

I/31891/2023



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry 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 सोलहवीं बैठक की कार्यसूची - के सम्बन्ध में ।

Subject: Agenda for the 16th Meeting of National Committee on Transmission (NCT) – regarding.

महोदया (Madam) / महोदय (Sir),

The 16th meeting of the "National Committee on Transmission" (NCT) is scheduled as given below:


Date: 30/11/2023

Time: 02:00 PM

Venue: Chintan, 2nd Floor, CEA, Sewa Bhawan, R.K. Puram Sector-1, New Delhi

The agenda for the meeting is enclosed herewith. Kindly make it convenient to attend the meeting.

भवदीय/Yours faithfully,


 28.11.2023

(बी.एस.बैरवा/ B.S. Bairwa)
 निदेशक/Director

प्रतिलिपि / Copy to:

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

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List of Addresses:

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.	Sh. Ravinder Gupta Ex. Chief Engineer CEA		

Special Invitee

Chief Engineer (PCD), CEA

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Agenda for the 16th meeting of National Committee on Transmission

1 Confirmation of the minutes of the 15th meeting of National Committee on Transmission.

1.1 The minutes of the 15th meeting of NCT held on 25.08.2023 were issued vide CEA letter no CEA-PS-12-13/3/2019-PSPA-II dated 18.09.2023.

1.2 CTUIL vide email dated 18.09.2023 had requested the following change in the minutes of 15th NCT meeting:

The clause 3.9.4 may be modified as:

Modifications in the schemes viz. OPGW on 400 kV Agra – Ballabhgarh & 400 kV Kishenpur – Wagoora line approved in 11th NCT to POWERGRID in RTM mode		
Sr. No.	Scope (as per 15th NCT MoM)	Revised Scope (to be included as Corrigendum)
1.	Supply & Installation of OPGW on 400kV Agra – Ballabhgarh line (181km)	Supply & Installation of OPGW alongwith terminal equipment on existing 400kV Agra – Ballabhgarh line (181km)
2.	Supply & Installation of OPGW on 400kV Kishenpur – Wagoora line (183km)	Supply & Installation of OPGW alongwith terminal equipment on existing 400kV Kishenpur – Wagoora line (183km) except LILO portion at New Wanpoh (3 kms)

1.3 Members may confirm the minutes along with the corrigendum.

2 Status of the transmission schemes noted/approved/recommended to MoP in the 15th meeting of NCT:

2.1 The status of the transmission schemes noted/approved/recommended in the 15th meeting of NCT is tabulated below:

2.1.1 Status of new transmission schemes approved/recommended:

Sr . No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Mode of Implementation	MoP approval	Survey Agency	BPC
1.	North Eastern Region Generation Scheme-I (NERGS-I)	Approved	TBCB	Notified vide Gazette dated 26.10.2023	Not Applicable	RECPDC L
2.	Transmission Scheme for	Recommended	TBCB	Would be taken up for	PFCCL	PFCCL

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Sr . No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Mode of Implementation	MoP approval	Survey Agency	BPC
	integration of Tumkur-II REZ in Karnataka			approval after completion of survey		
3.	Transmission system strengthening for interconnections of Bhadla-III & Bikaner-III complex.	Recommended	TBCB	Notified vide Gazette dated 07.11.2023		
4.	Network Expansion scheme in Gujarat for drawl of about 3.6 GW load under Phase-I in Jamnagar area.	Recommended	TBCB	Notified vide Gazette dated 07.11.2023	PFCCL	PFCCL
5.	Implementation of Unified Network Management System (UNMS) in the Western Region	Approved	RTM	Not applicable	Not applicable	Not applicable

2.1.2 Status of transmission schemes where modifications was suggested:

S. No	Scheme where modifications was suggested	MoP Approval
1.	De linking of augmentation of 765/400 kV, 1500 MVA transformer at Bhiwani S/s from Transmission System for evacuation of RE power from renewable energy parks in Leh (5 GW Leh- Kaithal HVDC Transmission corridor)	OM dated 06.11.2023
2.	Delinking of Jhatikara - Dwarka 400 kV D/c line (Quad) from the Transmission scheme "Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part D"	OM dated 06.11.2023

3 Modifications in the earlier approved/notified transmission schemes:

3.1 Transmission System for Evacuation of power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part B scheme

3.1.1 In the 14th NCT meeting held on 09.06.2023, Transmission System for Evacuation of power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part B scheme was agreed. Subsequently, the following developments have taken place which necessitated minor modifications in the scheme:

- M/s AMNS vide letter dated 26.09.2023 & e-mail dated 07.10.2023 has requested that the LILO of Gandhar – Hazira 400 kV D/c line at South Olpad (GIS) may be carried out using

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twin HTLS conductor with minimum capacity of 2100 MVA per ckt at nominal voltage instead of 1700 MVA per ckt at nominal voltage in view of expansion of their Hazira steel facility for which they are anticipating to draw upto 2000 MW by 2030.

- The matter of optimal utilization of 2x500 MVA, 400/220 kV ICTs at South Olpad S/s by GETCO/RIL (50 MW) Dahej Manufacturing division was discussed in a meeting amongst CEA, CTU, GRID-INDIA, GETCO & RIL on 25.09.2023 in which GETCO stated that they are anticipating drawal of power from 220 kV level of South Olpad S/s in the time-frame of Dec'26 to March'27 and RIL requested start date of GNA for 50 MW as 31.07.2026 by which time they shall draw power from 220 kV level of South Olpad S/s. Since the ICTs are catering to both RIL and GETCO, it was decided that the time-frame of implementation of the 2x500 MVA, 400/220 kV ICTs needs to be specified as 31.07.2026 so as to ensure that the ICTs are implemented in matching time-frame of proposed drawl of power by RIL, whose load requirement is coming up first. Regarding sharing of the transmission charges for the subject ICTs, it was deliberated that the same shall be based on the provisions specified in the extant CERC Sharing Regulations (as amended). In view of the above, the 2x500 MVA, 400/220 kV ICTs at South Olpad S/s need to be implemented in time-frame of 31.07.2026 or 24 months from SPV transfer whichever is later, while the rest of the scheme shall continue to be implemented in 24 months from SPV transfer.

3.1.2 Subsequently, final grant of GNA for 50MW was issued to M/s RIL vide letter dated 31.10.2023. However, M/s RIL vide e-mail dated 16.11.2023 have informed that considering the higher requirement of power in the Dahej Manufacturing plants, they will surrender the connectivity of 50 MW which is granted at 220 kV at Dahej from proposed South Olpad ISTS substation. Accordingly, based on request of applicant, the application shall be closed and hence, the requirement of 2x500MVA, 400/220kV ICTs by 31.07.2026 shall not arise.

3.1.3 In view of the same, the 2x500MVA, 400/220kV ICTs is proposed to be dropped from the Transmission System for Evacuation of power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7 GW): Part B scheme and may be taken up later based on request from GETCO.

3.1.4 The above changes (i.e. deletion of 2x500MVA ICTs and change in minimum capacity of twin HTLS conductor from 1700MVA to 2100MVA) shall result in change in cost of the scheme from 4766 Cr. to 4647 Cr. (i.e. 119Cr. Decrease, on Sep-22 Price Level) (about 2.5% cost reduction).

3.1.5 Revised Scope of “Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-IV (7GW): Part B” scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
1.	Establishment of 2x1500 MVA, 765/400 kV GIS S/s at a suitable location South of	• 765/400 kV, 1x1500 MVA ICT-2 Nos. (7x500 MVA single phase units

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Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
	<p>Olpad (between Olpad and Ichhapore) with 2x330 MVAR, 765 kV & 1x125 MVAR, 420 kV bus reactors</p> <p>Future Provisions:</p> <p>Space for</p> <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: 2 Nos. • 765 kV Sectionalizer bay: 1 - set • 400 kV line bays along with switchable line reactor – 8 Nos. • 400/220 kV ICT along with bays - 8 Nos. (<i>in addition to 2 nos. ICTs under present scope</i>) • 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>including one spare unit)</p> <ul style="list-style-type: none"> • 765 kV ICT bays- 2 Nos. • 400 kV ICT bays- 2 Nos. • 330 MVAR, 765 kV bus reactor-2 Nos. • 125 MVAR, 420 kV bus reactor-1 No. • 765 kV reactor bay- 2 Nos. • 765 kV line bay- 4 Nos. • 400 kV reactor bay- 1 No. • 400 kV line bay- 4 Nos. • 110 MVAR, 765 kV, 1-ph reactor (spare unit for line/bus reactor)-1 No.
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 2100	LILO route length ~ 10 km.

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Sl. No.	Scope of the Transmission Scheme	Capacity/ Route length
	MVA per ckt at nominal voltage	
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) • 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)

Implementation timeframe: 24 months from date of SPV transfer.

3.1.6 Members may deliberate.

3.2 Transmission scheme for drawal of 4000 MW power by MPSEZ Utilities Limited (MUL)

3.2.1 “Transmission scheme for drawal of 4000 MW power by MPSEZ Utilities Limited (MUL)” was deliberated in 11th NCT meeting held on 28.12.2022 & 17.01.2023 at an estimated cost of Rs. 2200 Cr. and recommended to be implemented through TBCB route with an implementation timeframe of 21 months from date of SPV transfer.

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Establishment of 4x1500 MVA, 765/400 kV Navinal (Mundra) S/s (GIS) with 2x330 MVAR, 765 kV & 1x125MVAR, 420 kV bus reactors	765/400 kV, 1500 MVA ICT – 4 Nos. (13x500 MVA single phase units including one spare ICT Unit) 765 kV ICT bays – 4 Nos.

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	Future provision (space for): <ul style="list-style-type: none"> ➤ 765/400 kV ICT along with bays- 2 Nos. ➤ 765 kV line bays along with switchable line reactors – 4 Nos. ➤ 765 kV Bus Reactor along with bay: 2 Nos. ➤ 765 kV Sectionalizer: 1 -set ➤ 400 kV line bays along with switchable line reactors– 6 Nos. ➤ 400/220 kV ICT along with bays -6 Nos. ➤ 400 kV Bus Reactor along with bays: 3 Nos. ➤ 400 kV Sectionalization bay: 1- set ➤ 220 kV line bays: 10 Nos. ➤ 220 kV Sectionalization bay: 1 set ➤ 220 kV BC and TBC: 2 Nos. ➤ STATCOM (± 300 MVAR) along with MSC (2x125 MVAR) & MSR (1x125 MVAR) and associated bays- 2 Nos. 	400 kV ICT bays – 4 Nos. 765 kV Line bays – 4 Nos. 1x330 MVAR, 765 kV bus reactor- 2 Nos. (7x110 MVAR single phase Reactors including one spare Unit for bus /line reactor) 765 kV Bus reactor bay – 2 Nos. 125 MVAR, 420 kV reactor- 1 Nos. 400 kV Reactor bay- 1 No.
2.	LILO of Bhuj-II – Lakadia 765 kV D/c line at Navinal(Mundra) (GIS) S/s with associated bays at Navinal(Mundra) (GIS) S/s	LILO Route length: 70 km (280 ckm)
3.	Installation of 1x330 MVAR switchable line reactor on each ckt at Navinal end of Lakadia – Navinal 765 kV D/c line (formed after above LILO)	1x330 MVAR, 765 kV switchable line reactor – 2 nos. Switching equipment for 765 kV line reactor – 2 nos.

Note:

- (1) The following scope of works for interconnection of MUL S/s (MRSS1 & 2) with Navinal (Mundra) S/s (GIS) is under the scope of MUL and is required to be implemented in the same time frame

Sl. No.	Scope of works to be implemented by MUL	Capacity/km
1	Interconnection of MUL S/s (MRSS1 & 2) with Navinal (Mundra) S/s (GIS) as given below: (i). MUL MRSS-1 – Navinal (Mundra) 400 kV D/c (Twin HTLS - Quad Moose equivalent) line along with associated line bays Navinal end* (~1-2 km.) (ii). MUL MRSS-2 – Navinal (Mundra) 400	Route Length- 1 km (approx.) 400 kV line bays: 4 Nos.

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	<p>kV D/c (Twin HTLS - Quad Moose equivalent) line along with associated line bays Navinal end* (~1-2 km.)</p> <p>*4 Nos. 400 kV Line bays at MUL (MRSS1 & 2) end shall be implemented by MUL</p>	
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(2) Developer of the transmission scheme (under ISTS) to provide space for 4 Nos. of 400 kV line bays for termination of MUL lines under the present scope of works (in addition to future space provision)

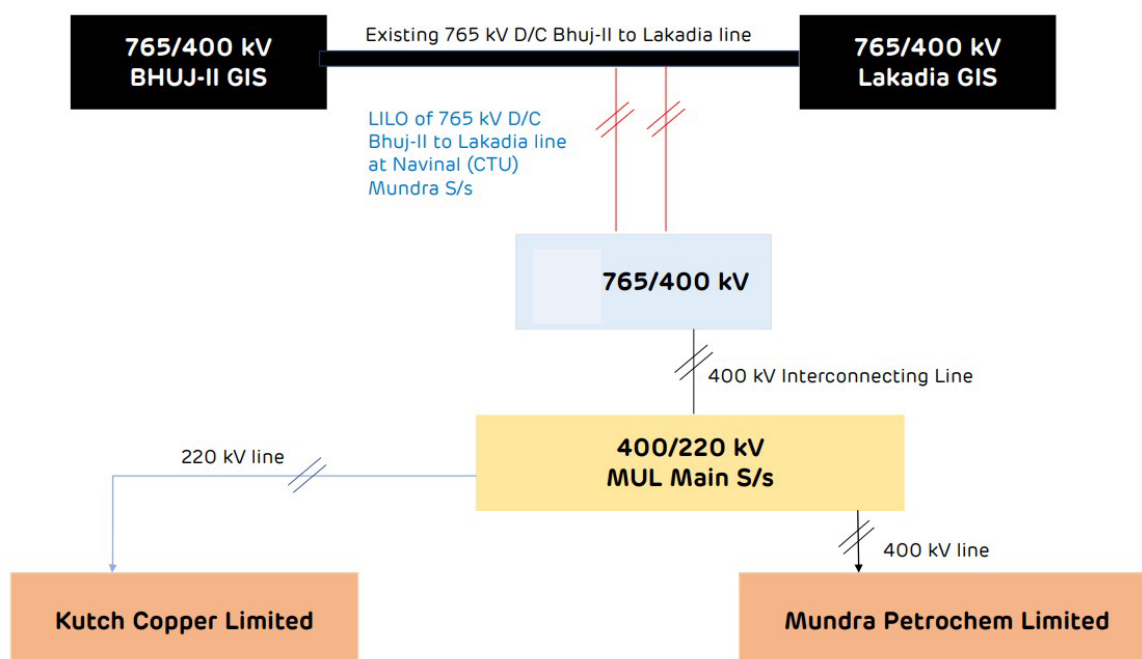
3.2.2 However, MUL vide letters dated 04.03.2023 requested to keep the following LTA applications on hold and defer their further processing. In the absence of any firm commitment from MUL, the scheme was agreed to be deferred in the 12th NCT meeting held on 24.03.2023.

3.2.3 Subsequently, GNA applications have been received from below entities in Mundra area:

Sl. No.	Application ID	Name of the Applicant	Submission Date	Nature of applicant	GNA within Region (MW)	GNA outside Region (MW)	Total Quantum (MW) of GNA Required	Start date of GNA	End date of GNA
1.	2200000129	Kutch Copper Limited	24-06-2023	Bulk consumer seeking to connect to ISTS	115.0	0.0	115	01-06-2025	31-05-2050
2.	2200000122	MPSEZ Utilities Limited	28-06-2023	Distribution licensee seeking to connect to ISTS	495.0	0.0	495	01-04-2029	31-03-2054
3.	2200000064	MPSEZ Utilities Limited	28-06-2023	Distribution licensee seeking to connect to ISTS	642.0	658.0	1300	01-06-2025	31-05-2050
4.	2200000124	Mundra Petrochem Limited (MPL)	28-06-2023	Bulk consumer seeking to connect to ISTS	1140.0	0.0	1140	01-06-2025	31-05-2050

3.2.4 The schematic diagram of above entities is given below (as received from MUL):

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3.2.5 The Regulation 12.5 of the GNA Regulations, 2022 states the following:

“12.5. In case of an entity covered under Regulation 17.1(iii), the line to connect such an entity to the ISTS and necessary augmentation for providing connection to the ISTS, shall be constructed and maintained by a licensee at the cost of such entity”

In view of the above, it was proposed in the 21st CMETS-WR (2nd sitting) meeting held on 29.08.2023 that the scope of work which was earlier covered under the “Transmission scheme for drawal of 4000 MW power by MPSEZ Utilities Limited (MUL)” be implemented by above entities (to be constructed and maintained by a licensee at the cost of above entities in Mundra area).

