalization bay: 2 sets ➤ 220 kV BC (3 Nos.) & TBC (3 Nos.) ➤ STATCOM (2 x ±300MVAR) along with MSC (4x125 MVAR) & MSR (2x125 MVAR) along with two number 400 kV bays.	<ul style="list-style-type: none"> • 240 MVAR, 765 kV Bus Reactor- 2 Nos. (7x80 MVAR including one spare unit) • 765 kV Bus reactor bays-2 Nos. • 765 kV line bays - 6 Nos. [for 765 kV Sirohi PS- Rishabdeo – Mandsaur D/c line and LILO of one circuit of 765 kV Chittorgarh-Banaskanta D/c line at Rishabdeo S/ s]
2	Sirohi PS- Rishabdeo 765 kV D/c line along with 330 MVAR switchable line reactor for each circuit at Sirohi end	Route Length – 170 km <ul style="list-style-type: none"> • 765 kV, 330 MVAR switchable line reactors at Sirohi PS– 2 Nos. • Switching equipment for 765 kV, 330 MVAR switchable line reactors at Sirohi PS– 2 Nos. • 110 MVAR (765 kV) spare reactor single phase unit at Sirohi PS – 1 No.
3	Rishabdeo - Mandsaur PS 765 kV D/c line along with 240 MVAR switchable line reactor	Route Length – 160 km

I/28785/2023

	for each circuit at Rishabdeo end	<ul style="list-style-type: none"> • 765 kV, 240 MVAR switchable line reactors at Rishabdeo – 2 Nos. • Switching equipment for 765 kV, 240 MVAR switchable line reactors at Rishabdeo – 2 Nos.
4	LILO of one circuit of 765 kV Chittorgarh-Banaskanta D/c line at Rishabdeo S/s (20 km)	LILO route length~ 20 km
5	2 No. of 765 kV line bays each at Sirohi PS & Mandsaur S/s	<ul style="list-style-type: none"> • 765 kV line bays – 4 Nos. (2 Nos. each at Sirohi PS & Mandsaur PS)

Note:

- The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey
- Developer of Sirohi PS to provide space for 2 Nos. of 765 kV line bays at Sirohi PS along with the space for switchable line reactors, including spare unit.
- Developer of Mandsaur PS to provide space for 2 Nos. of 765 kV line bays at Mandsaur PS.
- Implementation of A, B, C, D, E, F, H1, H2 packages shall be aligned
- Switchable line reactors to be implemented with NGR bypass arrangement.
- The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.5.17 Part F: Summary (by clubbing F1 & F2 Schemes)

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part F Tentative Implementation timeframe: 24 months from SPV transfer	2,735	Recommended to be implemented through TBCB route.

3.5.18 Detailed scope of Part F scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1	Establishment of 3x1500 MVA, 765/400 kV & 2x500 MVA, 400/220 kV Barmer-I Pooling Station along with 2x240 MVAR (765 kV) Bus Reactor & 2x125 MVAR (420 kV) Bus Reactor Future provisions: Space for ➤ 765/400 kV ICT along with bays- 3 No. ➤ 765 kV line bays along with switchable	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA ICT- 3 Nos. (10x500 MVA including one spare unit) • 765 kV ICT bays-3 Nos. • 240 MVAR, 765 kV Bus Reactor-2 Nos. (7x80 MVAR, including one spare unit) • 765 kV Bus reactor bays-2 Nos. • 765 kV line bays- 2 Nos. (for D/c line to Sirohi PS) • 400/220 kV, 500 MVA ICT -2 Nos. • 400 kV ICT bays- 5 Nos.

I/28785/2023

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
	line reactors – 4 Nos. ➤ 765 kV Bus Reactor along with bay: 1 No. ➤ 400 kV line bays –4 ➤ 400 kV line bays along with switchable line reactor –4 Nos. ➤ 400/220 kV ICT along with bays -8 Nos. ➤ 400 kV Bus Reactor along with bay: 1 No. ➤ 400 kV Sectionalization bays: 2 sets ➤ 220 kV line bays for connectivity of RE Applications -10 Nos. ➤ 220 kV Sectionalization bay: 3 sets ➤ 220 kV BC (3 Nos.) & TBC (3 Nos.) ➤ STATCOM (2x±300 MVAR) along with MSC (4x125 MVAR) & MSR (2x125 MVAR) along with two number 400 kV bays	<ul style="list-style-type: none"> • 125 MVAR, 420 kV Bus Reactor-2 Nos. • 400 kV Bus reactor bays- 2 Nos. • 400 kV line bays - 2 Nos. [for D/c line to Fatehgarh-III(Section-2) PS] • 220 kV ICT bays- 2 Nos. • 220 kV line bays: 4 Nos. (for RE connectivity) • 220 kV BC (1 No.) & TBC (1 No.)
2	Fatehgarh-III (Section-2) PS – Barmer-I PS 400 kV D/c line (Quad)	Route Length ~50 km
3	Barmer-I PS– Sirohi PS 765 kV D/c line along with 240 MVAR switchable line reactor for each circuit at each end	Route Length ~ 200 km <ul style="list-style-type: none"> • 765 kV, 240 MVAR switchable line reactors at Barmer-I PS – 2 Nos. • 765 kV, 240 MVAR switchable line reactors at Sirohi PS – 2 Nos. • Switching equipment for 765 kV 240 MVAR switchable line reactors at Barmer-I PS – 2 Nos. • Switching equipment for 765 kV 240 MVAR switchable line reactors at Sirohi PS – 2 Nos.
4	2 No. of 400 kV line bays at Fatehgarh-III (Section-2) PS	400 kV line bays at Fatehgarh-III (Section-2) PS - 2 Nos.
5	2 No. of 765 kV line bays at Sirohi PS	765 kV line bays at Sirohi PS – 2 Nos.

Note:

- i. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey
- ii. Developer of Sirohi PS to provide space for 2 Nos. of 765 kV line bays at Sirohi PS along with the space for switchable line reactor.
- iii. Developer of Fatehgarh-III PS (Section-2) to provide space for 2 Nos. of 400 kV line bays at Fatehgarh-III PS (Section-2).
- iv. Switchable line reactors to be implemented with NGR bypass arrangement
- v. Implementation of A, B, C, D, E, F, H1, H2 packages shall be aligned.

I/28785/2023

- vi. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.5.19 Part G: Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part G Augmentation by 1x1500 MVA, 765/400 kV ICT at Fatehgarh-II PS	132	The scheme was agreed to be deferred and it was decided that the scheme would be taken up for implementation in the matching timeframe of Fatehgarh-II PS- Bhadla 3 PS 400 kV D/c line, once the transmission line is approved by the GIB Committee constituted by Hon'ble Supreme Court Committee.

3.5.20 Part H1: Summary

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part H1 Tentative Implementation timeframe: 24 months from SPV transfer	3,674	Recommended to be implemented through TBCB route.

3.5.21 Detailed scope of Part H1 scheme is given below:

Scope of the Transmission Scheme	Capacity / line length km
Establishment of 765/400 kV (2x1500 MVA), 400/22 kV (2x500 MVA) & 220/132 kV (3x200 MVA) Kurawar S/s with 2x330 MVAR 765	<ul style="list-style-type: none"> 765/400 kV, 1500 MVA ICT – 2 (7 single units of 500 MVA including one spare unit) 400/220 kV, 500 MVA ICT – 2