3.2.6 As per deliberations in a meeting under the chairmanship of Chairperson, CEA, on 12.07.2023, it was decided that ISTS identified/planned for potential based bulk consumers including consumers producing green hydrogen can be considered as common augmentation provided the potential site of such bulk consumers has been confirmed by the central/state government.

3.2.7 In this respect, in the 21st CMETS-WR (2nd sitting) meeting, MNRE stated that they have received some proposals for green hydrogen / green ammonia production in Mundra as well as other areas and the same shall be shared with CTU after compilation of all proposals by their Green Hydrogen team.

3.2.8 Subsequently, MNRE vide e-mail dated 29.09.2023 has informed the following:

Quote

1. *This is with reference to a request received from M/s Adani Green Energy Ltd. In their request, they have envisaged to set up 3 MMTPA Green Ammonia production project at Mundra (Gujarat). The capacity will come in 3 phases of 1 MMTPA each*

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starting from FY 2026-27 up to FY 2029-30. This would require around 10 GW of RE power to be drawn from the grid.

2. *M/s Adani Green Energy Ltd has also mentioned that CTU has planned a 765 / 400 kV substation near Mundra (Navinal) and has requested MNRE to take up the matter with CTU/CEA for planning the transmission system for drawl of 10 GW power at Mundra for their envisaged 3 MMTPA Green Ammonia production project.*
3. *In view of above, request from M/s Adani Green Energy Ltd is forwarded for necessary examination and to plan accordingly, if found feasible. Further, MNRE is also writing to Govt. of Gujarat for sending the details of other upcoming projects related to Green Hydrogen & its derivatives. This will be forwarded to CTU as and when received so as to plan the transmission system in optimum manner.*

Unquote

3.2.9 The matter was deliberated in the 22nd CMETS-WR meeting wherein following was deliberated:

- i. A meeting had been convened under Chairperson, CEA, with STUs of states having major ports, and potential Green Hydrogen/Ammonia Manufacturers in March, 2023, to ascertain the likely production plan of Green Hydrogen/Ammonia and associated Electricity Requirement. Based on deliberations, it emerged that green hydrogen/ammonia manufacturing is planned in the coastal states of Gujarat, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Kerala and Odisha. Production of green hydrogen/ammonia is also envisaged in Uttar Pradesh, Madhya Pradesh and Rajasthan. In view of upcoming Green Hydrogen and Green Ammonia plants/industries in the above locations, planning of transmission system is being done by CEA in consultation with CTU for delivery of power to the potential Green Hydrogen/Ammonia manufacturing sites. In this respect, M/s Adani has informed CEA regarding potential for 16000MW green hydrogen in Mundra area by 2030. Electricity demand from green hydrogen of 1500MW in Mundra area is being considered in the 1st phase for which Establishment of 4x1500MVA, 765/400 kV Navinal (Mundra) (GIS) S/s through LILO of Bhuj-II – Lakadia 765 kV D/c line, is being considered.
- ii. Representative from MNRE stated that as per discussions in meeting chaired by Hon'ble Minister of Power with Green Hydrogen industry stakeholders/associations on 19.10.2023, various Green Hydrogen/Ammonia/Methanol project developers have been requested to share year-wise planned capacities at different locations and Hon'ble Minister has also instructed CTUIL to plan required substation capacity at these locations. In this respect, they have already received data from M/s Adani New Industries Ltd. regarding request for Green Ammonia capacity of 22GW which is planned to be drawn from Navinal (Mundra) area. MNRE stated that the consolidated list of such entities shall be shared with CTU in next week.

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3.2.10 Subsequently, MNRE vide OM dated 01.11.2023 has shared the consolidated information received from various developers and their drawal requirement at respective locations, which includes 22GW drawal plan of M/s Adani New Industries Ltd. from Navinal (Mundra) area by 2030 and also mentions that the overall plan is for 40GW capacity by end of 2032.

3.2.11 Matter regarding implementation of the scheme “Transmission scheme for drawal of 4000 MW power by MPSEZ Utilities Limited (MUL)” under ISTS, which was earlier deferred in 12th NCT meeting, may be discussed. In case implementation is agreed under ISTS, the name of the scheme would need to be modified to “Network Expansion Scheme in Navinal (Mundra) area of Gujarat for drawal of power in the area” as it would cater to multiple drawee utilities in Mundra area as well as Green Hydrogen/Ammonia manufacturers in the area. The scope of work is as given below:

Network Expansion Scheme in Navinal (Mundra) area of Gujarat for drawal of power in the area

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	<p>Establishment of 4x1500 MVA, 765/400 kV Navinal(Mundra) S/s (GIS) with 2x330 MVAR, 765 kV & 1x125MVAR, 420 kV bus reactors</p> <p>Future provision (space for):</p> <ul style="list-style-type: none"> ➤ 765/400 kV ICT along with bays- 2 Nos. ➤ 765 kV line bays along with switchable line reactors – 4 Nos. ➤ 765 kV Bus Reactor along with bay: 2 Nos. ➤ 765 kV Sectionalizer: 1 -set ➤ 400 kV line bays along with switchable line reactors– 6 Nos. (<i>in addition to 4 nos. bays for MUL – Navinal (Mundra) (GIS) 400 kV 2xD/c line mentioned under Note</i>) ➤ 400/220 kV ICT along with bays -6 Nos. ➤ 400 kV Bus Reactor along with bays: 3 Nos. ➤ 400 kV Sectionalization bay: 1- set ➤ 220 kV line bays: 10 Nos. ➤ 220 kV Sectionalization bay: 1 set ➤ 220 kV BC and TBC: 2 Nos. ➤ STATCOM (±300 MVAR) along with MSC (2x125 MVAR) & MSR (1x125 MVAR) and associated bays- 2 Nos. 	<p>765/400 kV, 1500 MVA ICT – 4 Nos. (13x500 MVA single phase units including one spare ICT Unit)</p> <p>765 kV ICT bays – 4 Nos. 400 kV ICT bays – 4 Nos. 765 kV Line bays – 4 Nos. 1x330 MVAR, 765 kV bus reactor- 2 Nos. (7x110 MVAR single phase Reactors including one spare Unit for bus /line reactor)</p> <p>765 kV Bus reactor bay – 2 Nos.</p> <p>125 MVAR, 420 kV reactor- 1 Nos.</p> <p>400 kV Reactor bay- 1 No.</p>
2.	LILO of Bhuj-II – Lakadia 765 kV D/c line at Navinal(Mundra) (GIS) S/s with associated bays at	LILO Route length: 70 km (280 ckm)

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	Navinal (Mundra) (GIS) S/s	
3.	Installation of 1x330 MVar switchable line reactor on each ckt at Navinal end of Lakadia – Navinal 765 kV D/c line (formed after above LILO)	1x330 MVar, 765 kV switchable line reactor – 2 nos. Switching equipment for 765 kV line reactor – 2 nos.

Note:

(1) The following scope of works for interconnection of 400/220kV MUL (Distribution Licensee) S/s with Navinal (Mundra) S/s (GIS) is under the scope of MUL and is required to be implemented in the same time frame

a) MUL (GNA: 1300 MW w.e.f. 01.06.2025):

- Establishment of 400/220 kV Substation by MUL
- MUL – Navinal (Mundra) (GIS) 400 kV 2xD/c (Twin HTLS - Quad Moose equivalent) line along with associated line bays Navinal end* (shall be constructed and maintained by a licensee at the cost of such entity) @
- 4 nos. 400 kV Line bays at the Dist. Licensee end shall be under the scope of MUL @Bay(s) required for completion of diameter (GIS) in one-and-half breaker scheme shall also be implemented by the licensee

b) MUL (GNA: 495 MW w.e.f. 01.04.2029):

- MUL shall share the Dedicated Transmission System for GNA of MUL (GNA Appl. No. 2200000064 for 1300MW)

(2) Further, following bulk consumer entities shall also get interconnected with 400/220kV Substation of MUL for drawal of power:

a) KCL (GNA-RE: 115 MW w.e.f. 01.06.2025):

- KCL – MUL 220 kV D/c line along with associated line bays at both ends (Shall be implemented by MUL)#
- KCL shall share the Dedicated Transmission System for GNA of MUL (GNA Appl. No. 2200000064 for 1300MW)
#As per e-mail dated 07.11.2023 from MUL, MUL is a Distribution Licensee in Mundra area and is authorized to construct and build the 220 kV and 440 kV Transmission lines to supply power to bulk Consumers in the area.

b) MPL (GNA-RE: 1140 MW w.e.f. 01.06.2025)

- MPL – MUL 400 kV D/c line along with associated line bays at both ends (Shall be implemented by MUL)#

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- MPL shall share the Dedicated Transmission System for GNA of MUL (GNA Appl. No. 2200000064 for 1300 MW)
#As per e-mail dated 07.11.2023 from MUL, MUL is a Distribution Licensee in Mundra area and is authorized to construct and build the 220 kV and 440 kV Transmission lines to supply power to bulk Consumers in the area.

3.2.12 Members may deliberate.

3.3 Additional 1x500 MVA 400/220 kV (9th) ICT, for injection from any additional RE project (other than 4000 MW injection under SECI bids upto Tranche IV) at Bhuj PS

3.3.1 Additional 1x500 MVAR, 400/220 kV (9th) ICT at Bhuj PS (along with associated ICT bays) was planned for injection from any additional RE project (other than 4000 MW injection under SECI bids upto Tranche IV) at Bhuj PS and was allocated for implementation to POWERGRID under RTM route as per MoP OM dated 30.01.2019. As per the OM, the 9th ICT is to be taken up for injection requirement beyond 4,000 MW at 220 kV level of Bhuj PS.

3.3.2 The matter was last deliberated in the 11th NCT meeting held on 28.12.2023 & 17.01.2023 and at that time total Stage-II connectivity and LTA at Bhuj PS had reached 3366 MW. During the meeting, Representative of SECI had stated that Govt. of Gujarat is not providing land for additional RE development in Bhuj area, therefore, no additional connectivity applications are anticipated from RE generators. After detailed deliberations, it was decided to defer the scheme and the same would be taken up upon visibility of additional RE generation at Bhuj PS.

3.3.3 Presently, the total connectivity under GNA at Bhuj PS has reached 3546 MW. Considering full dispatch from RE under GNA, it was agreed in the 22nd CMETS-WR (1st sitting) meeting held on 23.10.2023 to proceed with implementation of the 9th ICT at Bhuj PS irrespective of Stage-II connectivity/LTA applications to ensure N-1 compliance at Bhuj PS. Also, GoG vide letter dated 21.09.2023 has also allowed setting up of to allow all ISTS /In-STS connected RE projects in the State.

3.3.4 Members may deliberate.

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

3.4.1 A comprehensive transmission scheme (400 kV Jhangi-Wangtoo-Panchkula D/c Corridor) for evacuation of power from two Hydro Electric Projects (HEPs) viz Tidong HEP (150 MW) of Tidong Power Generation Private Limited (STATKRAFT) and Shongtong Karcham HEP (450 MW) of HPPCL in Himachal Pradesh was approved by MoP based on the recommendation by NCT (11th) for implementation through TBCB route. Scheme has been notified vide Gazette notification dated 13.04.2023 with RECPDCL as the BPC.

3.4.2 Subsequently, HPPCL had intimated that the commissioning date of Shongtong Karcham HEP (STKHEP) had been revised (preponed) from July'26 to July'25 and

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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.

- 3.4.3 Considering the revised commissioning of STKHEP, the revised transmission scheme was discussed in the 65th NRPC meeting held on 21.04.2023 and it was stated that all efforts may be made to reduce the time frame of the interim transmission system to ensure that the generation is not stranded. Therefore, NRPC Forum recommended NCT to consider generation project schedule and transmission system may be developed accordingly.
- 3.4.4 Further, the matter was discussed in the 14th NCT meeting held on 09.06.23, wherein, 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. In view of this, CTUIL was requested to confirm change in conductor configuration, if any, along with revised cost of the scheme based on the survey report.
- 3.4.5 In this regard, meetings were held between CEA and CTUIL to review the selection of conductors for 400 kV D/C Panchkula - Wangtoo line. Further, study report of M/s RSW (Canada) for the 400 kV D/C Nathpa Jhakri- Abdullapur line (running parallel to the proposed line) were also referred. From survey report, CTUIL observed that line shall be traversing high altitudes upto 2700 m and around 49% (85 km) of the line would be between 2000 m and 2700 m altitude, based on which various options for conductor selection were evaluated.
- 3.4.6 CTU also informed that during walkover survey, it emerged that line length of 400 kV Wangtoo -Panchkula D/c line is reduced to 175 km from 210 km in earlier approved proposal. CTUIL Cost committee revised the cost of transmission scheme considering Quad Moose configuration with revised length of 175 km.
- 3.4.7 CEA vide their letter dated 11.08.2023, recommended Quad AL 59 conductor configuration for Panchkula-Wangtoo 400 kV D/c line in view of less power losses & weight, as compared to Standard Conductors (Quad-ACSR Moose/AAAC/Trippl Bundle-ACSR Lapwing/AL 59/AAAC). CEA also stated that for continuation of the practice being followed at present in RfP documents for TBCB projects, CTUIL may give options of Quad ACSR or AAAC conductor for the subject line.
- 3.4.8 Subsequently, HPPCL vide letter dated 24.08.2023 informed that the commissioning of July'2025 for Shongtong Karcham would not be feasible to achieve and the transmission system would be required as per the original schedule of July'2026.
- 3.4.9 The same was deliberated in the 15th NCT meeting held on 25.08.2023 and after detailed deliberations, the scheme was deferred and it was agreed that a meeting would be convened under Member (Power Systems), CEA, to decide the conductor specification and estimated revised cost of the scheme.

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3.4.10 In view of above, the revised cost estimate for the scheme with 400 kV Wangtoo - Panchkula D/c line (Quad Moose conductor) (175 km) is about Rs. 2,712 (as per March'23 price level). There is a variation of +22.6% due to conductor change (Quad Moose in place of HTLS) at March'23 price level as given below:

Scope	Estimated cost (March, 22) (Rs Cr.)	Estimated cost (March, 23) (Rs Cr.)
Original Transmission scheme including 400 kV Wangtoo -Panchkula (210 km) D/c line (Twin HTLS)	2,286	2,212
Transmission scheme considering 400 kV Wangtoo -Panchkula (175 km) D/c line (Quad Moose)	2,991	2,712
% variation w.r.t scope	+30.83%	+22.6%

3.4.11 Subsequently, a meeting under the chairmanship of Member (Power Systems), CEA, was held on 03.11.2023 to discuss the issue of finalizing the suitable conductor for Wangtoo-Panchkula 400 kV D/c line. In the meeting, Quad AL59 conductor was recommended for the complete line length of Wangtoo-Panchkula 400 kV D/c transmission line. Further, to give options to bidders and for continuing of the practice being followed at present in the RfP document of TBCB projects, CTUIL may decide to also give options of Quad ACSR/Quad AL59/Quad AAAC conductor for the subject line.

3.4.12 Therefore, considering the earlier approved transmission scheme w.r.t original time frame of STKHEP i.e. July'26 and change in conductor configuration (Quad) & line length as 175 km instead of 210 km (considered in the initial estimate for 400 kV Wangtoo-Panchkula line), the detailed scope of work along with changes from earlier transmission scheme (approved in 11th NCT meeting) is as under:

Sl. No.	Scope of the Transmission Scheme (As Agreed in 11 th NCT meeting)	Revised Scope of the Transmission Scheme
A. Phase-I with Tidong HEP [Schedule: 01st July 2026]		
I.	Establishment of 2x315 MVA (7x105 MVA 1-ph units including a spare unit) 400/220 kV GIS Pooling Station at Jhangi ➤ 400/220 kV ICTs- 2x315 MVA (7x105 MVA 1-ph units including a spare unit) ➤ 400 kV ICT bays- 2 Nos. ➤ 220 kV ICT bays- 2 Nos. ➤ 400kV line bays (GIS) -2 Nos. (for Jhangi PS – Wangtoo D/c line) ➤ 420 kV Bus reactor -1 No. (4x 41.66 MVA 1-ph units including one spare unit) ➤ 420 kV Reactor bay-1 No.	No Change

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	Future space provision for: <ul style="list-style-type: none"> ➤ 5 nos. of 400 kV line bays ➤ 6 nos. of 220 kV line bays for future projects (space for 2 bays to be utilized for connectivity to Tidong generation) ➤ 2 nos. of 400/220 kV Transformer ➤ 1 no. 420 kV Bus Reactor along with bay ➤ 220 kV Sectionalization bay: 1 set ➤ Bus Coupler: 1 No. 	
2.	400 kV Jhangi PS – Wangtoo (Quad) D/c line (Line capacity shall be 2500 MVA per circuit at Nominal voltage) <ul style="list-style-type: none"> ➤ Route Length-54 km 	No Change
3.	400 kV bays at Wangtoo for termination of 400 kV Jhangi PS – Wangtoo D/c line <ul style="list-style-type: none"> ➤ 400 kV bays – 2 Nos.(GIS) 	No Change
B. Phase-II with Shongtong HEP [Schedule: 31st July, 2026]		
1.	LILO of one circuit of Jhangi PS - Wangtoo (HPPTCL) 400 kV D/c (Quad) line ^s at generation switchyard of Shongtong HEP <ul style="list-style-type: none"> ➤ LILO Route length- 1 km (2 ckm) 	No Change
2.	Wangtoo (HPPTCL) - Panchkula (PG) 400 kV D/c (Twin HTLS*) line along with 80 MVAR switchable line reactor at Panchkula end on each circuit <ul style="list-style-type: none"> ➤ Route length-210 km 	Wangtoo (HPPTCL) - Panchkula (PG) 400 kV D/c line (Quad AL 59/Quad ACSR Moose/Quad AAAC) along with 80 MVAR switchable line reactor at Panchkula end on each circuit <ul style="list-style-type: none"> ➤ Route length-175 km
3	400kV bays at Wangtoo S/s (2 nos.) and Panchkula S/s (2 nos.) for termination of 400 kV Wangtoo (HPPTCL) - Panchkula (PG) D/c line <ul style="list-style-type: none"> ➤ 400 kV Line bays- 4 nos. (2 nos. GIS bays at Wangtoo and 2 nos. AIS bays at Panchkula) 	No Change
	Estimated Cost of the Scheme: <ul style="list-style-type: none"> ➤ Rs. 2286 Cr 	Estimated Cost of the Scheme: <ul style="list-style-type: none"> ➤ Rs. 2712 Cr

^s Line capacity shall be 2500 MVA per circuit at nominal voltage

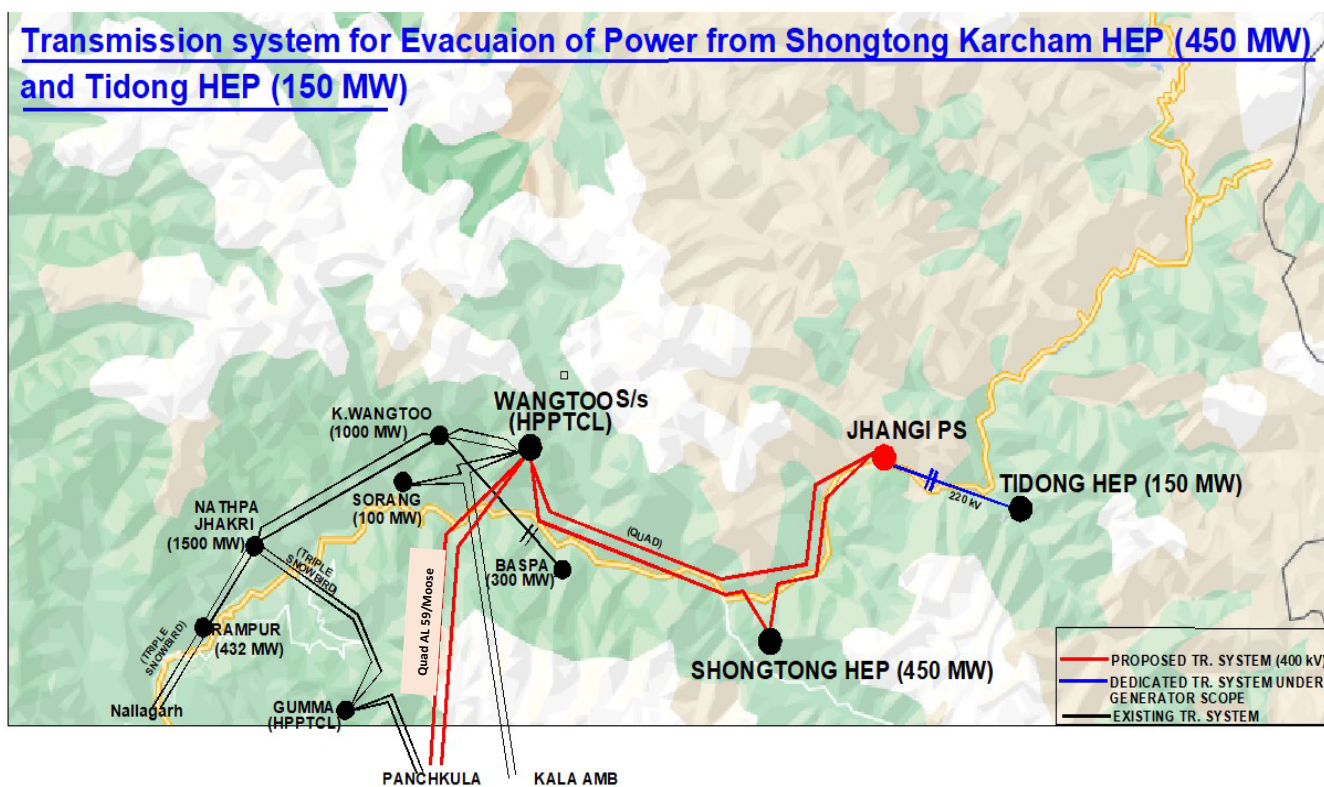
* with minimum capacity of 2100 MVA on each circuit at nominal voltage

Note:

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- (i) Developer of Shongtong HEP to provide 2 nos. of 400kV bays at Shongtong switchyard for LILO of one circuit of Jhangi PS - Wangtoo (HPPTCL) 400 kV D/c (Quad) line at generation switchyard of Shongtong HEP
- (ii) HPPTCL to provide space for four number of 400kV line bays (GIS) at Wangtoo (HPPTCL) substation for termination 400 kV Jhangi PS – Wangtoo D/c line and Wangtoo(HPPTCL) - Panchkula (PG) D/c line
- (iii) POWERGRID to provide space for 2 nos. of 400 kV line bays along with SLR at Panchkula S/s for termination of Wangtoo (HPPTCL) - Panchkula (PG) D/c line
- (iv) Tidong HEP- Jhangi PS 220 kV D/C line (along with associated bays at both ends)- under the scope of applicant/generation developer
- (v) The line lengths indicated above are approximate as the actual line length would be obtained after detailed survey.

3.4.13 Schematic Diagram of the Transmission scheme is given below:



3.4.14 As the change in estimated cost is 18.63%, the modified scope needs to be submitted to MoP for approval.

3.4.15 Members may deliberate.

3.5 Spare Reactor (1-ph, 1x80 MVar) unit at 765/400 kV Beawar S/s under Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/ Barmer Complex): Part D scheme

3.5.1 Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2:5.5 GW) (Jaisalmer/ Barmer Complex) was discussed and approved in the 14th NCT

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meeting held on 09.06.23. Subsequently, the scheme was approved by MoP vide Gazette dated 29.08.23. As part of above scheme, “Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-2:5.5 GW) (Jaisalmer/ Barmer Complex): Part D” was recommended for implementation through Tariff Based Competitive Bidding (TBCB) route with following scope

- a) Beawar- Mandsaur PS 765 kV D/c line along with 240 MVAR switchable line reactor for each circuit at each end
- b) 2 No. of 765 kV line bays each at Beawar S/s & Mandsaur S/s

3.5.2 The scheme has been notified vide Gazette notification dated 04.09.2023 with PFC as the BPC. Presently, the scheme is under RFP preparation stage.

3.5.3 765/400 kV Beawar substation is being established under Phase-III: Part F scheme along with associated 330 MVAR line & bus reactor(s) & 110 MVAR spare reactor unit (1-ph).

3.5.4 In Ph-IV Part-D scheme, 765kV Beawar- Mandsaur PS D/c line along with 240 MVAR switchable line reactor was approved. As there is no 80 MVAR spare Reactor (1-ph) available at Beawar substation in Ph-III Part-F scheme, it is proposed that scope for 1x80 MVAR (1-ph) spare Reactor unit may be kept at Beawar S/s under Rajasthan REZ Ph-IV (Part-2): Part-D scheme.

3.5.5 The original cost of Part-D package is Rs 2,227 Cr. With above addition of scope (1x80 MVAR (1-ph) spare Reactor unit at Beawar S/s), cost shall increase only by Rs 10.18 Cr which is less than (-) 0.5 % of original cost of package.

3.5.6 Member may deliberate.

3.6 Change in Scope of Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-1: Bikaner Complex)- Part-A package

3.6.1 Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-1) (Bikaner Complex) was discussed and approved in the 9th NCT meeting held on 28.09.2022. The scheme was for evacuation of 7.7 GW from Bikaner- complex (3.7 GW Bikaner-II & 4 GW from Bikaner-III PS). Subsequently, the scheme was approved by MoP vide Gazette dated 13.01.2023.

3.6.2 As part of this scheme, Part-A of the scheme involves establishment of 6x1500 MVA, 765/400 kV & 5x500 MVA 400/220 kV Bikaner-III Pooling Station at a suitable location near Bikaner along with 6 no. of 220 kV line bays for RE connectivity. Bid submission for the scheme has already been done. LoI/LoA is to be issued.

3.6.3 In the 23rd CMETS NR held on 29.08.2023, connectivity of 3,917 MW was agreed to be granted at Bikaner-III PS. Out of this, 2400 MW was agreed to be granted at 400 kV level (3 nos. 400 kV bays). Balance 1,517 MW was agreed to be granted at 220 kV level through 5 no. of 220 kV line bays. Therefore, margin for 83 MW enhancement is available at 220 kV level, thus makes the total connectivity quantum

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to 4000 MW (400kV – 2400 MW, 220 kV – 1600MW) in line with planned evacuation capacity at Bikaner-III PS.

3.6.4 Bikaner-III PS was planned for connectivity of 7 GW Solar & 3 GW BESS and evacuation capacity of 7.7 GW in Bikaner complex (3.7 GW of Bikaner-II PS & 4 GW at Bikaner-III PS). However, no connectivity of BESS has been received at Bikaner-III PS. Considering the total grant of connectivity agreed at Bikaner-III PS (3,917 MW), no additional connectivity can be granted at Bikaner-III PS beyond this quantum (except enhancement margin of 83 MW available at 220 kV bays).

3.6.5 As total connectivity granted at 220 kV level is 1,517 MW (excluding 83 MW enhancement quantum) through 5 no. of 220 kV line bays (out of 6 no. approved), 1 no. of 220 kV line bay which is part of the Part-A package of the above scheme shall remain unutilised. In view of the above, it is proposed to delete the following elements from Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part1) (Bikaner Complex)- Part-A package.

- 1 no. of 220 kV line bay at Bikaner-III PS

3.6.6 The original cost of Part-A package is Rs 4,741 Cr. With above deletion of scope, cost shall reduce only by Rs 5.8 Cr which is about (-)0.12 % of original cost of package.

3.6.7 Based on above, the revised scope of Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part 1) (Bikaner Complex)- Part-A package is proposed as under:

Part A- package		
Sl. No.	Original scope of the transmission scheme	Revised scope of the transmission scheme
	<p>Establishment of 6x1500 MVA (along with one spare unit of 500 MVA), 765/400 kV & 5x500 MVA 400/220 kV Bikaner-III Pooling Station along with 2x330 MVar (765kV) Bus Reactor (along with one spare unit of 110 MVar) & 2x125 MVar (420kV) Bus Reactor at a suitable location near Bikaner</p> <ul style="list-style-type: none"> • 765/400kV 1500 MVA ICTs: 6 nos (19x500 MVA including one spare unit) • 765 kV ICT bays – 6 nos. • 765 kV line bays- 2 nos. • 330 MVar Bus Reactor-2 nos. (7x110 MVar, including one spare unit) 	<p>Establishment of 6x1500 MVA (along with one spare unit of 500 MVA), 765/400 kV & 5x500 MVA 400/220 kV Bikaner-III Pooling Station along with 2x330 MVar (765kV) Bus Reactor (along with one spare unit of 110 MVar) & 2x125 MVar (420kV) Bus Reactor at a suitable location near Bikaner</p> <ul style="list-style-type: none"> • 765/400 kV 1500 MVA ICTs: 6 Nos (19x500 MVA including one spare unit) • 765 kV ICT bays – 6 Nos. • 765 kV line bays- 2 Nos. • 330 MVar Bus Reactor-2 Nos. (7x110 MVar, including one spare unit) • 765 kV reactor bays- 2 Nos.

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<ul style="list-style-type: none"> • 765 kV reactor bays- 2 nos. • 400/220 kV, 500 MVA ICTs – 5 nos • 400 kV ICT bays – 11 nos. • 420 kV reactor bays - 2 nos. • 125 MVA_r, 420kV bus reactor - 2 nos. • 400 kV line bays - 6 nos.(4 nos. for LILO of Bikaner-Bikaner-II D/c line & 2 nos. for Bikaner-II D/c line) • 220 kV ICT bays - 5 nos. • 220 kV line bays – 6 nos (for RE connectivity) • 220 kV BC (2 no.) and 220 kV TBC (2 no.) • 220kV Sectionalisation bay: 1 set <p>Future provisions: Space for</p> <ul style="list-style-type: none"> • 765 kV line bays along with switchable line reactors – 6 nos. • 765kV Bus Reactor along with bay: 1 no. • 400 kV line bays along with switchable line reactor –4 nos. • 400 kV line bays–4 nos. • 400/220kV ICT along with bays -5 nos. • 400 kV Bus Reactor along with bay: 1 no. • 400kV Sectionalization bay: 2 sets • 220 kV line bays for connectivity of RE Applications -8 nos. • 220kV Sectionalization bay: 2 sets • 220 kV BC (2 no.) and 220 kV TBC (2 no.) • STATCOM (2x±300MVA_r) along with MSC (4x125 MVA_r) & MSR (2x125 MVA_r) 	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICTs – 5 Nos. • 400 kV ICT bays - 11 Nos. • 420 kV reactor bays - 2 Nos. • 125 MVA_r, 420kV bus reactor - 2 Nos. • 400 kV line bays - 6 Nos. (4 nos. for LILO of Bikaner-Bikaner-II D/c line & 2 nos. for Bikaner-II D/c line) • 220 kV ICT bays - 5 Nos. • 220 kV line bays – 5 Nos. (for RE connectivity) • 220 kV BC (2 Nos.) and 220 kV TBC (2 Nos.) • 220 kV Sectionalisation bay: 1 set <p>Future Provisions: Space for</p> <ul style="list-style-type: none"> • 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. • 400/220 kV ICT along with bays -5 nos. • 400 kV Bus Reactor along with bay: 1 No. • 400 kV Sectionalization bay: 2 sets • 220 kV line bays for connectivity of RE Applications -8 Nos. • 220 kV Sectionalization bay: 2 sets • 220 kV BC (2 No.) and 220 kV TBC (2 No.) • STATCOM (2x±300 MVA_r) along with MSC (4x125 MVA_r) & MSR (2x125 MVA_r)
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3.6.8 The change in scope of the scheme had already been incorporated in the RfP Document.