I/28785/2023

S N o	Scope of the Transmission Scheme	Capacity / line length km
	<p>kV bus reactor and 1x125 MVAR, 420 kV bus reactor.</p> <p>Future Provisions:</p> <p>Space for</p> <ul style="list-style-type: none"> • 765/400 kV ICT along with bays- 4 no. • 765 kV line bays along with switchable line reactors – 8 nos. • 765 kV Bus Reactor along with bay: 2 no. • 765 kV Sectionalizer bay: 1 -set • 400 kV line bays along with switchable line reactor – 8 nos. • 400/220 kV ICT along with bays -6 nos. • 420 kV Bus Reactor along with bay: 3no. • 400 kV Sectionalization bay: 1- set • 220 kV line bays: 12 nos. • 220 kV Sectionalization bay: 1set • 220 kV BC and TBC: 1 no. • 220/132 kV ICT along with bays: 5 Nos. • 132 kV line bays: 16 nos. • 132 kV Sectionalization bay: 1 set • 132 kV TBC– 1 no. • STATCOM (± 300 MVAR) along with MSC (2x125 MVAR) & MSR (1x125 MVAR) along with 400 kV bay. 	<ul style="list-style-type: none"> • 220/132 kV, 200 MVA ICT – 3 • 765 kV ICT bays- 2 • 400 kV ICT bays- 4 • 220 kV ICT bays – 5 • 132 kV ICT bays - 3 • 330 MVAR 765 kV bus reactor-2 • 125 MVAR 420 kV bus reactor-1 • 765 kV reactor bay- 2 • 765 kV line bays- 4 • 400 kV line bays- 4 • 400 kV reactor bay- 1 • 220 kV BC – 1 • 220 kV TBC – 1 • 132 kV TBC – 1 • 110 MVAR, 765 kV, 1-ph reactor (spare unit)-1 • 80 MVAR, 765 kV, 1-ph reactor (spare unit)-1
	Mandsaur – Kurawar 765 kV D/c line	Route length: 235 km
	240 MVAR switchable line reactors on each ckt at both ends of Mandsaur – Kurawar 765 kV D/c line	<ul style="list-style-type: none"> • 240 MVAR, 765 kV switchable line reactor- 4 (2 for Mandsaur end and 2 for Kurawar end) • Switching equipment for 765 kV line reactor- 4 (2 for Mandsaur end and 2 for Kurawar end)
	42 nos. of 765 kV line bays at Mandsaur S/s for termination of Mandsaur – Kurawar 765 kV D/c line	<ul style="list-style-type: none"> • 765 kV line bays – 2 Nos. (for Mandsaur end)
	LILLO of Indore – Bhopal 765 kV S/c line at Kurawar	LILLO route length: 15 km.
	Kurawar – Ashtha 400 kV D/c (Quad	Route length: 65 km

I/28785/2023

S N o	Scope of the Transmission Scheme	Capacity / line length km
	ACSR/AAAC/AL59 moose equivalent) line	
	2 nos. of 400 kV line bays at Ashtha (MP) S/s for termination of Kurawar – Ashtha 400 kV D/c line	400 kV line bays – 2 Nos. [for Ashtha (MP) end]
	LILO of one circuit of Indore – Itarsi 400 kV D/c line at Astha	LILO route length: 30 km
	2 nos. of 400 kV line bays at Ashtha (MP) S/s for LILO of one circuit of Indore – Itarsi 400 kV D/c line at Astha	400 kV line bays – 2 Nos. [for Ashtha (MP) end]
	Shujalpur – Kurawar 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent) line	Route length: 40 km
	2 nos. of 400 kV line bays at Shujalpur(PG) S/s for termination of Shujalpur – Kurawar 400 kV D/c line	400 kV line bays – 2 Nos. [for Shujalpur (PG) end]

Note:

- i. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- ii. MPPTCL has confirmed availability of space for 2 nos. 400 kV bays at Ashta (MP) S/s and for 2 nos. additional bays, MPPTCL has informed that adjacent land is private land and may be purchased by the project developer at their cost as per requirement.
- iii. Implementation of A,B,C,D, E ,F, H1 & H2 packages shall be aligned
- iv. TSP of the subject scheme shall implement Inter-tripping scheme on Mandsaur – Kurawar 765 kV D/c line (for tripping of the switchable line reactor at Mandsaur/Kurawar end along with the main line breaker).
 - v. Switchable line reactors to be implemented with NGR bypass arrangement
 - vi. Developer of Mandsaur S/s to provide space for 2 Nos. 765 kV line bays for Mandsaur – Kurawar 765 kV D/c line.
 - vii. POWERGRID to provide space for 2 Nos. 400 kV line bays at Shujalpur S/s for Shujalpur – Kurawar 400 kV D/c line.
- viii. The implementation timeline mentioned above is tentative. Final Timeline would be indicated in the RfP Document.

3.5.22 Part H2: Summary

Sl. No.	Name of the scheme and	Estimated Cost	Remarks
---------	------------------------	----------------	---------

I/28785/2023

	implementation timeframe	(₹ Crores)	
1.	<p>Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part H2</p> <p>Provision of NGR bypass arrangement and inter tripping scheme on 240 MVAR SW LR at Bhopal end of Kurawar – Bhopal 765 kV S/c line (~60 km.): Part H2</p> <p>Implementation timeframe: In matching timeframe of H1 Scheme</p>	0.45	To be awarded under RTM to BDTCL i.e. the TSP owing the Indore – Bhopal 765 kV S/c line .

3.5.23 Detailed scope of Part H2 scheme is given below:

S I N O	Scope of the Transmission Scheme	Capacity/ Route length
1	Provision of NGR bypass arrangement and inter tripping scheme on 240 MVAR Switchable Line Reactor at Bhopal end of Kurawar – Bhopal 765 kV S/c line (~Route length: 60 km)	NGR bypass arrangement and inter tripping scheme (Bhopal end)

I/28785/2023

3.6 Requirement of additional FOTE of STM-16 capacity at Bhuj PS to cater to connectivity of RE Gencos.

3.6.1 To connect 6 number of RE generators (Inox, Vadava Desalpar, Narayanpar, Adani Ratadia, Renew Power, Alfanar Energy) directly to existing FOTE at Control Room of Bhuj PS maintaining MSP (1+1) and for making independent connectivity for upcoming generators at this station, Additional STM-16 capacity SDH equipment is required

3.6.2 The “Requirement of additional FOTE of STM-16 capacity at Bhuj PS to cater connectivity of RE Gencos”, has been deliberated in 46th TCC/ WRPC meeting. WRPC concurred the proposal of “Requirement of additional FOTE of STM-16 capacity at Bhuj PS to cater connectivity of RE Gencos” at an estimated cost of Rs 60 Lacs.

3.6.3 After detailed deliberations, the scheme was approved to be implemented under RTM route by POWERGRID.

3.6.4 Summary of the scheme is given below:

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Requirement of additional FOTE of STM-16 capacity at Bhuj PS to cater to connectivity of RE Gencos Implementation timeframe: 12 months from date of allocation	0.6	Approved to be implemented under RTM route by POWERGRID

3.6.5 Detailed Scope of the Scheme is given below:

Sl. No.	Scope of the Scheme	Estimated Cost
1.	Supply and installation of 01 number 10 MSP (1+1) FOTE or 02 No. 5 MSP (1+1) FOTE (STM-16 capacity) at Bhuj PS.	Rs. 60 Lakhs

I/28785/2023

3.7 Requirement of additional FOTE of STM-16 capacity at Bhuj-II substation to cater connectivity of RE Gencos.

3.7.1 To connect 6 number of RE generators (Inox, Vadava Desalpar, Narayanpar, Adani Ratadia, Renew Power, Alfancar Energy) directly to existing FOTE at Control Room of Bhuj PS maintaining MSP (1+1) and for making independent connectivity for upcoming generators at this station, Additional STM-16 capacity SDH equipment is required

3.7.2 The “Requirement of additional FOTE of STM-16 capacity at Bhuj II to cater connectivity of RE Gencos”, has been deliberated in 46th TCC/ WRPC meeting. WRPC concurred the proposal of “Requirement of additional FOTE of STM-16 capacity at Bhuj II to cater connectivity of RE Gencos” at estimated cost of Rs 30 Lacs.

3.7.3 After detailed deliberations, the scheme was approved to be implemented under RTM mode by M/s PBTL.

3.7.4 Summary of the scheme is given below:

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Requirement of additional FOTE of STM-16 capacity at Bhuj-II substation to cater connectivity of RE Gencos Implementation timeframe: 12 months from date of allocation	0.3	Approved to be implemented under RTM mode by M/s PBTL

3.7.5 Detailed Scope of the Scheme is given below:

Sl. No.	Scope of the Scheme	Estimated Cost
1.	Supply and installation of 01 number 5 MSP (1+1) FOTE (STM-16 capacity) at Bhuj-II station.	Rs. 30 Lakhs

I/28785/2023

3.8 Congestion in ISTS communication link via Dehgam- Ranchhodpura- Santhalpur- Bhachau- Mundra

3.8.1 The communication link via Dehgam-Ranchhodpura-Santhalpur-Bhachau-Mundra was at STM-4 level. Further, this link was extended through Mundra-Bhuj-Santhalpur Repeater-Banaskantha at STM-16 level. The owner of these stations is POWERGRID. This communication network is being used for routing the data Bhuj-PS, Bhuj-II, Lakadia, CGPL Mundra and various RE generators connected to these stations to WRLDC/NLDC. Communication link via Dehgam-Ranchhodpura-Santhalpur repeater-Banaskantha is also used for routing inter regional data between WR-NR.