3.6.9 Members may like to note.

4 New Transmission Schemes:

4.1 Augmentation of transformation capacity at 765/400 kV Indore S/s in Madhya Pradesh

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4.1.1 Augmentation of Transformation capacity at 765/400 kV Indore S/s by 1x1500 MVA ICT (3rd) [terminated on 400 kV Bus Section A with Indore & Khandwa 400 kV D/c lines] for enabling compliance of loading limits under 'N-1' contingency criteria in 2027-28 time-frame (Scenario-7, Feb Solar Max).

4.1.2 Detailed scope of the scheme is given below:

Sl. No.	Items	Details						
1.	Name of Scheme	Augmentation of transformation capacity at 765/400 kV Indore S/s in Madhya Pradesh						
2.	Scope of the scheme	<table> <tr> <th>Sl.</th><th>Scope of the Transmission Scheme</th><th>Capacity /km</th></tr> <tr> <td>I.</td><td>Augmentation of Transformation capacity at 765/400kV Indore S/s by 1x1500MVA ICT (3rd) [terminated on 400kV Bus section A with Indore & Khandwa 400kV D/c lines]</td><td> 765/400 kV, 1x1500 MVA ICT – 1 No. 765 kV bay – 1 No. 400 kV bay – 1 No. (on bus section-A) 765 kV GIS duct (1 ph) – 150 m. (approx.)* 400 kV GIS duct (1 ph) – 750m. (approx.)* 132kV cable – 1 km.* </td></tr> </table> <p><i>*As per e-mail from POWERGRID dated 28.08.2023, the 765 kV GIS Bus Duct & 132 kV Cable are required for connection to existing 765/400 kV Spare ICT with proposed ICT in Section A. 400 kV GIS duct is required for termination in 400 kV Bay</i></p>	Sl.	Scope of the Transmission Scheme	Capacity /km	I.	Augmentation of Transformation capacity at 765/400kV Indore S/s by 1x1500MVA ICT (3 rd) [terminated on 400kV Bus section A with Indore & Khandwa 400kV D/c lines]	765/400 kV, 1x1500 MVA ICT – 1 No. 765 kV bay – 1 No. 400 kV bay – 1 No. (on bus section-A) 765 kV GIS duct (1 ph) – 150 m. (approx.)* 400 kV GIS duct (1 ph) – 750m. (approx.)* 132kV cable – 1 km.*
Sl.	Scope of the Transmission Scheme	Capacity /km						
I.	Augmentation of Transformation capacity at 765/400kV Indore S/s by 1x1500MVA ICT (3 rd) [terminated on 400kV Bus section A with Indore & Khandwa 400kV D/c lines]	765/400 kV, 1x1500 MVA ICT – 1 No. 765 kV bay – 1 No. 400 kV bay – 1 No. (on bus section-A) 765 kV GIS duct (1 ph) – 150 m. (approx.)* 400 kV GIS duct (1 ph) – 750m. (approx.)* 132kV cable – 1 km.*						
3.	Depiction of the scheme on Transmission Grid Map	Refer to the schematic given below the table						
4.	Upstream/ downstream system associated with the scheme	N.A.						
5.	Objective Justification	The ICT shall be utilized for enabling compliance of loading limits under 'N-1' contingency criteria in 2027-28 time-frame (Scenario-7,						

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Sl. No.	Items	Details
		Feb Solar Max).
6.	Estimated Cost	INR 126 Crore
7.	Impact on the total Annual Transmission charges (ATC) in % along with the existing ATC	A. ATC (considering levelized tariff @15% of estimated cost): about ₹18.9Cr. B. Present ATC: ₹44582.2 Cr.* C. A/B: about 0.0424%
8.	Need of phasing, if any	Not Applicable
9.	Implementation timeframe	18 months from date of allocation to implementing agency
10.	Inclusion of any wildlife/protected area along the transmission line route	Not Applicable
11.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to WRPC for their deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
12.	System Study for the evolution of the proposal	The scheme was agreed in the 20 th CMETS-WR meeting held on 04.08.2023. Loading of more than 1600 MW was observed on ICT at Section-B under outage of 1500 MVA ICT on Section-A in 2027-28 time-frame (Scenario-7, Feb Solar Max).

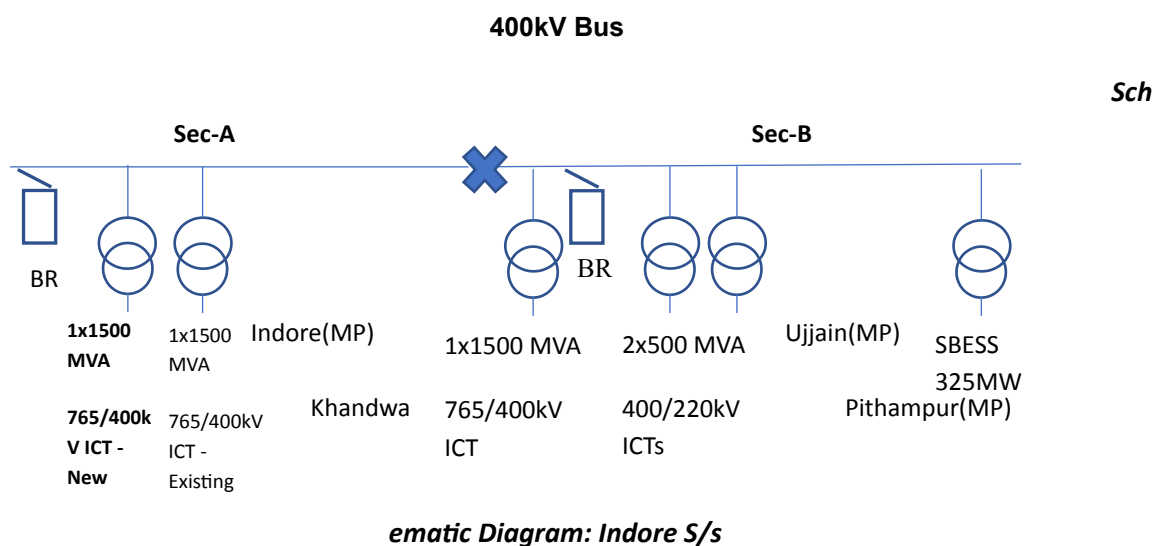
4.1.3 Accordingly, the following scope needs to be implemented:

Sl.	Scope of the Transmission Scheme	Capacity /km
I.	Augmentation of Transformation capacity at 765/400kV Indore S/s by 1x1500MVA ICT (3 rd) [terminated on 400kV Bus section A with Indore & Khandwa 400kV D/c lines]	765/400 kV, 1x1500 MVA ICT – 1 No. 765 kV bay – 1 No. 400 kV bay – 1 No. (on bus section-A) 765 kV GIS duct (1ph) – 150m.

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<i>Sl.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
		(approx.)* 400 kV GIS duct (1ph) – 750m. (approx.)* 132 kV cable – 1 km.*

4.1.4 Schematic of the scheme is given below:



4.1.5 Members may deliberate.

4.2 Augmentation of transformation capacity at Bhuj-II PS

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4.2.1 Augmentation of transformation capacity at Bhuj-II PS (GIS) by 2x500 MVA, 400/220 kV ICT (5th& 6th) and by 1x1500 MVA, 765/400 kV ICT (3rd) for enabling compliance of loading limits under 'N-1' contingency criteria considering connectivity under GNA applications received at Bhuj-II PS for 2,426.5 MW till Sep-23.

4.2.2 Detailed scope of the scheme is given below:

S. No.	Items	Details		
1.	Name of Scheme	Augmentation of transformation capacity at Bhuj-II PS		
2.	Scope of the scheme	Sl.	Scope of the Transmission Scheme	Capacity /km
		I.	Augmentation of transformation capacity at Bhuj-II PS (GIS) by 2x500MVA, 400/220kV ICT (5th& 6th) and by 1x1500MVA, 765/400kV ICT (3rd)	500 MVA, 400/220 kV ICTs: 2 Nos. 1500 MVA, 765/400 kV ICTs- 1 No. 765 kV ICT bay: 2 No. (1 No. for ICT & 1 No. for Dia. completion (with provision of Switchable LR)) 400 kV ICT bays: 4 Nos. (3 Nos. for ICT termination and 1 No. for Dia. completion (with provision of Switchable LR)) 220kV ICT bays: 2 Nos. <u>GIB Duct length for 1x1500 MVA, 765/400 kV ICT:</u> 1 Ph. 765 kV GIB Duct -600 m (approx.) 1 Ph. 400 kV GIB Duct – 625 m. (approx.) <u>GIB Duct length for 2x500 MVA, 400/220 kV ICTs:</u> 1 Ph. 400 kV GIB – 300 m

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S. No.	Items	Details		
		<i>Sl.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
				(approx.) 1 Ph. 220 kV GIB – 750 m (approx.)
		2.	Implementation of 220kV GIS line bay at Bhuj-II PS for ABREL (RJ) Projects Limited	220 kV line bay – 1 No. (GIS) <u>GIB Duct length:</u> 1 Ph. 220 kV GIB – 150 m (approx.)
		Note: <ul style="list-style-type: none"> Wherever required, TSP shall implement complete Dia consisting of 2 Main Bays & 1 Tie Bay required for completion of diameter (GIS) in one-and-half breaker scheme. GIB Bus Duct lengths are as communicated by TSP of Bhuj-II PS vide e-mail dated 01.11.2023 TSP of Bhuj-II PS shall provide space for execution of above works 		
3.	Depiction of the scheme on Transmission Grid Map	N.A.		
4.	Upstream/downstream system associated with the scheme	<u>New Applications received in Aug/Sep-23:</u> <ul style="list-style-type: none"> ABREL(RJ)PL (314 MW): 31.05.2023 (Start date requested) SJVN REL (360 MW): 31.03.2024 (Start date requested) 		
5.	Objective Justification	/ The ICTs shall be utilized for enabling compliance of loading limits under N-1 contingency criteria considering connectivity under GNA applications received at Bhuj-II PS for 2,426.5MW till Sep-23.		
6.	Estimated Cost	INR 413 Crore		

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S. No.	Items	Details
7.	Impact on the total Annual Transmission charges (ATC) in % along with the existing ATC	D. ATC (considering levelized tariff @15% of estimated cost): about ₹61.95Cr. E. Present ATC: ₹44582.2 Cr.* F. A/B: about 0.139%
8.	Need of phasing, if any	Not Applicable
9.	Implementation timeframe	21 months from date of allocation to implementing agency (18 months on best effort basis)
10.	Inclusion of any wildlife/protected area along the transmission line route	Not Applicable
11.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to WRPC for their deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
12.	System Study for the evolution of the proposal	The scheme was agreed in the 22 nd CMETS-WR (1 st sitting) meeting held on 23.10.2023 for ensuring N-1 compliance on existing Bhuj-II ICTs considering full dispatch from RE under GNA (2426.5 MW connectivity received till Sep-23)

4.2.3 Accordingly, the following scope is required:

Sl.	Scope of the Transmission Scheme	Capacity /km
I.	Augmentation of transformation capacity at Bhuj-II PS (GIS) by 2x500MVA, 400/220kV ICT (5th& 6th) and by 1x1500MVA, 765/400kV ICT (3rd)	500 MVA, 400/220 kV ICTs: 2 Nos. 1500 MVA, 765/400 kV ICTs: 1 No. 765 kV ICT bay: 2 No. (1 No. for ICT & 1 No. for Dia. completion (with provision of Switchable LR)) 400 kV ICT bays: 4 Nos. (3 Nos. for ICT termination and 1 No. for Dia. completion (with

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<i>Sl.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
		provision of Switchable LR)) 220 kV ICT bays: 2 Nos. <u>GIB Duct length for 1x1500 MVA, 765/400 kV ICT:</u> 1 Ph. 765 kV GIB Duct -600 m (approx.) 1 Ph. 400 kV GIB Duct – 625 m. (approx.) <u>GIB Duct length for 2x500 MVA, 400/220 kV ICTs:</u> 1 Ph. 400 kV GIB – 300 m (approx.) 1 Ph. 220 kV GIB – 750 m (approx.)
2.	Implementation of 220 kV GIS line bay at Bhuj-II PS for ABREL (RJ) Projects Limited	220 kV line bay – 1 No. (GIS) <u>GIB Duct length:</u> 1 Ph. 220 kV GIB – 150 m (approx.)

Note:

- Wherever required, TSP shall implement complete Dia consisting of 2 Main Bays & 1 Tie Bay required for completion of diameter (GIS) in one-and-half breaker scheme.
- GIB Bus Duct lengths are as communicated by TSP of Bhuj-II PS vide e-mail dated 01.11.2023
- TSP of Bhuj-II PS shall provide space for execution of above works

4.2.4 Members may deliberate.

4.3 Transmission System for integration of Nizamabad REZ (1 GW) in Telangana

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- 4.3.1 Out of the identified (86 GW) RE Potential in Southern Region, 13 GW has been identified in the State of Telangana. MNRE have indicated that out of the 13 GW REZ potential in Telangana, transmission system for evacuation capacity of about 8.5 GW may be identified considering the Energy Storage System. A comprehensive transmission system has been planned for immediate integration and evacuation of the above RE potential.
- 4.3.2 Further, based on the communication from SECI, a meeting was held under the chairmanship of Chairperson, CEA on 03.11.2022 to discuss the implementation of Transmission system for RE Zones at Ananthapuram, Kurnool, Bidar and some other RE Potential zones. During the meeting, it was decided that transmission system for evacuation of power from other RE Zones suggested by SECI viz. Devangere/Chitradurga & Tumkur-II in Karnataka and Nizamabad-II in Telangana would be put up to NCT after deliberations in CMETS and SRPC forum.
- 4.3.3 Further, for optimal utilization of transmission system, power from other RE Zones in Telangana viz. Medak, Rangareddy and Karimnagar area (part of 181.5 GW RE capacity addition by 2030) would be pooled at Nizamabad-II PS. Accordingly, Nizamabad-II PS is being proposed at 765 kV level.
- 4.3.4 Out of 3.5 GW RE potential in Medak and Rangareddy, 1.5 GW each has been phased out for implementation under Phase-I. Medak and Rangareddy REZs are being integrated with Nizamabad-II PS through Medak PS – Nizamabad-II PS 400 kV (Quad ACSR moose) D/c line and Rangareddy PS – Nizamabad-II PS 400kV (Quad ACSR moose) D/c line.
- 4.3.5 The scheme was discussed in the 46th SRPC meeting held on 31.05.2023 and SRPC has forwarded the views of Southern region constituents and communicated that consensus has not been arrived for the above schemes. Southern region constituents suggested to utilize the existing transmission system for evacuation of RE power and transmission scheme may be implemented at 400 kV level at the initial stage at Nizamabad. Southern region constituents requested to take up the schemes in phased manner depending on the visibility of RE generation.
- 4.3.6 Further, SECI informed that they have invited bids for 500 MW RE generation in Telangana state and have requested that two number of pooling stations must be taken up for bidding/development in the State.
- 4.3.7 Considering the view of the Southern region constituents and SECI RE bid invitation, a meeting was held in CEA on 06.10.2023 to decide upon the pooling stations in Telangana for evacuation of RE power in the initial phase. After deliberation, the following transmission scheme was agreed for implementation in Phase-I:

i) Transmission System for integration of Nizamabad REZ (1 GW) under Phase-I

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Sl. No.	Items	Details
1.	Name of Scheme	Transmission System for integration of Nizamabad REZ (1 GW REZ) under Phase-I

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Sl. No.	Items	Details		
2.	Scope of the scheme			
		<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	I.		<p>Establishment of 400/220 kV 2x500 MVA Pooling Station near Nizamabad (Nizamabad-II) with provision for upgradation to 765 kV level and provision of two (2) sections of 4500 MVA each at 400 kV level and provision of four (4) sections of 2500 MVA each at 220 kV level</p> <p>Future Space Provisions: (Including space for Phase-II)</p> <ul style="list-style-type: none"> • 765/400 kV, 1500 MVA, ICTs – 7 nos. (22x500) (incl. 1 spare unit) • 765 kV ICT bays – 7 Nos. • 400 kV ICT bays – 7 Nos. • 765 kV, 330 MVA bus reactors – 2 nos. (7x110 MVA including 1 switchable spare unit) • 765 kV Bus Reactor bays – 2 Nos. • 400/220 kV, 500 MVA, ICTs – 9 Nos. • 400 kV ICT bays – 9 Nos. • 220 kV ICT bays – 9 Nos. • 765 kV line bays – 12 Nos. (with provision for SLR) • 400 kV line bays – 12 Nos. (with provision for SLR) • 220 kV line bays – 12 Nos. • 220 kV Sectionaliser: 	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICTs – 2 Nos. • 400 kV ICT bays – 2 Nos. • 220 kV ICT bays – 2 Nos. • 400 kV line bays – 2 Nos. (at Nizamabad-II for termination of Nizamabad-II - Nizamabad 765 kV D/c line, initially charged at 400 kV) • 220 kV line bays – 6 Nos. • 220 kV Bus Coupler (BC) Bay – 1 No. • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.