As on date, the STM-4 level bandwidth on Dehgam-Ranchhodpura-Santhalpur Repeater is almost 100% utilized and on Santhalpur repeater-Bhachau-Mundra is 75% utilized. Outage of these lines affects the telemetry of the entire Bhuj location and CGPL Mundra.

3.8.2 The “Upgradation of STM-4 communication link of Dehgam, Ranchhodpura, Santhalpur Repeater, Bhachau and CGPL Mundra to STM-16 capacity”, has been deliberated in 46th TCC/ WRPC meeting held on 02-03 Feb 2023. WRPC concurred the proposal of “Upgradation of STM-4 communication link of Dehgam, Ranchhodpura, Santhalpur Rep, Bhachau and CGPL Mundra to STM-16 capacity” at estimated cost of Rs 1.5 Cr.

3.8.3 After detailed deliberations, the scheme was approved to be implemented under RTM route by POWERGRID.

3.8.4 Summary of the scheme is given below:

Sl. No.	Name of the scheme and implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Upgradation of STM-4 communication link of Dehgam, Ranchhodpura, Santhalpur Rep, Bhachau and CGPL Mundra to STM-16 capacity. Implementation timeframe: 12 months from date of allocation	1.5	Approved to be implemented under RTM route by POWERGRID

3.8.5 Detailed Scope of the Scheme is given below:

Scope of the Scheme	Estimated Cost
---------------------	----------------

I/28785/2023

<p>1. Supply and installation of 5 No. STM-16 SDH, 5 MSP (1+1) for all the below mentioned stations-</p> <p>a) Dehgam b) Ranchhodpura c) Santhalpur Repeater d) Bhachau e) CGPL Mundra</p>	<p>Rs. 1.5 Cr.</p>
--	--------------------

3.9 Transmission scheme for evacuation of power from Neemuch/Mandsaur 2 GW WEZ

3.9.1 SECI vide letter dated 23.06.2022 has informed that in order to provide round the clock (RTC) Power (with wind, solar and storage components), they have identified certain locations with high solar and wind potential where work on RE evacuation system may be taken up immediately. 2 GW Wind Potential at Neemuch/Mandsaur is one such prioritized RE Zone.

3.9.2 Accordingly, scheme was evolved to cater to the evacuation of power from Neemuch/Mandsaur 2 GW WEZ and was discussed in the 12th NCT meeting held on 24.03.2023. During the meeting, the establishment of 765 kV Mandsaur Pooling Station [Under Transmission system for Rajasthan REZ Phase-IV Part-2 (5.5 GW)] was agreed to be reviewed and it was decided that the proposal of creation of 400 kV and 220 kV levels at Mandsaur PS (under the subject scheme), would also be reviewed along with 765 the kV Pooling Station at Mandsaur.

3.9.3 After detailed deliberations, it was decided that the scheme shall be merged with Part C of the Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex) and would be implemented under TBCB route. Please refer para 3.5.

3.10 Change in implementation timeline of STATCOM and HVDC

3.10.1 Siemens and TATA Power had requested to increase the timeline of commissioning of STATCOMs from 24 months to 30 months on account of increased delivery period of Power Electronics, Control Cards, Air Core Reactors, Valve Cooling systems etc. globally e.g. for $\pm 2 \times 300$ MVAR STATCOM at any sub-station, time frame for implementation of STATCOMs to be as given below, in place of 24 months:

- ± 300 MVAR (1st): 24 months
- ± 300 MVAR (2nd): 30 months

3.10.2 After detailed deliberations, it was agreed that the base time shall remain 24 months for 1st STATCOM unit. For further STATCOM units, additional 3 months of time for each unit e.g. 27 months (for 2nd STATCOM unit) will be given.

3.10.3 Chairperson, CEA, stated that the list of components of STATCOM, not being manufactured in India, may be prepared and put up to the Technical Scoping Committee (TSC) Committee under Chairperson, CEA, constituted to inter-alia identify the identify the potential technologies that can be considered for indigenous development in the country, bring out the relevance of the technology for the future power sector. The Committee would in turn make recommendations to the Apex Committee, the High Level Committee under Hon'ble Minister of Power.

3.10.4 Similarly, Hitachi had requested to increase the timeline of commissioning of Bhadla-Fatehpur HVDC from 42 months to 49 months for Bipole I and 54 months for Bipole II, considering the present global uncertainties on supplies of components and their lead time.

After detailed deliberations, it was agreed that the timeline of commissioning of HVDC shall be increased by 06 months for Bipole-II i.e. if implementation timeline is 48 months for Bipole I, it should be 54 months for Bipole-II.

3.10.5 However, the changed timelines for implementation of HVDC & SATCOM schemes would be applicable only to the new schemes brought up in NCT henceforth.

3.10.6 Chairperson, CEA, also stated that rating of HVDC transmission system must be standardised by CEA so that delivery time is reduced.

4 Modification in the earlier approved/notified transmission schemes:

4.1 Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)

4.1.1 A comprehensive transmission scheme (400 kV Jhangi-Wangtoo-Panchkula D/c Corridor) for evacuation of power from two Hydro Electric Projects (HEPs) viz Tidong (150 MW) of Tidong Power Generation Private Limited (STATKRAFT) and Shongtong Karcham HEP (450 MW) of HPPCL in Himachal Pradesh was evolved. The transmission scheme was approved by MoP based on the recommendation by NCT for implementation through TBCB route. Subsequently, HPPCL had intimated that the commissioning date of Shongtong Karcham HEP (STKHEP) had been revised (preponed) from July'26 to July'25 and requested to review the timelines of the transmission system for evacuation of power from Shongtong Karcham HEP (STKHEP) in Himachal Pradesh due to the revised timeline of commissioning of STKHEP.

I/28785/2023

4.1.2 The revised scheme was also discussed in the 65th NRPC meeting held on 21.04.2023. During the NRPC meeting, MS, NRPC stated that all efforts may be made to reduce the time frame of the interim part to ensure that the generation is not stranded. Therefore, NRPC Forum recommended NCT to give consideration to generation project schedule and accordingly transmission system may be developed.

4.1.3 In the NCT meeting, CTUIL informed that based on the preliminary survey report for 400 kV Wangtoo-Panchkula D/c line, conductor in certain portion of the transmission line may need to be of different configuration (due to very high altitude encountered in certain sections) in order to avoid Corona inception gradient. The cost of the transmission scheme may also increase. Accordingly, CTUIL was requested to confirm change in conductor configuration if any along with revised cost of the scheme based on the survey report and submit the same within two weeks.

4.2 Revised timeframe of the transmission scheme “Transmission system for evacuation of power from Luhri Stage-I HEP”

4.2.1 The transmission system for evacuation of power from Luhri Stage-I HEP was agreed in the 8th meeting of NCT held on 25.03.2022 with the following scope of works:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1.	Establishment of 7x105 MVA, 400/220 kV Nange GIS Pooling Station along with 125 MVAR (420kV) Bus Reactor at Nange (GIS) PS (1-Ph units along with one spare unit) Future provisions: Space for <ul style="list-style-type: none"> • 400/220 kV ICTs (315 MVA with single phase units) along with associated bays: 3 Nos. • 400 kV line bays along with switchable line reactor: 3 Nos. • 220 kV line bays: 10 nos 	315 MVA, 400/220 kV ICT: 2 Nos. (7x105 MVA including 1 spare ICT) 400 kV ICT bays: 2 Nos. 220 kV ICT bays: 2 Nos. 400 kV, 125 MVAR Bus Reactor-1 No. 400 kV Bus Reactor bay- 1 No. 400 kV Line Bays- 2 Nos.
2.	Nange (GIS) Pooling Station – Koldam 400 kV D/c line (Triple snowbird) (<i>only one circuit is to be terminated at Kol Dam while second circuit would be connected to bypassed circuit of Kol Dam – Ropar/Ludhiana 400 kV D/c line</i>)	Route length: 40 km
3.	1 No. of 400 kV line bay at Koldam S/s for termination of Nange (GIS) Pooling Station – Koldam 400 kV line along with 125 MVAR (420kV) Bus Reactor at Koldam S/s (1-Ph units along with one spare unit)	400 kV Line Bays- 2 Nos. 400 kV, 125 MVAR Bus Reactor-1 No. 400 kV Bus Reactor bay- 1 No.
4.	Bypassing one ckt of Koldam –	

I/28785/2023

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
	Ropar/Ludhiana 400 kV D/c line (Triple snowbird) at Koldam and connecting it with one of the circuit of Nange- Koldam 400 kV D/c line(Triple snowbird), thus forming Nange- Ropar/ Ludhiana one line (Triple snowbird)	
5.	1x50 MVAR switchable line reactor at Ropar end of Nange- Ropar/ Ludhiana 400 kV line	400 kV, 50 MVAR Line Reactor- 1 No. 400 kV Reactor Bay- 1 No.