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Sl. No.	Items	Details		
		Sl. No.	Scope of the Transmission Scheme	Capacity /km
			3 sets <ul style="list-style-type: none"> • 220 kV Bus Coupler (BC) Bay – 3 Nos. • 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos. • 400 kV Sectionaliser : 1 sets 	
		2.	Nizamabad-II PS – Nizamabad 765 kV D/c line (initially charged at 400 kV level)	<ul style="list-style-type: none"> • Route length ~30 km • 400 kV line bays – 2 Nos. (GIS) (at Nizamabad)
		3.	2x125 MVar 420 kV bus reactors at Nizamabad-II	<ul style="list-style-type: none"> • 420 kV, 125 MVar bus reactors – 2 Nos. • 420 kV, 125 MVar bus reactor bays – 2 Nos.
3.	Depiction of the scheme on Transmission Grid Map	Given below		
4.	Upstream/downstream system associated with the scheme	Not applicable		
5.	Objective / Justification	<p>Govt. of India has set a target of 500 GW generation capacity from non-fossil fuel resources by 2030. In this direction, MNRE has identified addition of 181.5 GW RE Potential in the States of Andhra Pradesh, Telangana, Karnataka, Rajasthan, Madhya Pradesh and Tamil Nadu (Offshore). Out of the identified 181.5 GW Potential, 86 GW RE Potential is identified in the State of Andhra Pradesh, Telangana, Karnataka and Tamil Nadu (Offshore) in Southern Region.</p> <p>The transmission system for integration of 181.5 GW RE Potential has been identified by CEA and a report on Transmission System for Integration of over 500 GW RE Capacity has been published by CEA on 07.12.2022. In the report, implementation of transmission system has been phased out in 3 parts; Phase-I by March 2025, Phase-II by December 2027 and Phase-III by December 2030.</p> <p>Out of the identified (86 GW) RE Potential in Southern Region, 13 GW has been identified in the State of Telangana. Out of the 13 GW, 5GW was identified under Phase-I and 7.5 GW under Phase-II. MNRE have indicated that out of the 13 GW REZ potential in Telangana, transmission system for evacuation capacity of about 8.5 GW may be identified</p>		

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Sl. No.	Items	Details																																																																																																																
		<p>considering the Energy Storage System. The details of district wise potential are as below:</p> <table><tr><th rowspan="2">District</th><th colspan="2">Potential (GW)</th><th rowspan="2">Total (GW)</th><th rowspan="2">Dispatch (90% S + 55% W)</th><th rowspan="2">BESS</th><th rowspan="2">Evacuation capacity to be planned (GW)</th></tr><tr><th>Wind</th><th>Solar</th></tr><tr><td>Nizamabad</td><td>1</td><td>2.5</td><td>3.5</td><td>3</td><td>1</td><td>2</td></tr><tr><td>Medak</td><td>1</td><td>2.5</td><td>3.5</td><td>3</td><td>1</td><td>2</td></tr><tr><td>Rangareddy</td><td>1</td><td>2.5</td><td>3.5</td><td>3</td><td>1</td><td>2</td></tr><tr><td>Karimnager</td><td>0</td><td>2.5</td><td>2.5</td><td>2.5</td><td></td><td>2.5</td></tr><tr><td>Total</td><td>3</td><td>10</td><td>13</td><td>11.5</td><td>3</td><td>8.5</td></tr></table> <p><u>Potential identified under Phase-I</u></p> <table><tr><th rowspan="2">District</th><th colspan="4">Potential (GW)</th></tr><tr><th>Wind</th><th>Solar</th><th>Total</th><th>BESS</th></tr><tr><td>Nizamabad</td><td>1</td><td>1</td><td>2</td><td>0</td></tr><tr><td>Medak</td><td>1</td><td>0.5</td><td>1.5</td><td>0</td></tr><tr><td>Rangareddy</td><td>1</td><td>0.5</td><td>1.5</td><td>0</td></tr><tr><td>Karimnager</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Total</td><td>3</td><td>2</td><td>5</td><td>0</td></tr></table> <p><u>Potential identified under Phase-II</u></p> <table><tr><th rowspan="2">District</th><th colspan="4">Potential (GW)</th></tr><tr><th>Wind</th><th>Solar</th><th>Total</th><th>BESS</th></tr><tr><td>Nizamabad</td><td>0</td><td>1.5</td><td>1.5</td><td>1</td></tr><tr><td>Medak</td><td>0</td><td>2</td><td>2</td><td>1</td></tr><tr><td>Rangareddy</td><td>0</td><td>2</td><td>2</td><td>1</td></tr><tr><td>Karimnager</td><td>0</td><td>2</td><td>2</td><td>0</td></tr><tr><td>Total</td><td>0</td><td>7.5</td><td>7.5</td><td>3</td></tr></table> <p>A comprehensive transmission system has been identified for immediate integration and evacuation of the above potential. Further, based on the communication from SECI, a meeting was held under the chairmanship of Chairperson, CEA on 03.11.2022. During the meeting, it was decided that transmission system for evacuation of power from other RE Zones suggested by SECI viz. Devangere/Chitradurga & Tumkur-II in Karnataka and Nizamabad-II in Telangana would be put up to NCT after deliberations in CMETS and SRPC forum. CTUIL was requested to expedite the same.</p> <p>Accordingly, transmission system for integration and immediate evacuation of RE potential at Nizamabad is being proposed for implementation. Further, for optimal utilization of transmission system, power from other RE Zones in Telangana viz. Medak, Rangareddy and Karimnagar area would be pooled at Nizamabad-II PS through 400 kV lines for further transfer of power. Accordingly, Nizamabad-II PS is being proposed at 765kV level.</p>	District	Potential (GW)		Total (GW)	Dispatch (90% S + 55% W)	BESS	Evacuation capacity to be planned (GW)	Wind	Solar	Nizamabad	1	2.5	3.5	3	1	2	Medak	1	2.5	3.5	3	1	2	Rangareddy	1	2.5	3.5	3	1	2	Karimnager	0	2.5	2.5	2.5		2.5	Total	3	10	13	11.5	3	8.5	District	Potential (GW)				Wind	Solar	Total	BESS	Nizamabad	1	1	2	0	Medak	1	0.5	1.5	0	Rangareddy	1	0.5	1.5	0	Karimnager	0	0	0	0	Total	3	2	5	0	District	Potential (GW)				Wind	Solar	Total	BESS	Nizamabad	0	1.5	1.5	1	Medak	0	2	2	1	Rangareddy	0	2	2	1	Karimnager	0	2	2	0	Total	0	7.5	7.5	3
District	Potential (GW)			Total (GW)	Dispatch (90% S + 55% W)					BESS	Evacuation capacity to be planned (GW)																																																																																																							
	Wind	Solar																																																																																																																
Nizamabad	1	2.5	3.5	3	1	2																																																																																																												
Medak	1	2.5	3.5	3	1	2																																																																																																												
Rangareddy	1	2.5	3.5	3	1	2																																																																																																												
Karimnager	0	2.5	2.5	2.5		2.5																																																																																																												
Total	3	10	13	11.5	3	8.5																																																																																																												
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Rangareddy	0	2	2	1																																																																																																														
Karimnager	0	2	2	0																																																																																																														
Total	0	7.5	7.5	3																																																																																																														

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Sl. No.	Items	Details
		<p>The scheme was discussed and agreed in the 14th CMETS(SR) held on 26.12.2022 Further, during the 16th CMETS(SR) held on 28.02.2023, the Transmission System for integration of Nizamabad REZ (1 GW Wind, 2.5 GW Solar, 1 GW BESS) has been phased into two phases. Transmission System for integration of Nizamabad REZ (1 GW Wind, 1 GW Solar) under Phase-I by March 2025 and Transmission System for integration of Nizamabad REZ (1.5 GW Solar, 1 GW BESS) under Phase-II by December, 2027.</p> <p>The scheme was discussed in the 46th SRPC meeting held on 31.05.2023 and SRPC has forwarded the views of Southern region constituents and communicated that consensus has not been arrived for the above schemes. Southern region constituents suggested to utilize the existing transmission system for evacuation of RE power and transmission scheme may be implemented at 400 kV level at the initial stage at Nizamabad. Southern region constituents requested to take up the schemes in phased manner depending on the visibility of RE generation</p> <p>Further, SECI informed that they have invited bids for 500 MW RE generation in Telangana state.</p> <p>Considering the view of the Southern region constituents and SECI RE bid invitation, a meeting was held in CEA on 06.10.2023 to decide upon the pooling stations in Telangana for evacuation of RE power in the initial phase.</p> <p>The present phased scheme shall facilitate immediate integration and evacuation of 1 GW potential at Nizamabad.</p>
6.	Estimated Cost	Rs. 548 Crore
7.	Impact on the total Annual Transmission charges in % along with the existing ATC	<p>A. ATC (considering Levelized Tariff @15% of estimated cost): 234.6 Crore</p> <p>B. Present ATC: Rs. 45,753.99 Crore[#]</p> <p>C. A/B (%): 0.513%</p>
8.	Need of phasing, if any	Not Applicable
9.	Tentative Implementation timeframe	24 months from date of allocation to implementing agency / SPV Transfer (as the case may be).
10.	Inclusion of any wild life/protected area along the transmission line route	No major National Park, Wildlife Sanctuary or other protected areas observed. However, for details of forest/protected areas, survey is required to be done.
11.	Deliberations with RPC along with their comments	The scheme was discussed in the 46 th SRPC meeting held on 31.05.2023 SRPC vide letter dated 22.06.2023 has forwarded the views on the scheme. Copy of SRPC views is enclosed at Annexure-I.
12.	System Study for evolution of the proposal	Report on Transmission System for Integration of over 500 GW RE Capacity has been published by CEA on 07.12.2022

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Total YTC allowed for May'23 as per Notification of Transmission Charges payable by DICs for Billing Month of Jul'23 dated 25.06.2023 posted on NLDC website

4.3.8 Schematic of the scheme is given below:



4.3.9 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
4.	<p>Establishment of 400/220 kV 2x500 MVA Pooling Station near Nizamabad (Nizamabad-II) with provision for upgradation to 765 kV level and provision of two (2) sections of 4500 MVA each at 400 kV level and provision of four (4) sections of 2500 MVA each at 220 kV level</p> <p>Future Space Provisions: (Including space for Phase-II)</p> <ul style="list-style-type: none"> • 765/400kV, 1500 MVA, ICTs – 7 nos. (22x500) (incl. 1 spare unit) • 765kV ICT bays – 7 nos. • 400kV ICT bays – 7 nos. • 765kV, 330 MVar bus reactors – 2 nos. (7x110 MVar inc. 1 switchable spare unit) 	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA, ICTs – 2 Nos. • 400 kV ICT bays – 2 Nos. • 220 kV ICT bays – 2 Nos. • 400 kV line bays – 2 Nos. (at Nizamabad-II for termination of Nizamabad-II - Nizamabad 765 kV D/c line, initially charged at 400 kV) • 220 kV line bays – 6 Nos. • 220 kV Bus Coupler (BC) Bay– 1 No. • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.

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<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	<ul style="list-style-type: none"> 765 kV Bus Reactor bays – 2 nos. 400/220kV, 500 MVA, ICTs – 9 nos. 400kV ICT bays – 9 nos. 220kV ICT bays – 9 nos. 765kV line bays – 12 nos. (with provision for SLR) 400kV line bays – 12 nos. (with provision for SLR) 220kV line bays – 12 nos. 220kV Sectionaliser : 3 sets 220 kV Bus Coupler (BC) Bay – 3 nos. 220 kV Transfer Bus Coupler (TBC) Bay – 3 nos. 400kV Sectionaliser : 1 sets 	
5.	Nizamabad-II PS – Nizamabad 765 kV D/c line (initially charged at 400 kV level)	<ul style="list-style-type: none"> Route length ~30 km 400 kV line bays – 2 Nos. (GIS) (at Nizamabad)
6.	2x125 MVar 420 kV bus reactors at Nizamabad-II	<ul style="list-style-type: none"> 420 kV, 125 MVar bus reactors – 2 Nos. 420 kV, 125 MVar bus reactor bays – 2 Nos.

4.3.10 Members may deliberate.

ii) Transmission System for integration of Medak REZ (1 GW)

<i>Sl. No.</i>	<i>Items</i>	<i>Details</i>						
1.	Name of Scheme	Transmission System for integration of Medak REZ (1 GW)						
2.	Scope of the scheme	<table> <tr> <th><i>Sl. No.</i></th><th><i>Scope of the Transmission Scheme</i></th><th><i>Capacity /km</i></th></tr> <tr> <td>1.</td><td> Establishment of 400/220 kV 2x500 MVA Pooling Station near Medak (Medak PS) Future Space Provisions: (Including space for Phase-II) <ul style="list-style-type: none"> 400/220 kV, 500 MVA, ICTs – 9 Nos. 400 kV ICT bays – 9 Nos. 220 kV ICT bays – 9 Nos. 400 kV line bays – 6 </td><td> <ul style="list-style-type: none"> 400/220 kV, 500 MVA, ICTs – 2 Nos. 400 kV ICT bays – 2 Nos. 220 kV ICT bays – 2 Nos. 400 kV line bays – 2 Nos. (at Medak PS for termination of Medak PS – Nizamabad-II line) 220 kV line bays – 4 Nos. 220 kV Bus Coupler (BC) Bay – 1 No. 220 kV Transfer Bus Coupler (TBC) Bay – 1 </td></tr> </table>	<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>	1.	Establishment of 400/220 kV 2x500 MVA Pooling Station near Medak (Medak PS) Future Space Provisions: (Including space for Phase-II) <ul style="list-style-type: none"> 400/220 kV, 500 MVA, ICTs – 9 Nos. 400 kV ICT bays – 9 Nos. 220 kV ICT bays – 9 Nos. 400 kV line bays – 6 	<ul style="list-style-type: none"> 400/220 kV, 500 MVA, ICTs – 2 Nos. 400 kV ICT bays – 2 Nos. 220 kV ICT bays – 2 Nos. 400 kV line bays – 2 Nos. (at Medak PS for termination of Medak PS – Nizamabad-II line) 220 kV line bays – 4 Nos. 220 kV Bus Coupler (BC) Bay – 1 No. 220 kV Transfer Bus Coupler (TBC) Bay – 1
<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>						
1.	Establishment of 400/220 kV 2x500 MVA Pooling Station near Medak (Medak PS) Future Space Provisions: (Including space for Phase-II) <ul style="list-style-type: none"> 400/220 kV, 500 MVA, ICTs – 9 Nos. 400 kV ICT bays – 9 Nos. 220 kV ICT bays – 9 Nos. 400 kV line bays – 6 	<ul style="list-style-type: none"> 400/220 kV, 500 MVA, ICTs – 2 Nos. 400 kV ICT bays – 2 Nos. 220 kV ICT bays – 2 Nos. 400 kV line bays – 2 Nos. (at Medak PS for termination of Medak PS – Nizamabad-II line) 220 kV line bays – 4 Nos. 220 kV Bus Coupler (BC) Bay – 1 No. 220 kV Transfer Bus Coupler (TBC) Bay – 1 						