4.2.2 The above mentioned transmission scheme was notified in Gazette dated 02.06.2022 and RECPDCL was appointed as the BPC of the transmission scheme. The transmission scheme is currently under bidding with the implementation timeframe of 24.04.2025 (in matching timeframe of Luhri Stage-I HEP).

4.2.3 SJVNL vide letter dated 17.02.2023 informed that Luhri Stage-I HEP is likely to be commissioned by August, 2026, hence the time frame of Luhri Stage-I may be considered as 31.08.2026. The same was acknowledged in a meeting convened by CEA on 07.03.2023. Accordingly, it was decided that the timeframe of the transmission scheme “Transmission system for evacuation of power from Luhri Stage-I HEP”, would be revised to 31st August, 2026.

4.2.4 NCT noted the same.

4.3 **Delinking of 400 kV Fatehgarh-II- Bhadla-III D/c line from transmission scheme “Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part B1”**

4.3.1 The transmission scheme “Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part B1” was agreed in the 5th meeting of the NCT held on 25.08.2021 and 02.09.2021, with the following scope of works:

- Establishment of 2x1500 MVA 765/400 kV & 3x500 MVA 400/220 kV pooling station at Bhadla-3
- Fatehgarh-2 PS – Bhadla-3 PS 400 kV D/c line
- Bhadla-3 PS – Sikar-II S/s 765 kV D/c line

I/28785/2023

- 4.3.2 The above mentioned transmission scheme was notified in the Gazette dated 06.12.2022 and PFCCCL was appointed as the BPC of the transmission scheme. As the transmission scheme is falling under core GIB area, PFCCCL approached the Committee formed by Hon'ble Supreme Court for obtaining the necessary GIB clearance.
- 4.3.3 Subsequently, a meeting was held on 01.05.2023 under the chairmanship of Secretary, MoP, to review the progress of under construction/ under bidding/ planned Transmission Projects for evacuation of Renewable Energy (RE) projects, wherein it was highlighted that the GIB clearance for Fatehgarh-2 PS – Bhadla-3 PS 400 kV D/c line has not been received due to which the bidding process for the transmission scheme is getting delayed. Considering that, Secretary, MoP, directed that the process of delinking of 400 kV Fatehgarh-II- Bhadla-III D/c line from Phase-III Part-B1 may be carried out at the earliest and a separate package may be formed comprising 400 kV Fatehgarh-II- Bhadla III D/c line.
- 4.3.4 The same was deliberated in a meeting convened by CEA on 10.05.2023, wherein PFCCCL (BPC) was requested to delink the 400 kV Fatehgarh-II- Bhadla-III D/c line as directed by Secretary, MoP. Further, it was recommended that for timely completion of the bidding process, bidders may be given 4 weeks of time for bid submission by the BPC, since the transmission scheme (Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part B1) is already under the bidding process for the past few months and also linked with other transmission schemes under Phase-III.
- 4.3.5 In view of above, the modification in the scope of the transmission scheme “Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part B1” is as follows:

Sl. No.	Existing Scope	Revised Scope
1.	<p>Establishment of 2x1500 MVA 765/400 kV & 3x500 MVA 400/220 kV pooling station at Bhadla-3 along with 2x330 MVAR (765 kV) Bus Reactor & 2x125 MVAR (420kV) Bus Reactor</p> <ul style="list-style-type: none"> • 765/400 kV 1500 MVA ICTs: 2 Nos. (7x500 MVA including one spare unit) • 765 kV ICT bays - 2 Nos. • 400/220 kV, 500 MVA ICT – 3 Nos. • 765 kV line bays -2 Nos. • 400 kV ICT bays – 5 Nos. • 220 kV ICT bays - 3 Nos. • 400 kV line bays - 2 Nos. • 220 kV line bays: 5 Nos. • 330 MVAR Bus Reactor-2 Nos. (7x110 MVAR, including one spare unit) 	<p>Establishment of 2x1500 MVA, 765/400 kV & 3x500 MVA, 400/220 kV pooling station at Bhadla-3 along with 2x330 MVAR (765 kV) Bus Reactor & 2x125 MVAR (420 kV) Bus Reactor</p> <ul style="list-style-type: none"> • 765/400 kV 1500 MVA ICTs: 2 Nos. (7x500 MVA including one spare unit) • 765 kV ICT bays - 2 Nos. • 400/220 kV, 500 MVA ICT – 3 Nos. • 765 kV line bays -2 Nos. • 400 kV ICT bays – 5 Nos. • 220 kV ICT bays - 3 Nos. • 220 kV line bays: 5 Nos. • 330 MVAR Bus Reactor-2 Nos. (7x110 MVAR, including one spare unit) • 765 kV reactor bay- 2 Nos. • 125 MVAR, 420 kV bus reactor - 2 Nos.

I/28785/2023

Sl. No.	Existing Scope	Revised Scope
	<ul style="list-style-type: none"> • 765 kV reactor bay- 2 Nos. • 125 MVAR, 420kV bus reactor - 2 Nos. • 420 kV reactor bay - 2 Nos. <p><u>Future provisions:</u> Space for</p> <ul style="list-style-type: none"> • 765/400 kV ICTs along with bays: 2 Nos. • 765 kV line bay along with switchable line reactor: 6 Nos. • 765 kV line bay: 4 Nos. • 765 kV Bus Reactor along with bays: 2 Nos. • 400/220 kV ICTs along with bays: 10 Nos. • 400 kV line bays: 8 Nos. • 400 kV line bays along with switchable line reactor: 6 Nos. • 400 kV Bus Reactor along with bays: 2 Nos. • 400 kV Sectionalization bay: 2 sets • 220 kV line bays: 12 Nos. • 220 kV sectionalization bay: 2 sets 	<ul style="list-style-type: none"> • 420 kV reactor bay - 2 Nos. <p><u>Future provisions:</u> Space for</p> <ul style="list-style-type: none"> • 765/400 kV ICTs along with bays: 2 Nos. • 765 kV line bay along with switchable line reactor: 6 Nos. • 765 kV line bay: 4 Nos. • 765 kV Bus Reactor along with bays: 2 Nos. • 400/220 kV ICTs along with bays: 10 Nos. • 400 kV line bays: 8 Nos. • 400 kV line bays along with switchable line reactors: 8 Nos. • 400 kV Bus Reactor along with bays: 2 Nos. • 400 kV Sectionalization bay: 2 sets • 220 kV line bays: 12 Nos. • 220 kV Sectionalization bay: 2 sets
2.	<p>Fatehgarh-2 PS – Bhadla-3 PS 400 kV D/c line (Quad moose) along with 63 MVAR Switchable line reactor for each circuit at both ends of Fatehgarh 2-Bhadla-3 400 kV D/c line</p> <ul style="list-style-type: none"> • 400 kV 63 MVAR switchable line reactor – 4 Nos. • Switching equipment for 400 kV 63 MVAR switchable line reactor – 4 Nos. 	Deleted
3.	<p>400 kV line bays at Fatehgarh-2 PS for Fatehgarh-2 PS – Bhadla-3 PS 400 kV D/c line</p> <ul style="list-style-type: none"> • 400 kV line bays - 2 Nos. 	Deleted
4.	<p>Bhadla-3 PS – Sikar-II S/s 765 kV D/c line along with 330 MVAR Switchable line reactor for each circuit at each end of</p>	<p>Bhadla-3 PS – Sikar-II S/s 765 kV D/c line along with 330 MVAR Switchable line reactor for each circuit at each end of Bhadla-</p>