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Sl. No.	Items	Details		
		Sl. No.	Scope of the Transmission Scheme	Capacity /km
			Nos. (with provision for SLR) <ul style="list-style-type: none"> • 220 kV line bays – 14 Nos. • 220 kV Sectionaliser: 3 sets • 220 kV Bus Coupler (BC) Bay – 3 Nos. • 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos. 	No.
		2.	Medak PS – Nizamabad-II 400 kV (Quad ACSR moose) D/c line	<ul style="list-style-type: none"> • Route length~60 km • 400 kV line bays – 2 Nos. (at Nizamabad-II PS)
		3.	2x125 MVar, 420 kV bus reactors at Medak PS	<ul style="list-style-type: none"> • 420 kV, 125 MVar Bus Reactors – 2 Nos. • 420 kV, 125 MVar Bus Reactor bays – 2 Nos.
3.	Depiction of the scheme on Transmission Grid Map	Given below		
4.	Upstream/downstream system associated with the scheme	Not applicable		
5.	Objective / Justification	<p>Govt. of India has set a target of 500 GW generation capacity from non-fossil fuel resources by 2030. In this direction, MNRE has identified addition of 181.5 GW RE Potential in the States of Andhra Pradesh, Telangana, Karnataka, Rajasthan, Madhya Pradesh and Tamil Nadu (Offshore). Out of the identified 181.5 GW Potential, 86 GW RE Potential is identified in the State of Andhra Pradesh, Telangana, Karnataka and Tamil Nadu (Offshore) in Southern Region.</p> <p>The transmission system for integration of 181.5 GW RE Potential has been identified by CEA and a report on Transmission System for Integration of over 500 GW RE Capacity has been published by CEA on 07.12.2022. In the report, implementation of transmission system has been phased out in 3 parts; Phase-I by March 2025, Phase-II by December 2027 and Phase-III by December 2030.</p> <p>Out of the identified (86 GW) RE Potential in Southern Region, 13 GW has been identified in the State of Telangana. Out of the 13 GW, 5GW was identified under Phase-I by</p>		

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Sl. No.	Items	Details																																																																														
		<p>March, 2025 and 7.5 GW under Phase-II by December, 2027. MNRE have indicated that out of the 13 GW REZ potential in Telangana, transmission system for evacuation capacity of about 8.5 GW may be identified considering the Energy Storage System. The details of district wise potential is as given below:</p> <table><tr><th rowspan="2">District</th><th colspan="2">Potential (GW)</th><th rowspan="2">Total (GW)</th><th rowspan="2">Dispatch (90% S + 55% W)</th><th rowspan="2">BESS</th><th rowspan="2">Evacuation capacity to be planned (GW)</th></tr><tr><th>Wind</th><th>Solar</th></tr><tr><td>Nizamabad</td><td>1</td><td>2.5</td><td>3.5</td><td>3</td><td>1</td><td>2</td></tr><tr><td>Medak</td><td>1</td><td>2.5</td><td>3.5</td><td>3</td><td>1</td><td>2</td></tr><tr><td>Rangareddy</td><td>1</td><td>2.5</td><td>3.5</td><td>3</td><td>1</td><td>2</td></tr><tr><td>Karimnagar</td><td>0</td><td>2.5</td><td>2.5</td><td>2.5</td><td></td><td>2.5</td></tr><tr><td>Total</td><td>3</td><td>10</td><td>13</td><td>11.5</td><td>3</td><td>8.5</td></tr></table> <p><u>Potential identified under Phase-I by March, 2025</u></p> <table><tr><th rowspan="2">District</th><th colspan="4">Potential (GW)</th></tr><tr><th>Wind</th><th>Solar</th><th>Total</th><th>BESS</th></tr><tr><td>Nizamabad</td><td>1</td><td>1</td><td>2</td><td>0</td></tr><tr><td>Medak</td><td>1</td><td>0.5</td><td>1.5</td><td>0</td></tr><tr><td>Rangareddy</td><td>1</td><td>0.5</td><td>1.5</td><td>0</td></tr><tr><td>Karimnager</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Total</td><td>3</td><td>2</td><td>5</td><td>0</td></tr></table> <p>A comprehensive transmission system has been identified for immediate integration and evacuation of the above potential.</p> <p>Further, a meeting was held on 11.01.2023 under the chairmanship of Secretary (Power) to review the progress of under construction/under bidding/planned transmission projects for evacuation of renewable energy projects and constraints, if any, in evacuating RE energy. During the meeting, it was decided that in order to reduce time taken for implementation of ISTS required for RE evacuation, approval of National Committee on Transmission/Ministry of Power could be taken in advance and bidding could be started based on ground situation of visibility of RE generations. In addition, SECI vide email dated 18.01.2023 has also requested to initiate the approval process for ISTS Pooling Stations of Medak: 1.5 GW & Rangareddy: 1.5 GW in Telangana at the earliest so that initial capacity become available to RE developers against the state specific wind power projects.</p> <p>Out of 3.5 GW RE in Medak area, 1.5 GW each has been phased out for implementation under Phase-I by March, 2025. Further, for optimal utilization of transmission system, power from other RE Zones in Telangana viz. Medak,</p>	District	Potential (GW)		Total (GW)	Dispatch (90% S + 55% W)	BESS	Evacuation capacity to be planned (GW)	Wind	Solar	Nizamabad	1	2.5	3.5	3	1	2	Medak	1	2.5	3.5	3	1	2	Rangareddy	1	2.5	3.5	3	1	2	Karimnagar	0	2.5	2.5	2.5		2.5	Total	3	10	13	11.5	3	8.5	District	Potential (GW)				Wind	Solar	Total	BESS	Nizamabad	1	1	2	0	Medak	1	0.5	1.5	0	Rangareddy	1	0.5	1.5	0	Karimnager	0	0	0	0	Total	3	2	5	0
District	Potential (GW)			Total (GW)	Dispatch (90% S + 55% W)					BESS	Evacuation capacity to be planned (GW)																																																																					
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Nizamabad	1	2.5	3.5	3	1	2																																																																										
Medak	1	2.5	3.5	3	1	2																																																																										
Rangareddy	1	2.5	3.5	3	1	2																																																																										
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Nizamabad	1	1	2	0																																																																												
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Rangareddy	1	0.5	1.5	0																																																																												
Karimnager	0	0	0	0																																																																												
Total	3	2	5	0																																																																												

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Sl. No.	Items	Details
		<p>Rangareddy, Nizamabad and Karimnagar area would be pooled at Nizamabad-II PS through 400 kV lines for further transfer of power. Accordingly, Medak REZ is being integrated with Nizamabad-II PS through Medak PS – Nizamabad-II PS 400 kV (Quad ACSR moose) D/c line.</p> <p>The scheme was discussed and agreed in the 15th CMETS(SR) held on 30.01.2023.</p> <p>The scheme was discussed in the 46th SRPC meeting held on 31.05.2023 and SRPC has forwarded the views of Southern region constituents and communicated that consensus has not been arrived for the above schemes. Southern region constituents suggested to utilize the existing transmission system for evacuation of RE power and transmission scheme may be implemented at 400 kV level at the initial stage at Nizamabad. Southern region constituents requested to take up the schemes in phased manner depending on the visibility of RE generation.</p> <p>Further, SECI informed that they have invited bids for 500 MW RE generation in Telangana state.</p> <p>Accordingly, in meeting at CEA on 06.10.2023, Transmission System for integration of Medak REZ (1 GW) was agreed to be implemented in initial phase, keeping in view the SECI tender of 500 MW in Telangana State and views of SR constituents regarding phased implementation of transmission schemes. Minutes of the meeting enclosed at Annexure -II</p> <p>The present phased scheme shall facilitate immediate integration and evacuation of 1 GW RE potential at Medak.</p>
6.	Estimated Cost	Rs. 536 Crore
7.	Impact on the total Annual Transmission charges in % along with the existing ATC	<p>A. ATC (considering Levelized Tariff @15% of estimated cost): 80.4 Crore</p> <p>B. Present ATC: Rs. 45,753.99 Crore[#]</p> <p>C. A/B (%): 0.176%</p>
8.	Need of phasing, if any	Not Applicable
9.	Tentative Implementation timeframe	24 months from date of allocation to implementing agency / SPV Transfer (as the case may be).
10.	Inclusion of any wild life/protected area along the transmission line route	No major National Park, Wildlife Sanctuary or other protected areas observed. However, for details of forest/protected areas, survey is required to be done.
11.	Deliberations with RPC along with their comments	The scheme was discussed in the 46 th SRPC meeting held on 31.05.2023 SRPC vide letter dated 22.06.2023 has forwarded the views on the scheme. (Copy of SRPC views attached at Annexure-I).
12.	System Study for evolution of the proposal	Report on Transmission System for Integration of over 500 GW RE Capacity has been published by CEA on 07.12.2022

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Total YTC allowed for May'23 as per Notification of Transmission Charges payable by DICs for Billing Month of Jul'23 dated 25.06.2023 posted on NLDC website

4.3.11 Schematic of the scheme is given below:



4.3.12 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
4.	<p>Establishment of 400/220 kV 2x500 MVA Pooling Station near Medak (Medak PS)</p> <p>Future Space Provisions: (Including space for Phase-II)</p> <ul style="list-style-type: none"> • 400/220 kV, 500 MVA, ICTs – 9 Nos. • 400 kV ICT bays – 9 Nos. • 220 kV ICT bays – 9 Nos. • 400 kV line bays – 6 Nos. (with provision for SLR) • 220 kV line bays – 14 Nos. • 220 kV Sectionaliser: 3 sets • 220 kV Bus Coupler (BC) Bay – 3 Nos. • 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos. 	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA, ICTs – 2 Nos. • 400kV ICT bays – 2 Nos. • 220kV ICT bays – 2 Nos. • 400kV line bays – 2 Nos. (at Medak PS for termination of Medak PS – Nizamabad-II line) • 220 kV line bays – 4 Nos. • 220 kV Bus Coupler (BC) Bay – 1 No. • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.
5.	Medak PS – Nizamabad-II 400 kV (Quad ACSR moose) D/c line	<ul style="list-style-type: none"> • Route length~60 km • 400 kV line bays – 2 Nos. (at

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<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
		Nizamabad-II PS)
6.	2x125 MVA, 420 kV bus reactors at Medak PS	<ul style="list-style-type: none"> • 420 kV, 125 MVA Bus Reactors – 2 Nos. • 420 kV, 125 MVA Bus Reactor bays – 2 Nos.

4.3.13 Members may deliberate.

4.4 Augmentation of transformation capacity by 1x1500 MVA (3rd), 765/400 kV ICT at Kurnool New substation in Andhra Pradesh

4.4.1 Presently, Kurnool New 765/400 kV Substation is under operation with 2x1500 MVA, 765/400 kV ICTs. Connectivity of 1,725 MW has been granted / agreed for grant at 400 kV level. In 22nd CMETS-SR held on 25.08.2023, it was agreed to grant connectivity for 989 MW to M/s AM Green Energy Pvt. Ltd. at Kurnool New S/s with 1x1500 MVA, 765/400 kV (3rd ICT).

4.4.2 In view of the above, augmentation of transformation capacity by 1x1500 MVA, 765/400 kV (3rd) ICT was discussed and agreed in the 23rd CMETS-SR held on 29.09.2023.

4.4.3 The estimated cost of the scheme is less than INR 500 Cr and accordingly, same was not sent to SRPC for deliberations.

4.4.4 Details of the proposed scheme is given below:

<i>Sl. No.</i>	<i>Items</i>	<i>Details</i>		
1.	Name of Scheme	Augmentation of transformation capacity by 1x1500 MVA (3 rd), 765/400kV ICT at Kurnool New substation in Andhra Pradesh		
2.	Scope of the scheme			
		<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
		I.	Augmentation of 1x1500 MVA (3 rd), 765/400 kV transformation capacity at Kurnool New S/s	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA ICT – 1 No. • 1x500 MVA, 765/400 ICT (1-Phase Unit) spare: 1 No. • 765 kV ICT bays – 1 No. (New bay is to be terminated in existing diameter) • 400 kV ICT bays – 1 No. (New bay is to be terminated in new

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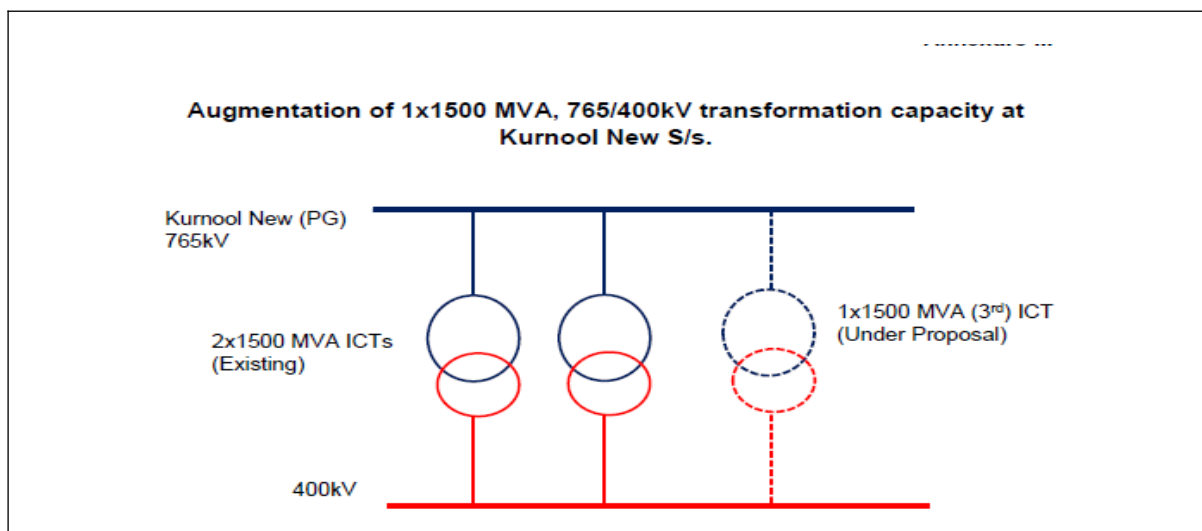
Sl. No.	Items	Details		
		Sl. No.	Scope of the Transmission Scheme	Capacity /km
				diameter along with associated tie bay) <ul style="list-style-type: none"> • 400 kV GIS duct – 1550 m • 420 kV, SF6/Air Bushing for connecting GIS to AIS – 6 Nos.
3.	Depiction of the scheme on Transmission Grid Map	Given Below		
4.	Upstream/downstream system associated with the scheme	Not applicable		
5.	Objective / Justification	<p>1. Presently, Kurnool New 765/400kV Substation is under operation with 2x1500 MVA, 765/400kV ICTs. Connectivity of 1725 MW has been granted / agreed for grant at 400kV level. In 22nd CMETS-SR held on 25.08.2023, it was agreed to grant connectivity for 989 MW to M/s AM Green Energy Pvt. Ltd. at Kurnool New S/s with 1x1500 MVA, 765/400 kV (3rd ICT).</p> <p>2. In view of the above, augmentation of transformation capacity by 1x1500 MVA, 765/400 kV (3rd) ICT was discussed and agreed in the 23rd CMETS-SR held on 29.09.2023.</p>		
6.	Estimated Cost	Rs. 162 Crore		
7.	Impact on the total Annual Transmission charges in % along with the existing ATC	<p>A. ATC (considering Levelized Tariff @15% of estimated cost): 24.3 Crore</p> <p>B. Present ATC: Rs. 44840.38 Crore*</p> <p>C. A/B (%): 0.0542%</p>		
8.	Need of phasing, if any	Not Applicable		
9.	Tentative Implementation timeframe	<p>18 months from date of allocation to implementing agency / SPV Transfer (as the case may be).</p> <p>Tentative time-frame: June'25 (Considering 2-3 months for necessary approvals & subsequent award of the project)</p>		
10.	Inclusion of any wild life/protected area along the transmission line route	None envisaged		
11.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr and accordingly, same was not sent to SRPC for		

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Sl. No.	Items	Details
		deliberations in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
12.	System Study for evolution of the proposal	For providing the connectivity to RE generation project, the augmentation of 1x1500 MVA, 765/400kV ICT (3 rd) at Kurnool New S/s was proposed.

** Total YTC allowed for Aug'23 as per Notification of Transmission Charges payable by DICs for Billing Month of October, 2023 dated 25.09.2023 posted on NLDC website.*

4.4.5 Schematic of the scheme is given below:



4.4.6 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
2.	Augmentation of 1x1500 MVA (3 rd), 765/400kV transformation capacity at Kurnool New S/s	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA ICT – 1 No. (4x500 MVA including one spare unit) • 765 kV ICT bays – 1 No. (New bay is to be terminated in existing diameter) • 400 kV ICT bays – 1 No. (New bay is to be terminated in new diameter along with associated tie bay) • 400 kV GIS duct – 1550 m • 420 kV, SF6/Air Bushing for connecting GIS to AIS – 6 Nos.

4.4.7 Members may deliberate.

4.5 ISTS Network Expansion scheme “Reconductoring of Raichur – Velloor (Mahabubnagar) 400 kV S/c line with HTLS conductor”

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- 4.5.1 The high loading on Raichur – Veltoor (Mehaboobnagar) 400 kV S/c line was highlighted by SRLDC and TSTRANSCO in the Joint Study meeting of Southern Region Constituents held on 30th June – 2nd July, 2022, at SRPC, Bengaluru. During the meeting, SRLDC informed that during Peak wind season in Southern Region, the flow on Raichur – Veltoor (Mehaboobnagar) 400 kV S/c line is as high as 700 MW. TSTRANSCO informed that on account of high loading on the Raichur – Veltoor (Mehaboobnagar) 400 kV S/c line, TTC of Telangana is restricted, therefore, options may be explored for reconductoring of conductor/replacement of corridor based on the inputs from POWERGRID.
- 4.5.2 The scheme was discussed and agreed in the 20th CMETS (SR) held on 04.08.2023. The estimated cost of the scheme is less than INR 500 Cr and accordingly, same was not sent to SRPC for deliberations in line with MoP office order no. 15/3/2018-Trans-Pt (5) dated 28-10-2021 regarding reconstitution of NCT.
- 4.5.3 Details of the scheme is summarized as below:

Sl. No.	Items	Details		
1.	Name of Scheme	Reconductoring of Raichur – Veltloor (Mahabubnagar) 400 kV S/c line with HTLS conductor		
2.	Scope of the scheme			
		Sl. No.	Scope of the Transmission Scheme	Capacity /km
		1.	Reconductoring of Raichur – Veltloor (Mahabubnagar) 400 kV S/c line with HTLS conductor	Line length – 73.68 km
		2.	Upgradation of 400 kV bay equipments at Veltloor (Mahabubnagar) end	
		3.	Upgradation of 400 kV bay equipments at Raichur end	
3.	Depiction of the scheme on Transmission Grid Map			
4.	Upstream/downstream system associated with the scheme	Not applicable		
5.	Objective / Justification	The high loading on Raichur – Veltloor(Mehaboobnagar) 400 kV S/c line was highlighted by SRLDC and TSTRANSCO in the Joint Study meeting of Southern Region Constituents held		

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Sl. No.	Items	Details
		<p>on 30th June – 2nd July, 2022 at SRPC, Bengaluru. During the meeting, SRLDC informed that during Peak wind season in Southern Region, the Raichur – Veltor (Mehaboobnagar) 400 kV S/c line flow is as high as 700 MW. TSTRANSCO informed that on account of high loading on the Raichur – Veltor (Mehaboobnagar) 400 kV S/c line, TTC of Telangana is restricted and suitable augmentation may be explored.</p> <p>The issue of high loading of Raichur-Veltor (Mehaboobnagar) 400 kV S/c line was also highlighted during the meeting held on 19.09.2022 regarding intra-state proposals of APTRANSCO and TSTRANSCO. SRLDC requested to take up implementation of upgradation of Raichur – Veltor (Mahabubnagar) 400 kV S/c line corridor. CTU informed that Raichur – Veltor (Mehaboobnagar) 400 kV S/c line is an ISTS line owned by POWERGRID designed at 45-75 deg and options may be explored for reconductoring of conductor / replacement of corridor based on the inputs from POWERGRID.</p> <p>The issue of overloading of Raichur – Veltor (Mehaboobnagar) 400kV S/c line was also highlighted by the NLDC in its operational feedback for the quarter July-Sep.'22. Further, CTU, in the interim report for the ISTS Rolling Plan 2027-28 published on 30.09.2022 has also highlighted that loading on Raichur – Veltor(Mehaboobnagar) 400kV S/c line is crossing its thermal rating (850 MVA) under N-1 contingency. Subsequently, CTU vide email dated 03.10.2022 requested POWERGRID to confirm the possibility of reconductoring the line with HTLS conductor / replacement of corridor. POWERGRID vide email dated 18.01.2023 has confirmed the possibility of reconductoring with HTLS conductor.</p> <p>Accordingly, reconductoring of the Raichur – Veltor (Mehaboobnagar) 400 kV S/c line with HTLS conductor was discussed and agreed in the 15th CMETS(SR) held on 30.01.2023. The scope of upgradation works of bay equipment at both Raichur and Mahabubnagar end for the line was discussed and agreed in the 20th CMETS(SR) held on 04.08.2023.</p>
6.	Estimated Cost	Rs. 164 Crore
7.	Impact on the total Annual Transmission charges in % along with the existing ATC	<p>D. ATC (considering Levelized Tariff @15% of estimated cost): 24.6 Crore</p> <p>E. Present ATC: Rs. 44,786.17 Crore[#]</p> <p>F. A/B (%): 0.0549%</p>
8.	Need of phasing, if any	Not Applicable

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Sl. No.	Items	Details
9.	Tentative Implementation timeframe	24 months from date of allocation to implementing agency / SPV Transfer (as the case may be). Tentative time-frame: Dec'25 (Considering 2-3 months for necessary approvals & subsequent award of the project)
10.	Inclusion of any wild life/protected area along the transmission line route	None envisaged
11.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr and accordingly, same was not sent to SRPC for deliberations in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
12.	System Study for evolution of the proposal	As per the meeting held on 19.09.2022, ISTS Rolling Plan report for 2026-27 timeframe and SRLDC, GRID-INDIA operational feedback, reconductoring of the Raichur – Veltloor (Mahaboobnagar) 400 kV S/c line with HTLS conductor along with upgradation of 400kV bay equipment at both Raichur and Mahabubnagar end was proposed.

Total YTC allowed for Feb'23 as per Notification of Transmission Charges payable by DICs for Billing Month of April, 2023 dated 25.03.2023 posted on NLDC website.

4.5.4 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Reconductoring of Raichur – Veltloor (Mahabubnagar) 400 kV S/c line with HTLS conductor	Route length – 73.68 km
2.	Upgradation of 400 kV bay equipments at Veltloor (Mahabubnagar) end	
3.	Upgradation of 400 kV bay equipments at Raichur end	

4.5.5 Members may deliberate.

4.6 Eastern Region Expansion Scheme-XXXIX (ERES-XXXIX)

4.6.1 There is a requirement of ISTS corridor to supply RE power from outside Odisha to such industries, to meet the RPO. Thus, keeping in view critical nature of large industrial demand and quantum of power requirement it is essential that Gopalpur S/s is feed reliably from ISTS and with high capacity lines.

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4.6.2 ERPC has recommended the scheme and mentioned that implementation of the scheme may be taken up delinking it with the receipt of Connectivity / GNA applications from the industries

4.6.3 Details of the scheme is summarized as below:

Sl. No.	Items	Details
1.	Name of scheme	Eastern Region Expansion Scheme-XXXIX (ERES-XXXIX)
2.	Scope of the scheme	<p>i. Establishment of Gopalpur 765/400 kV, 2x1500 MVA GIS S/s</p> <p>ii. Angul (POWERGRID) – Gopalpur 765 kV D/c line along with 765 kV, 1x330 MVA switchable line reactor with 500 ohm NGR (with NGR bypass arrangement) at Gopalpur end, one each in both circuits</p> <p>iii. Gopalpur – Gopalpur (OPTCL) 400 kV D/c (Quad) line</p> <p>iv. 2 nos. 765 kV AIS line bays (along with space for future switchable line reactor) along with bus extension in GIS at Angul 765/400kV S/s for termination of Angul (POWERGRID) – Gopalpur 765 kV D/c line.</p> <p>v. 2 nos. 400 kV GIS line bays at Gopalpur (OPTCL) S/s for termination of Gopalpur – Gopalpur (OPTCL) 400kV D/c (Quad) line.</p>
3.	Depiction of the scheme on Transmission Grid Map	Given below
4.	Upstream/downstream system associated with the scheme	<p>Establishment of Gopalpur (OPTCL) 400/220 kV S/s by OPTCL. OPTCL vide email dated 16-09-2023 has informed the following status of its substation:</p> <ul style="list-style-type: none"> • <i>Award expected by March, 2024</i> • <i>Commissioning expected by March, 2026</i>
5.	Objective / Justification	In view of upcoming Green Hydrogen and Green Ammonia plants/industries in Gopalpur, Odisha area with cumulative demand of about 3GW by 2025-26 and Gopalpur's locational advantage, Govt. of Odisha proposed for establishment of a new 765kV S/s in the area. It was also mentioned that there is a requirement of ISTS corridor to

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Sl. No.	Items	Details
		<p>supply RE power from outside Odisha to such industries, to meet the RPO. Thus, keeping in view critical nature of large industrial demand and quantum of power requirement it is essential that Gopalpur S/s is feed reliably from ISTS and with high capacity lines.</p> <p>As Gopalpur is in coastal area and within 60km from coastline, Gopalpur (ISTS) S/s is planned to be implemented in GIS in line with the recommendation of Report of Task Force on Cyclone Resilient Robust Electricity Transmission and Distribution Infrastructure in coastal area published by CEA in May 2021 for construction of new substations upto 60km from the coastline.</p> <p>After exploring various alternatives for establishment of Gopalpur 765kV ISTS S/s, the present scheme for establishment of Gopalpur 765/400kV new substation along with Angul – Gopalpur 765kV D/c line & Gopalpur – Gopalpur (OPTCL) 400kV D/c (Quad) line was approved in the 18th CMETS-ER held on 27th Apr 2023.</p> <p>Further, the scheme has also been recommended by ERPC in its 50th meeting held on 11-08-2023.</p> <p>OPTCL vide email dated 05-09-2023 & 16-09-2023, has informed/confirmed the following:</p> <ol style="list-style-type: none"> Gopalpur (OPTCL) S/s is expected to be commissioned by March, 2026. Award expected by March, 2024. Contiguous land is not available for implementation of both 400/220 kV intra-state and 765/400 kV ISTS substations in Gopalpur area. Line length of Gopalpur – Gopalpur (OPTCL) may be considered as 20 km.
6.	Estimated Cost	₹ 2898 Cr.
7.	Impact on the total Annual Transmission Charges in % along with the existing ATC	<p>A. ATC (considering levelized tariff @15% of estimated cost): ₹434.7 Cr.</p> <p>B. Present ATC: ₹44840.38Cr.*</p> <p>C. A/B: 0.97%</p>

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Sl. No.	Items	Details
8.	Need of phasing, if any	Nil
9.	Tentative Implementation timeframe	March 2026 [matching with Gopalpur (OPTCL) 400/220kV S/s]
10.	Inclusion of any wild life/ protected area along the transmission line route	<p>(a) Angul – Gopalpur: The line may pass through Satkosia Gorge WLS or its buffer zone in the state of Orrisa. However, for details of forest/protected areas survey is required to be done.</p> <p>(b) Gopalpur – Gopalpur (OPTCL): No major NP, WLS, other protected areas observed. However, for details of other forest/protected areas, survey is required to be done.</p>
11.	Deliberations with RPC along with their comments	ERPC has recommended the scheme and mentioned that implementation of the scheme may be taken up delinking it with the receipt of Connectivity / GNA applications from the industries.
12.	System Study for evolution of the proposal	

4.6.4 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Line length (km)/ Nos.	Estimated Cost (in ₹ Cr.)
1.	<p>Establishment of new 765/400kV, 2x1500MVA GIS substation at Gopalpur in Odisha</p> <p>Additional space for future expansion:</p> <ul style="list-style-type: none"> - 765/400kV, 4x1500MVA ICTs (12x500MVA single phase units) along with associated ICT bays at both voltage levels - 400/220kV, 4x500MVA ICTs along with 	<p>765/400 kV, 1500MVA ICTs: 2 Nos. (7x500MVA single phase units including one spare)</p> <p>765 kV ICT bays: 2 Nos.</p> <p>400 kV ICT bays: 2 Nos.</p> <p>765 kV, 330 MVAr Bus reactor: 2 Nos. (7x110 MVAr single phase units including one spare unit for both bus and line reactors)</p> <p>765 kV Bus reactor bays: 2 Nos.</p>	855

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Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Line length (km)/ Nos.	Estimated Cost (in ₹ Cr.)
	<p>associated ICT bays at both voltage levels</p> <ul style="list-style-type: none"> - 765kV, 2x330MVA (6x110MVA single phase units) bus reactor along with associated bays - 420kV, 2x125MVA bus reactor along with associated bays - 8 nos. of 765kV line bays (along with space for switchable line reactor) for future lines - 10 nos. of 400kV line bays (along with space for switchable line reactor) for future lines - 12 nos. of 220kV line bays for future lines - 765kV bus sectionaliser bay: 1 set - 400kV bus sectionaliser bay: 1 set - 220kV bus sectionaliser bay :1 set - 220kV bus coupler bay: 2 no. 	<p>420 kV, 125 MVA Bus reactor: 2 Nos.</p> <p>400 kV Bus reactor bays: 2 Nos.</p> <p>765 kV line bays: 2 Nos.</p> <p><i>[for termination of Angul (POWERGRID) – Gopalpur 765 kV D/c line along with 765 kV, 1x330 MVA switchable line reactor at Gopalpur end in both circuits]</i></p> <p>400 kV line bays: 2 nos.</p> <p><i>[for termination of Gopalpur – Gopalpur (OPTCL) 400 kV D/c (Quad) line]</i></p> <p>765 kV, 330 MVA (3x110 MVA single phase units) switchable line reactor along with associated bay and 500 ohm NGR (with NGR bypass arrangement) <i>[at Gopalpur end in both circuits of Angul (POWERGRID) – Gopalpur 765 kV D/c line]</i>: 2 Nos.</p>	
2.	Angul – Gopalpur 765kV D/c line	205 km	1661
3.	Extension at 765kV level at Angul (POWERGRID) S/s including bus extension in GIS	<p>765 kV GIS/Hybrid line bays (along with space for future switchable line reactor): 2 nos.</p> <p><i>[for termination of Angul (POWERGRID) – Gopalpur 765kV D/c line]</i></p> <p>including bus extension in GIS of about 3000m</p>	222