Sl. No.	Existing Scope	Revised Scope
	Bhadla-3 PS – Sikar-II S/s 765 kV D/c line <ul style="list-style-type: none"> Switching equipment for 765 kV 330 MVAR switchable line reactor – 4 Nos. 765 kV, 330 MVAR Switchable line reactor- 4 Nos. 	3 PS – Sikar-II S/s 765 kV D/c line <ul style="list-style-type: none"> Switching equipment for 765 kV 330 MVAR switchable line reactor – 4 Nos. 765 kV, 330 MVAR Switchable line reactor- 4 Nos.
5.	765 kV line bays at Sikar-II <ul style="list-style-type: none"> 765 kV line bays – 2 Nos. 	765 kV line bays at Sikar-II <ul style="list-style-type: none"> 765 kV line bays – 2 Nos.
	Note: <ol style="list-style-type: none"> <i>Provision of suitable sectionalization shall be kept at Bhadla-3 at 400 kV & 220 kV level to limit short circuit level.</i> <i>POWERGRID to provide space for 2 Nos. of 400 kV line bays along with space for switchable line reactors at Fatehgarh-2 S/s.</i> <i>Developer of Sikar-II S/s to provide space for 2 Nos. of 765 kV line bays at Sikar-II S/s along with space for switchable line reactors.</i> <i>Space provision for future 2 Nos. 220 kV Bus Coupler bay and 2 Nos. Transfer Bus Coupler Bay shall be kept for bus switching scheme requirement.</i> 	Note: <ol style="list-style-type: none"> <i>Provision of suitable sectionalization shall be kept at Bhadla-3 at 400 kV & 220 kV level to limit short circuit level.</i> Deleted <i>Developer of Sikar-II S/s to provide space for 2 Nos. of 765 kV line bays at Sikar-II S/s along with space for switchable line reactors.</i> <i>Space provision for future 2 Nos. 220 kV Bus Coupler bay and 2 Nos. Transfer Bus Coupler Bay shall be kept for bus switching scheme requirement.</i>

4.3.6 After detailed deliberations, the revised scope of the scheme was approved by NCT. Revised scope of the scheme “Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part B1” is as follows:

Revised Scope
Establishment of 2x1500 MVA 765/400 kV & 3x500 MVA 400/220 kV pooling station at Bhadla-3 along with 2x330 MVAR (765 kV) Bus Reactor & 2x125 MVAR (420 kV) Bus Reactor <ul style="list-style-type: none"> 765/400 kV 1500 MVA ICTs: 2 Nos. (7x500 MVA including one spare unit) 765 kV ICT bays - 2 Nos. 400/220 kV, 500 MVA ICT – 3 Nos. 765 kV line bays -2 Nos. 400 kV ICT bays – 5 Nos. 220 kV ICT bays - 3 Nos. 220 kV line bays: 5 Nos. 330 MVAR Bus Reactor-2 Nos. (7x110 MVAR, including one spare unit)

I/28785/2023

Revised Scope
<ul style="list-style-type: none"> • 765 kV reactor bay- 2 Nos. • 125 MVAR, 420kV bus reactor - 2 Nos. • 420 kV reactor bay - 2 Nos. <p><u>Future provisions:</u> Space for</p> <ul style="list-style-type: none"> • 765/400 kV ICTs along with bays: 2 Nos. • 765 kV line bay along with switchable line reactor: 6 Nos. • 765 kV line bay: 4 Nos. • 765 kV Bus Reactor along with bays: 2 Nos. • 400/220 kV ICTs along with bays: 10 Nos. • 400 kV line bays: 8 Nos. • 400 kV line bays along with switchable line reactor: 8 Nos. • 400 kV Bus Reactor along with bays: 2 Nos. • 400 kV Sectionalization bay: 2 sets • 220 kV line bays: 12 Nos. • 220 kV Sectionalization bay: 2 sets
<p>Bhadla-3 PS – Sikar-II S/s 765 kV D/c line along with 330 MVAR Switchable line reactor for each circuit at each end of Bhadla-3 PS – Sikar-II S/s 765 kV D/c line</p> <ul style="list-style-type: none"> • Switching equipment for 765 kV 330 MVAR switchable line reactor – 4 Nos. • 765 kV, 330 MVAR Switchable line reactor- 4 Nos.
<p>765 kV line bays at Sikar-II</p> <ul style="list-style-type: none"> • 765 kV line bays – 2 Nos.
<p>Note:</p> <ol style="list-style-type: none"> i. <i>Provision of suitable sectionalization shall be kept at Bhadla-3 at 400 kV & 220 kV level to limit short circuit level.</i> ii. <i>Developer of Sikar-II S/s to provide space for 2 Nos. of 765 kV line bays at Sikar-II S/s along with space for switchable line reactors.</i> iii. <i>Space provision for future 2 Nos. 220 kV Bus Coupler bay and 2 Nos. Transfer Bus Coupler Bay shall be kept for bus switching scheme requirement.</i>

5 Comprehensive presentation by CTU apprising NCT of measures taken for ensuring development of an efficient, co-ordinated and economical ISTS for smooth flow of electricity.

CTUIL has prepared the rolling plan for 2027-28, which will be presented in the next NCT meeting.

6 Five-year rolling plan for ISTS capacity addition.

CTUIL has prepared the rolling plan for 2027-28, which will be presented in the next NCT meeting.

7 Any other issues, with permission of chair

The meeting ended with thanks to the chair.

Summary of the deliberations of the 14th meeting of NCT held on 09th June, 2023**I. ISTS communication schemes approved by NCT for implementation under RTM Route:**

Sl. No.	Name of Transmission Scheme	Implementation Mode	Implementation timeframe	Implementing Agency	Estimated Cost (Rs Cr)
1.	Requirement of additional FOTE of STM-16 capacity at Bhuj PS to cater to connectivity of RE Gencos	RTM	12 months	POWER GRID	0.6
2.	Requirement of additional FOTE of STM-16 capacity at Bhuj-II substation to cater to connectivity of RE Gencos	RTM	12 months	M/s PBTL	0.3
3.	Upgradation of STM-4 communication link of Dehgam, Ranchhodpura, Santhalpur Rep, Bhachau and CGPL Mundra to STM-16 capacity	RTM	12 months	POWER GRID	1.5

II. ISTS schemes costing less than Rs. 100 Crs. approved by NCT:

Sl. No.	Name of Transmission Scheme	Implementation Mode	Implementation timeframe	Allocated to	Estimated Cost (Rs Crs)
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW): Part A1 <u>Brief Scope:</u> Conversion of 330 MVAR Fixed LR at Wardha (on each ckt of Wardha – Raipur 765 kV D/c line	RTM	Matching with implementation of Khavda Phase-V Part A scheme viz. Bipole-1 (2x1500 MW) ±	POWER GRID	21

I/28785/2023

Sl. No.	Name of Transmission Scheme	Implementation Mode	Implementation timeframe	Allocated to	Estimated Cost (Rs Crs)
	being LILOed at Nagpur) into Bus Reactors at Wardha S/s		800 kV Nagpur (HVDC) [LCC] which is 48 months from SPV transfer.		
2.	<p>Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part H2</p> <p><u>Brief Scope:</u></p> <p>Provision of NGR bypass arrangement and inter tripping scheme on 240 MVAR SW LR at Bhopal end of Kurawar – Bhopal 765 kV S/c line (~60 km.):</p>	RTM	In matching timeframe of H1 Scheme	BDTCL i.e. the TSP owing the Indore – Bhopal 765 kV S/c line	0.45

III. ISTS Transmission schemes, costing between Rs 100 Crore to Rs 500 Crore, approved by NCT:

(a) The transmission schemes approved by NCT under RTM route is given below:

Sl. No.	Name of Transmission Scheme	Implementation Mode	Implementation timeframe	Allocated to	Estimated Cost (Rs. Crs)
1.	Augmentation of transformation capacity by 1x1500 MVA (3rd), 765/400 kV ICT at Maheshwaram (PG) substation in Telangana	RTM	21 months	POWERGRID	123.12

I/28785/2023

Sl. No.	Name of Transmission Scheme	Implementation Mode	Implementation timeframe	Allocated to	Estimated Cost (Rs. Crs)
2.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E1	RTM	24 months	Khavda – Bhuj Transmission Ltd. (Subsidiary of Adani Transmission limited)	216
3.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E3	RTM	24 months	KPS3 Transmission Limited (Subsidiary of POWERGRID)	216
4.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E4	RTM	24 months	POWERGRID	235

(b) The transmission schemes approved by NCT to be implemented through TBCB route is given below:

Sl. No.	Name of Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	Allocated to	Estimated Cost (Rs. Crs)	Survey Agency
1.	Western Region Network Expansion scheme in Kallam area of Maharashtra	TBCB	18 months	RECPD CL	160	RECPDCL

The broad scope of above ISTS scheme, approved by NCT for implementation through TBCB route to be notified in Gazette of India is as given below:

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
1.	Western Region Network Expansion scheme in Kallam area of Maharashtra Tentative Implementation Timeframe: 18 months from transfer of SPV	i. LILO of both circuits of Parli(M) – Karjat(M)/Lonikand-II(M) 400 kV D/c line (twin moose) at Kallam PS ii. 4 Nos. 400 kV line bays at Kallam PS for LILO of both circuits of Parli(M) – Karjat(M)/Lonikand-II(M) 400 kV D/c line (twin moose) at Kallam PS iii. 63 MVAR, 420 kV switchable line reactor (with NGR bypassing arrangement) on each ckt at Kallam PS end of Karjat – Kallam 400 kV D/c line (~140 km) (Detailed scope as approved by 14th NCT and subsequent amendments thereof)	RECPDCL

IV. ISTS Transmission schemes, costing greater than Rs 500 Crore recommended by NCT to MoP:

(a) The ISTS transmission schemes recommended by NCT to MoP are given below:

Sl. No.	Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	Survey Agency	BPC	Estimated Cost (Rs. Crs)
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part A	TBCB	24 months from SPV Transfer	RECPDCL	RECPDCL	4,091
2.	Transmission System for Evacuation of Power from potential renewable	TBCB	24 months from	PFCCCL	PFCCCL	4,766

I/28785/2023

Sl. No.	Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	Survey Agency	BPC	Estimated Cost (Rs. Crs)
	energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part B		SPV Transfer			
3.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part C	TBCB	24 months from SPV Transfer	RECPDCL	RECPDCL	5,340
4.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part D	TBCB	24 months from SPV Transfer	PFCCL	PFCCL	3,455
5.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E2	TBCB	21 months from SPV Transfer	RECPDCL	RECPDCL	697
6.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW): Part A	TBCB	48 months for Bipole-1 and 54 months for Bipole-2 from SPV Transfer	RECPDCL	RECPDCL	24,819
7.	Transmission System for Evacuation of Power	TBCB	48 months	PFCCL	PFCCL	12,000

I/28785/2023

Sl. No.	Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	Survey Agency	BPC	Estimated Cost (Rs. Crs)
	from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW): Part C		from SPV Transfer			
8.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part A	TBCB	24 months from SPV Transfer	RECPDCL	RECPDCL	2,206
9.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part B	TBCB	24 months from SPV Transfer	PFCCCL	PFCCCL	3,279
10.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part C	TBCB	24 months from SPV Transfer	CTUIL	RECPDCL	2,708
11.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part D	TBCB	24 months from SPV Transfer	CTUIL	PFCCCL	2,227
12.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part E	TBCB	24 months from SPV Transfer	RECPDCL	RECPDCL	3,251

I/28785/2023

Sl. No.	Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	Survey Agency	BPC	Estimated Cost (Rs. Crs)
13.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part F (By clubbing Part F1 & F2)	TBCB	24 months from SPV Transfer	PFCCCL	PFCCCL	2,735
14.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part H1	TBCB	24 months from SPV Transfer	RECPDCL	RECPDCL	3,674

(b) The broad scope of ISTS schemes recommended by NCT to MoP for implementation through TBCB mode, to be notified in Gazette of India is as given below:

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
1.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7GW): Part A Tentative Implementation Timeframe: 24 months	<p>i. Creation of 765 kV bus section-II at KPS3 (GIS) along with 765 kV Bus Sectionaliser & 1x330MVAR, 765 kV Bus Reactors on Bus Section-II</p> <p>Bus section – II shall be created at 765 kV & 400 kV level both with 3x1500 MVA, 765/400 kV ICTs at Bus Section-II</p> <p>ii. Creation of 400 kV bus section-II at KPS3 (GIS) along with 400 kV Bus Sectionaliser & 1x125MVAR, 400 kV Bus Reactors on Bus Section-II and 3 Nos. 400 kV bays at Bus Section-II for RE interconnection</p>	RECPDCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		iii. KPS3 (GIS) – Lakadia (AIS) 765 kV D/C line iv. 2 Nos. of 765 kV line bays each at KPS3 (GIS) & Lakadia (AIS) for KPS3 (GIS) – Lakadia (AIS) 765 kV D/C line v. ±300 MVAR STATCOM with 1x125 MVAR MSC, 2x125 MVAR MSR at KPS3 400 kV Bus section-2 vi. KPS1 (GIS)– Bhuj PS 765 kV 2 nd D/C line vii. 2 Nos. of 765 kV line bays each at KPS1 (GIS) & Bhuj PS for KPS1 (GIS) – Bhuj PS 765 kV D/C line viii. 330 MVAR, 765 kV switchable line reactors at KPS3 end of KPS3 (GIS) – Lakadia 765 kV D/C line (with NGR bypass arrangement) (Detailed scope as approved by 14th NCT and subsequent amendments thereof)	
2.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part B Tentative Implementation timeframe: 24 months from SPV transfer	i. Establishment of 2x1500 MVA, 765/400 kV & 2x500 MVA, 400/220 kV GIS S/s at a suitable location South of Olpad (between Olpad and Ichhapore) with 2x330 MVAR, 765 kV & 1x125 MVAR, 420 kV bus reactors. ii. Vadodara(GIS) – South Olpad (GIS) 765 kV D/C line iii. 240 MVAR switchable line	PFCCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		<p>reactors on each ckt at Vadodara(GIS) end of Vadodara(GIS) –South Olpad(GIS) 765 kV D/C line (with NGR bypass arrangement)</p> <p>iv. 2 Nos. of 765 kV line bays at Vadodara(GIS) for Vadodara(GIS) – South olpad(GIS) 765 kV D/C line</p> <p>v. LILO of Gandhar – Hazira 400 kV D/c line at South Olpad (GIS) using twin HTLS conductor with minimum capacity of 1700MVA per ckt at nominal voltage</p> <p>vi. Ahmedabad – South Olpad(GIS) 765 kV D/c line</p> <p>vii. 240 MVAR switchable line reactors on each ckt at Ahmedabad & South Olpad (GIS) end of Ahmedabad – South Olpad(GIS) 765 kV D/c line (with NGR bypass arrangement)</p> <p>viii. 2 Nos. of 765 kV line bays at Ahmedabad S/s for Ahmedabad – South Olpad(GIS) 765 kV D/c line</p> <p>(Detailed scope as approved by 14th NCT and subsequent amendments thereof)</p>	
3.	Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part C	i. Establishment of 4x1500 MVA 765/400 kV & 2x500 MVA 400/220 kV Boisar-II (GIS) with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor. [2x1500 MVA, 765/400 kV ICTs shall be on each 400 kV section and	RECPDCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
	Tentative Implementation timeframe: 24 months from SPV transfer	<p>2x500MVA, 400/220 kV ICTs shall be on 400 kV bus section-II. 2x125MVAR Bus reactors shall be such that one bus reactor is placed on each 400 kV bus section. 400 kV Bus Sectionalizer to be kept under normally OPEN condition.]</p> <p>ii. South Olpad (GIS) – Boisar-II (GIS) 765 kV D/c line</p> <p>iii. 2 Nos. of 765 kV line bays at South Olpad (GIS) for termination of South Olpad (GIS) – Boisar-II (GIS) 765 kV D/c line</p> <p>iv. 240 MVAR switchable line reactors on each ckt at South Olpad(GIS) & Boisar-II(GIS) end of South Olpad(GIS) – Boisar-II(GIS) 765 kV D/c line (with NGR bypass arrangement)</p> <p>v. LILO of Navsari(New) – Padghe(PG) 765 kV D/c line at Boisar-II</p> <p>vi. Boisar-II (Sec-II) – Velgaon(MH) 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent) line</p> <p>vii. 2 Nos. of 400 kV line bays at Velgaon(MH) for termination of Boisar-II – Velgaon(MH) 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent) line</p> <p>viii. LILO of Babhaleswar – Padghe (M) 400 kV D/c line at Boisar-II (Sec-I) using twin HTLS</p>	

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		<p>conductor with minimum capacity of 1700 MVA per ckt at nominal voltage</p> <p>ix. 80 MVAR switchable line reactors at Boisar-II end of Boisar-II – Babhaleswar 400 kV D/c line (with NGR bypass arrangement) formed after above LILO</p> <p>x. ±200MVAR STATCOM with 2x125 MVAR MSC, 1x125 MVAR MSR at 400 kV bus section-I of Boisar-II and ±200MVAR STATCOM with 2x125 MVAR MSC, 1x125 MVAR MSR at 400 kV bus section-II of Boisar-II</p> <p>xi. ± 300 MVAR STATCOM with 3x125 MVAR MSC, 1x125 MVAR MSR at 400 kV level of Navsari(New)(PG) S/s with 1 No. of 400 kV bay (GIS)</p> <p>(Detailed scope as approved by 14th NCT and subsequent amendments thereof)</p>	
4.	<p>Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part D</p> <p>Tentative Implementation timeframe: 24 months from SPV transfer</p>	<p>i. Establishment of 2x1500 MVA 765/400 kV & 3x500 MVA 400/220 kV Pune-III (GIS) S/s with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor.</p> <p>ii. Boisar-II – Pune-III 765 kV D/c line</p> <p>iii. 330 MVAR switchable line reactors at Pune-III end of Boisar-II – Pune-III 765 kV D/c line (with NGR bypass</p>	PFCCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		<p>arrangement).</p> <p>iv. 2 Nos. of 765 kV line bays at Boisar-II for termination of Boisar-II – Pune-III 765 kV D/c line</p> <p>v. LILO of Narendra (New) – Pune(GIS) 765 kV D/c line at Pune-III</p> <p>vi. 330 MVAR switchable line reactors at Pune-III end of Narendra (New) – Pune-III (GIS) 765 kV D/c line (with NGR bypass arrangement).</p> <p>vii. LILO of Hinjewadi - Koyna 400 kV S/c line at Pune-III(GIS) S/s</p> <p>viii. 80 MVAR, 420 kV switchable Line Reactors on each ckt at Pune-III (GIS) end of Pune-III (GIS) – Koyna 400 kV line formed after above LILO (with NGR bypass arrangement).</p> <p>(Detailed scope as approved by 14th NCT and subsequent amendments thereof)</p>	
5.	<p>Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part E2</p> <p>Tentative Implementation timeframe: 21 months from SPV transfer</p>	<p>i. Augmentation of transformation capacity at KPS2 (GIS) by 2x1500 MVA, 765/400 kV ICT on Bus Section-I (5th & 6th) & 2x1500 MVA, 765/400 kV ICT on Bus section-II (7th & 8th) & 2 Nos. 400 kV bays at Bus Section-I for RE interconnection and 3 Nos. 400 kV bays at Bus Section-II for RE interconnection</p> <p>(Detailed scope as approved by 14th NCT and subsequent</p>	RECPDCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		amendments thereof)	
6.	<p>Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW): Part A</p> <p>Tentative Implementation timeframe: 48 months for Bipole-1 (2x1500MW) and 54 months for Bipole-2 (2x1500MW)</p>	<p>i. Establishment of 6000 MW, ± 800 kV KPS2 (HVDC) [LCC] terminal station (4x1500 MW) along with associated interconnections with 400 kV HVAC Switchyard</p> <p>ii. Establishment of 6000 MW, ± 800 kV Nagpur (HVDC) [LCC] terminal station (4x1500 MW) along with associated interconnections with 400 kV HVAC Switchyard</p> <p>iii. ± 800 kV HVDC Bipole line (Hexa lapwing) between KPS2(HVDC) and Nagpur (HVDC) (1200 km) (with Dedicated Metallic Return) (capable to evacuate 6000 MW with overload as specified)</p> <p>iv. Establishment of 6x1500 MVA, 765/400 kV ICTs at Nagpur S/s along with 2x330 MVAR (765 kV) & 2x125 MVAR, 420 kV bus reactors along with associated interconnections with HVDC Switchyard. The 400 kV bus shall be established in 2 sections through 1 set of 400 kV bus sectionaliser so that 3x1500 MVA ICTs are placed in each section. The bus sectionaliser shall be normally CLOSED and may be opened based on Grid requirement.</p> <p>v. LILO of Wardha – Raipur 765 kV one D/c line (out of 2xD/c</p>	PFCCCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		<p>lines) at Nagpur.</p> <p>vi. Installation of 240 MVAR switchable line reactor at Nagpur end on each ckt of Nagpur – Raipur 765 kV D/c line.</p> <p>(Detailed scope as approved by 14th NCT and subsequent amendments thereof)</p>	
7.	<p>Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8GW): Part C</p> <p>Tentative Implementation timeframe: 48 months from SPV transfer</p>	<p>i. Establishment of 2500 MW, ± 500 kV KPS3 (HVDC) [VSC] terminal station (2x1250 MW) at a suitable location near KPS3 substation with associated interconnections with 400 kV HVAC Switchyard</p> <p>ii. Establishment of 2500 MW, ± 500 kV South Olpad (HVDC) [VSC] terminal station (2x1250 MW) along with associated interconnections with 400 kV HVAC Switchyard of South Olpad S/s</p> <p>iii. Establishment of KPS3 (HVDC) S/s along with 2x125MVAR, 420kV bus reactors along with associated interconnections with HVDC Switchyard. The 400 kV bus shall be established in 2 sections through 1 set of 400 kV bus sectionaliser to be kept normally OPEN.</p> <p>400/33 kV, 2x50 MVA transformers for exclusively supplying auxiliary power to HVDC terminal.</p> <p>iv. KPS3 – KPS3 (HVDC) 400 kV 2xD/c (Quad ACSR /AAAC /</p>	RECPDCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		<p>AL59 moose equivalent) line along with the line bays at both substations</p> <p>v. ± 500 kV HVDC Bipole line between KPS3(HVDC) and South Olpad (HVDC) (with Dedicated Metallic Return) (capable to evacuate 2500 MW)</p> <p>(Detailed scope as approved by 14th NCT and subsequent amendments thereof)</p>	
8.	<p>Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part A</p> <p>Tentative Implementation timeframe: 24 months from SPV transfer</p>	<p>i. Establishment of 4x1500 MVA, 765/400 kV & 5x500 MVA, 400/220 kV Fatehgarh-IV (Section-2) Pooling Station along with 2x240 MVAR (765 kV) Bus Reactor & 2x125 MVAR (420 kV) Bus Reactor</p> <p>ii. Fatehgarh-IV (Section-2) PS – Bhinmal (PG) 400 kV D/c line (Twin HTLS) along with 50 MVAR switchable line reactor on each ckt. at each end</p> <p>iii. LILO of both ckts of 765 kV Fatehgarh-III- Beawar D/c line (2nd) at Fatehgarh-IV (Section-2) PS along with 330 MVAR switchable line reactor at Fatehgarh-IV PS end of each ckt of 765 kV Fatehgarh-IV- Beawar D/c line (formed after LILO)</p> <p>iv. 2 Nos. of 400 kV line bays at Bhinmal (PG)</p> <p>(Detailed scope as approved by 14th NCT and subsequent amendments thereof)</p>	PFCCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
9.	<p>Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part B</p> <p>Tentative Implementation timeframe: 24 months from SPV transfer</p>	<p>i. Establishment of 2x1500 MVA, 765/400 kV Substation at suitable location near Sirohi along with 2x240 MVAR (765 kV) & 2x125 MVAR (420 kV) Bus Reactor</p> <p>ii. Fatehgarh-IV (Section-2) PS – Sirohi PS 765 kV D/c line along with 240 MVAR switchable line reactor for each circuit at each end</p> <p>iii. Sirohi PS-Chittorgarh (PG) 400 kV D/c line (Quad) along with 80 MVAR switchable line reactor for each circuit at Sirohi PS end.</p> <p>iv. 2 No. of 400 kV line bays at Chittorgarh (PG) S/s</p> <p>v. 2 No. of 765 kV line bays at Fatehgarh-IV (Section-2) PS</p> <p>(Detailed scope as approved by 14th NCT and subsequent amendments thereof)</p>	RECPDCL
10.	<p>Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part C</p> <p>Tentative Implementation timeframe: 24 months from SPV transfer</p>	<p>i. Establishment of 3x1500 MVA, 765/400 kV & 5x500 MVA, 400/220 kV Mandsaur Pooling Station along with 2x330 MVAR (765 kV) Bus Reactors & 2x125 MVAR, 420 kV Bus Reactor.</p> <p>ii. Mandsaur PS – Indore(PG) 765 kV D/c Line</p> <p>iii. 1x330 MVAR, 765 kV switchable line reactor (SLR) on each ckt at Mandsaur end of Mandsaur PS – Indore (PG) 765</p>	PFCCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		kV D/c Line iv. 2 Nos. of 765 kV line bays at Indore(PG) for termination of Mandsaur PS – Indore(PG) 765 kV D/c Line (Detailed scope as approved by 14th NCT and subsequent amendments thereof)	
11.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part D Tentative Implementation timeframe: 24 months from SPV transfer	i. Beawar- Mandsaur PS 765 kV D/c line along with 240 MVAR switchable line reactor for each circuit at each end ii. 2 Nos. of 765 kV line bays each at Beawar S/s & Mandsaur S/s (Detailed scope as approved by 14th NCT and subsequent amendments thereof)	RECPDCL
12.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part E Tentative Implementation timeframe: 24 months from SPV transfer	i. Establishment of, 765 kV Substation at suitable location near Rishabdeo (Distt. Udaipur) along with 2x240 MVAR (765 kV) Bus Reactor ii. Sirohi PS- Rishabdeo 765 kV D/c line along with 330 MVAR switchable line reactor for each circuit at Sirohi end iii. Rishabdeo - Mandsaur PS 765 kV D/c line along with 240 MVAR switchable line reactor for each circuit at Rishabdeo end iv. LILO of one circuit of 765 kV Chittorgarh-Banaskanta D/c line at Rishabdeo S/s v. 2 Nos. of 765 kV line bays each	PFCCCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		at Sirohi PS & Mandsaur S/s (Detailed scope as approved by 14th NCT and subsequent amendments thereof)	
13.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part F [by clubbing Part F1 & F2] Tentative Implementation timeframe: 24 months from SPV transfer	<ul style="list-style-type: none"> i. Establishment of 3x1500 MVA, 765/400 kV & 2x500 MVA, 400/220 kV Barmer-I Pooling Station along with 2x240 MVAR (765 kV) Bus Reactor & 2x125 MVAR (420 kV) Bus Reactor ii. Fatehgarh-III (Section-2) PS – Barmer-I PS 400 kV D/c line (Quad) iii. Barmer-I PS– Sirohi PS 765 kV D/c line along with 240 MVAR switchable line reactor for each circuit at each end iv. 2 Nos. of 400 kV line bays at Fatehgarh-III (Section-2) PS v. 2 Nos. of 765 kV line bays at Sirohi PS (Detailed scope as approved by 14th NCT and subsequent amendments thereof)	RECPDCL
14.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2 :5.5 GW) (Jaisalmer/Barmer Complex): Part H1 Tentative Implementation timeframe: 24 months from SPV transfer	<ul style="list-style-type: none"> i. Establishment of 765/400 (2x1500 MVA), 400/220 (2x500 MVA) & 220/132 kV (3x200 MVA) Kurawar S/s with 2x330 MVAR, 765 kV bus reactor and 1x125 MVAR, 420 kV bus reactor. ii. Mandsaur – Kurawar 765 kV D/c line. iii. 240 MVAR switchable line 	PFCCL

I/28785/2023

Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
		<p>reactors on each ckt at both ends of Mandsaur – Kurawar 765 kV D/c line.</p> <p>iv. 2 Nos. of 765 kV line bays at Mandsaur S/s for termination of Mandsaur – Kurawar 765 kV D/c line.</p> <p>v. LILO of Indore – Bhopal 765 kV S/c line at Kurawar.</p> <p>vi. Kurawar – Ashtha 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent) line.</p> <p>vii. 2 Nos. of 400 kV line bays at Ashtha (MP) S/s for termination of Kurawar – Ashtha 400 kV D/c line.</p> <p>viii. LILO of one circuit of Indore – Itarsi 400 kV D/c line at Astha</p> <p>ix. 2 Nos. of 400 kV line bays at Ashtha (MP) S/s for LILO of one circuit of Indore – Itarsi 400 kV D/c line at Astha</p> <p>x. Shujalpur – Kurawar 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent) line</p> <p>xi. 2 Nos. of 400 kV line bays at Shujalpur(PG) S/s for termination of Shujalpur – Kurawar 400 kV D/c line</p> <p>(Detailed scope as approved by 14th NCT and subsequent amendments thereof)</p>	

V. Modification in the earlier approved/notified transmission schemes:

I/28785/2023

(a) Revised timeframe of the transmission scheme “Transmission system for evacuation of power from Luhri Stage-I HEP”

The timeframe of the transmission scheme “Transmission system for evacuation of power from Luhri Stage-I HEP”, would be revised to 31st August, 2026, in the matching timeframe of Luhri Stage-I HEP.

(b) Delinking of Fatehgarh-II- Bhadla-III 400 kV D/c line from transmission scheme “Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part B1”:

Revised scope of the scheme “Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part B1” is as follows:

Revised Scope

Establishment of 2x1500 MVA 765/400 kV & 3x500 MVA 400/220 kV pooling station at Bhadla-3 along with 2x330 MVAR (765 kV) Bus Reactor & 2x125 MVAR (420 kV) Bus Reactor

- 765/400 kV 1500 MVA ICTs: 2 Nos.
(7x500 MVA including one spare unit)
- 765 kV ICT bays - 2 Nos.
- 400/220 kV, 500 MVA ICT – 3 Nos.
- 765 kV line bays -2 Nos.
- 400 kV ICT bays – 5 Nos.
- 220 kV ICT bays - 3 Nos.
- 220 kV line bays: 5 Nos.
- 330 MVAR Bus Reactor-2 Nos. (7x110 MVAR, including one spare unit)
- 765 kV reactor bay- 2 Nos.
- 125 MVAR, 420kV bus reactor - 2 Nos.
- 420 kV reactor bay - 2 Nos.

Future provisions: Space for

Revised Scope
<ul style="list-style-type: none"> • 765/400 kV ICTs along with bays: 2 Nos. • 765 kV line bay along with switchable line reactor: 6 Nos. • 765 kV line bay: 4 Nos. • 765 kV Bus Reactor along with bays: 2 Nos. • 400/220 kV ICTs along with bays: 10 Nos. • 400 kV line bays: 8 Nos. • 400 kV line bays along with switchable line reactor: 8 Nos. • 400 kV Bus Reactor along with bays: 2 Nos. • 400 kV Sectionalization bay: 2 sets • 220 kV line bays: 12 Nos. • 220 kV sectionalization bay: 2 sets
<p>Bhadla-3 PS – Sikar-II S/s 765 kV D/c line along with 330 MVAR Switchable line reactor for each circuit at each end of Bhadla-3 PS – Sikar-II S/s 765 kV D/c line</p> <ul style="list-style-type: none"> • Switching equipment for 765 kV 330 MVAR switchable line reactor – 4 Nos. • 765 kV, 330 MVAR Switchable line reactor- 4 Nos.
<p>765 kV line bays at Sikar-II</p> <ul style="list-style-type: none"> • 765 kV line bays – 2 Nos.
<p>Note:</p> <p>iv. <i>Provision of suitable sectionalization shall be kept at Bhadla-3 at 400 kV & 220 kV level to limit short circuit level.</i></p> <p>v. <i>Developer of Sikar-II S/s to provide space for 2 Nos. of 765 kV line bays at Sikar-II S/s along with space for switchable line reactors.</i></p> <p>vi. <i>Space provision for future 2 Nos. 220 kV Bus Coupler bay and 2 Nos. Transfer Bus Coupler Bay shall be kept for bus switching scheme requirement.</i></p>

I/28785/2023

Annex-I**List of Participants of the 14th meeting of NCT****CEA:**

1. Sh. Ghanshyam Prasad, Chairperson, CEA and Chairman, NCT
2. Sh. A. K. Rajput, Member (Power Systems)
3. Sh. Ajay Talegaonkar, Member (E&C)
4. Sh. Ishan Sharan, Chief Engineer (PSPA-I)
5. Sh. Upendra Kumar, Chief Engineer (PCD)
6. Sh. B.S. Bairwa, Director (PSPA-II)
7. Sh. Deepanshu Rastogi, Deputy Director (PSPA-II)
8. Sh. Manish Maurya, Deputy Director (PSPA-II)
9. Sh. Pranay Garg, Deputy Director (PSPA-II)
10. Sh. Kanhaiya Singh Kushwaha, Assistant Director (PSPA-I)
11. Sh. Ajay Malav, Assistant Director (PSPA-II)

MoP:

1. Sh. Om Kant Shukla, Director (Trans.)

MNRE:

1. Sh. Tarun Singh, Scientist D

SECI:

1. Sh. Sanjay Sharma, Director
2. Sh. R.K. Agarwal, Consultant

CTUIL:

1. Sh. P.C. Garg, COO
2. Sh. Ashok Pal, Deputy COO
3. Sh. Jasbir Singh, CGM
4. Sh. Sourov Chakraborty, CGM
5. Sh. P.S Das, Senior GM
6. Sh. V Thiagarajan, Senior GM
7. Sh. Kashish Bhambhani, GM
8. Sh. Sandeep Kumawat, DGM
9. Sh. Chinmay Sharma, Chief Manager
10. Sh. Pratyush Singh, Chief Manager

GRID India:

1. Sh. Rajiv Porwal, ED
2. Sh. Surajit Banerjee, CGM
3. Sh. Vivek Pandey, GM
4. Sh. Priyam Jain, Manager

Expert Member:

1. Ms. Seema Gupta
2. Dr. Radheshyam Saha