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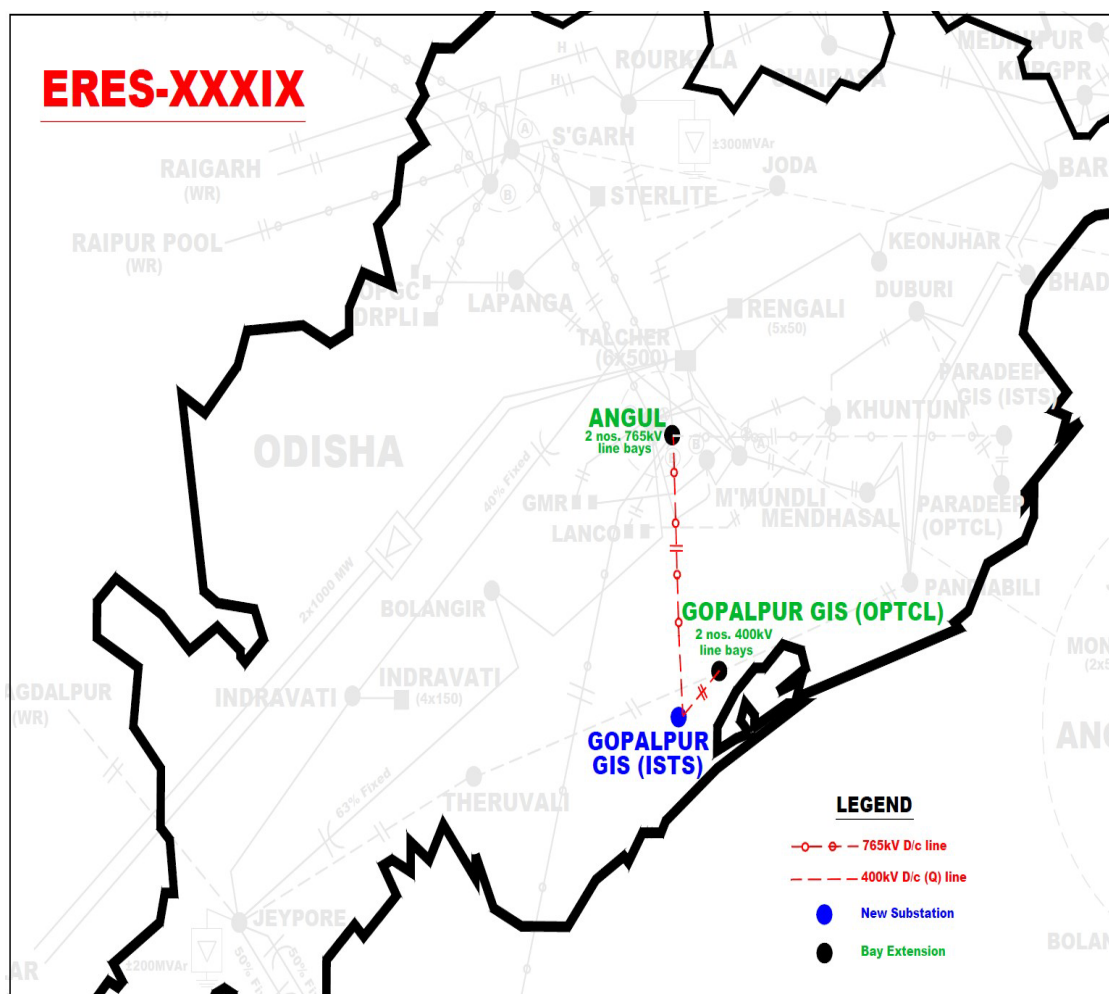
Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Line length (km)/ Nos.	Estimated Cost (in ₹ Cr.)
4.	Gopalpur – Gopalpur (OPTCL) 400kV D/c (Quad) line [@]	Route length: 20 km (approx.)	90
5.	Extension at 400kV level at [#] Gopalpur (OPTCL) GIS S/s	400 kV GIS line bays: 2 nos. [for termination of Gopalpur – Gopalpur (OPTCL) 400kV D/c (Quad) line] + [#] 2 nos. for diameter completion	70
		Total	2898

Note:

- (a) [@]Gopalpur (OPTCL) is being taken up for implementation and is expected to be awarded by Mar 2024. As per OPTCL's input 20km line has been considered between 765/400kV (ISTS) and 400/220kV (Intra-state) substations at Gopalpur.
- (b) [#]The bus scheme of 400kV level at Gopalpur (OPTCL) GIS S/s shall be one and half breaker scheme, 2 nos. full diameter i.e. 4 nos. of GIS bays needs to be implemented in the scheme for requirement of 2 nos. GIS bays for termination of Gopalpur (OPTCL) – Gopalpur 400kV D/c (Quad) line in two different diameters. Utilisation of other 2 nos. GIS bays of these diameters shall be identified in future.
- (c) OPTCL shall provide space at under implementation Gopalpur (OPTCL) 400/220kV GIS S/s for implementation of 2 nos. of 400kV GIS line bays for termination of Gopalpur (ISTS) – Gopalpur (OPTCL) 400kV D/c (Quad) line. 2 nos. full diameter i.e. 4 nos. GIS bays shall be established.
- (d) POWERGRID shall provide space at Angul (POWERGRID) 765/400kV S/s for implementation of 2 nos. of 765kV line bays (along with space for future switchable line reactor) along with bus extension in GIS for termination Angul (POWERGRID) – Gopalpur 765kV D/c line.

4.6.5 Schematic of the scheme is given below:

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4.6.6 Members may deliberate.

4.7 Eastern Region Generation Scheme-I (ERGS-I)

4.7.1 ISTS Connectivity of 2000MW was provided to NLCIL for Talabira generation project through LILO of both circuits of Angul – Sundargarh (Jharsuguda) 765kV 2xS/c lines at NLC-Talabira generation switchyard. It was agreed that the LILO line shall be implemented in ISTS as ATS under the Eastern Region Generation Scheme-I (ERGS-I).

4.7.2 Estimated cost of the ISTS scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to NERPC for deliberation.

4.7.3 Details of the scheme is summarized as below:

Sl. No.	Items	Details
1.	Name of scheme	Eastern Region Generation Scheme-I (ERGS-I)
2.	Scope of the scheme	LILO of both circuits of Angul –Sundargarh (Jharsuguda) 765kV 2xS/c lines at NLC Talabira generation switchyard

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Sl. No.	Items	Details
		<p>Note: NLC India Ltd. shall provide following at 765kV level its Talabira generation switchyard:</p> <p>(a) 2 no. 765kV GIS line bays with PIR in different diameters for termination of Talabira – Sundargarh (Jharsuguda) 765kV D/c line.</p> <p>(b) 2 no. of 765kV GIS line bays with PIR in different diameters for termination of Talabira – Angul 765kV D/c line, each with 765kV, 1x240MVAR (3x80MVAR single phase units) switchable line reactor along with 400ohm NGR (with NGR bypass arrangement). There shall be total 7x80MVAR single phase units against 2x240MVAR line reactors and the 7th 1-phase unit shall be spare as hot stand by. The spare 1-phase shunt reactor unit shall be placed and connected in such a way that the spare unit can be utilized without its physical movement. Further, the connection arrangement of switchable line reactors shall be such that it can be used as line reactor as well as bus reactor with suitable NGR bypass arrangement.</p>
3.	Depiction of the scheme on Transmission Grid Map	Given below
4.	Upstream/downstream system associated with the scheme	Nil
5.	Objective / Justification	<p>NLC India Ltd. had applied ISTS connectivity for 2000MW and intra-state connectivity for 400MW for its upcoming generation plant of 2400MW (3x800MW) at Talabira, Odisha. Alternatives for providing Connectivity to this generation project at nearby ISTS substations viz. Angul (POWERGRID), Sundargarh-A (Jharsuguda) (POWERGRID) & Sundargarh-B (Jharsuguda) (POWERGRID), were explored. Considering future generation project and load demand in Odisha, system studies were carried out for 2027-28 timeframe for providing ISTS Connectivity to Talabira and planning of evacuation system for upcoming intra-state generations in Odisha and discussed in the joint study meeting among ERPC, CTU, ERLDC, OPTCL and NLC on 11-07-2023. As decided in the 20th Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER) held on 28-06-2023 and based on the outcomes of the joint study meeting held on 11-07-2023, ISTS Connectivity of 2000MW was provided to NLCIL for it Talabira generation</p>

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Sl. No.	Items	Details
		<p>project through LILO of both circuits of Angul – Sundargarh (Jharsuguda) 765kV 2xS/c lines at NLC-Talabira generation switchyard. It was agreed that the LILO line shall be implemented in ISTS as ATS under the Eastern Region Generation Scheme-I (ERGS-I).</p> <p>Further, as per request of NLCIL regarding implementation modalities of line reactor (including spare reactor, NGR bypass scheme) and communication /protection related matters, a meeting was held on 24-08-2023 between CTU and NLCIL. Based on discussion, final scope of works under Eastern Region Generation Scheme-I (ERGS-I) was agreed in the 22nd Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER) held on 29-08-2023. For 400MW intra-state Connectivity, OPTCL has planned Talabira – Lapanga 400kV D/c (Quad) line (to be implemented by NLC).</p>
6.	Estimated Cost	₹ 413.16 Cr.
7.	Impact on the total Annual Transmission Charges in % along with the existing ATC	<p>D. ATC (considering levelized tariff @15% of estimated cost): ₹61.97 Cr.</p> <p>E. Present ATC: ₹44840.38Cr.*</p> <p>F. A/B: 0.14%</p>
8.	Need of phasing, if any	Nil
9.	Tentative Implementation timeframe	01-05-2027
10.	Inclusion of any wild life/ protected area along the transmission line route	No major National Park, Wild Life Sanctuary, other protected areas observed. However, for details of other forest/protected areas survey is required to be done.
11.	Deliberations with RPC along with their comments	Estimated cost of the ISTS scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to NERPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
12.	System Study for evolution of the proposal	

4.7.4 Detailed scope of the scheme is given below:

Sl.	Scope of the Transmission	Capacity (MVA) /	Estimated Cost
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No.	Scheme	Line length (km)/ Nos.	(₹ Cr.)
1.	LILO of both circuits of Angul –Sundargarh (Jharsuguda) 765kV 2xS/c lines at NLC-Talabira generation switchyard	50km (25km Loop in and 25km Loop out)	413

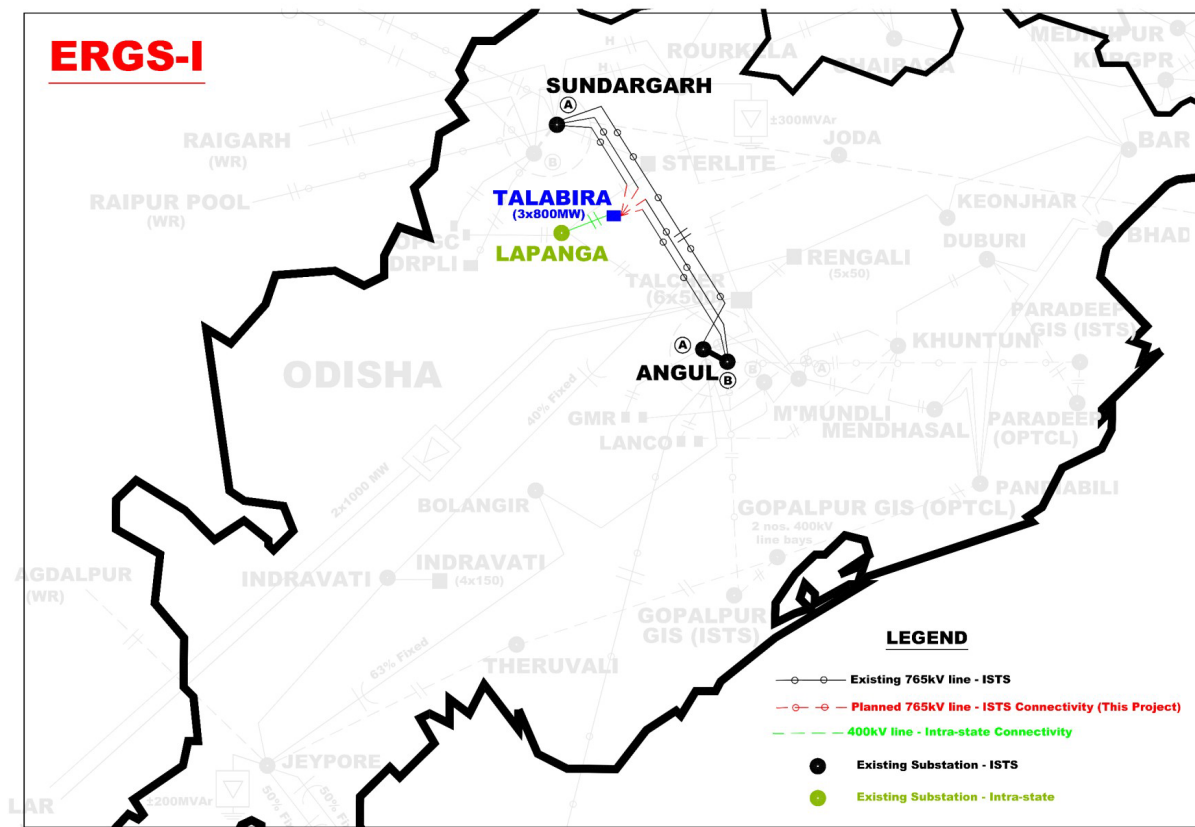
Note: NLC India Ltd. shall provide following at 765kV level its Talabira generation switchyard:

(a) 2 no. 765kV GIS line bays with PIR in different diameters for termination of Talabira – Sundargarh (Jharsuguda) 765kV D/c line.

(b) 2 no. of 765kV GIS line bays with PIR in different diameters for termination of Talabira – Angul 765kV D/c line, each with 765kV, 1x240MVAR (3x80MVAR single phase units) switchable line reactor along with 400ohm NGR (with NGR bypass arrangement). There shall be total 7x80MVAR single phase units against 2x240MVAR line reactors and the 7th 1-phase unit shall be spare as hot stand by. The spare 1-phase shunt reactor unit shall be placed and connected in such a way that the spare unit can be utilized without its physical movement. Further, the connection arrangement of switchable line reactors shall be such that it can be used as line reactor as well as bus reactor with suitable NGR bypass arrangement.

4.7.5 Schematic of the scheme is given below:

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4.7.6 Members may deliberate.

4.8 North Eastern Region Expansion Scheme-XXI Part-B

4.8.1 The existing 132kV Badarpur (POWERGRID) switching station was commissioned in 1999 and shall be completing 25 years in service by 2024. POWERGRID the owner of the substation has informed that they are facing issues in O&M of the switching station and to improve the reliability it would be prudent to upgrade the switching station from single main and transfer bus scheme to double main transfer bus scheme by converting from AIS to GIS.

4.8.2 Estimated cost of the ISTS scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to ERPC for deliberation.

4.8.3 Details of the scheme is summarized as below:

Sl. No.	Items	Details
1.	Name of scheme	North Eastern Region Expansion Scheme-XXI Part-B (NERES-XXI Part-B)
2.	Scope of the scheme	Upgradation of Single Main & Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station along with upgradation of necessary Control, Protection, Communication, Automation & LT auxiliary system

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Sl. No.	Items	Details
		Note: As the Green GIS is being introduced for first time in ISTS in the Indian network, the ISTS transmission licensee shall involve CTU officials at various stages of implementation such as detailed engineering, design, testing, commissioning etc., and also after commissioning, so as to assess the environmental impact, operational performance, ageing characteristics etc. of the Green GIS.
3.	Depiction of the scheme on Transmission Grid Map	Given below
4.	Upstream/downstream system associated with the scheme	Nil
5.	Objective / Justification	<p>The existing 132kV Badarpur (POWERGRID) switching station was commissioned in 1999 and shall be completing 25 years in service by 2024. POWERGRID the owner of the substation has informed that they are facing issues in O&M of the switching station and to improve the reliability it would be prudent to upgrade the switching station from single main and transfer bus scheme to double main transfer bus scheme by converting from AIS to GIS.</p> <p>Further, towards adoption of new technology in the Indian Grid, it was proposed that the upgradation could be carried out as Green GIS instead of conventional GIS owing to the following benefits:</p> <ul style="list-style-type: none"> • Green GIS is a new technology in which SF₆ gas is not used and this technology is being adopted by several countries in the world. • This would help in the reduction of usage of Green House Gas and would be a step towards achieving sustainable development targets. <p>The scheme was also discussed in the 23rd TCC & NERPC meetings held on 18th-19th Nov 2022 wherein the subject upgradation was agreed to be carried out in Green GIS.</p> <p>The proposal was deliberated in 16th CMETS-NER held on 24-02-2023 wherein following was decided to be implemented in ISTS:</p> <ul style="list-style-type: none"> • Upgradation of Single Main and Transfer

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Sl. No.	Items	Details
		<p>Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station</p> <p>Upon finalization of the above scope a committee comprising of officials from CTU and POWERGRID visited Badarpur substation for finalization of the implementation modalities of the above agreed scope of works. The committee submitted a report wherein it is suggested the scope of works may be refined as per the actual site conditions. Accordingly, the proposal was once again discussed in the 20th CMETS-NER meeting held on 23rd June 2023 and revised scope of works (as mentioned below) under subject scheme was agreed with an implementation schedule of 30 months keeping in view implementation of new technology of Green GIS in ISTS:</p> <ul style="list-style-type: none"> Upgradation of Single Main & Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station along with upgradation of necessary Control, Protection, Communication, Automation & LT auxiliary system <p>Note: <i>As the Green GIS is being introduced for first time in ISTS in the Indian network, the ISTS transmission licensee shall involve CTU at various stages of implementation such as detailed engineering, design, testing, commissioning etc., and even after commissioning, so as to assess the environmental impact, operational performance, ageing characteristics etc. of the Green GIS.</i></p> <p>The scheme was taken up for deliberations in the 15th meeting of NCT held on 25-08-2023, wherein it was recorded that “...life of sub-stations is generally about 35 years and hence, the reasons for replacement/upgradation of switching station after 25 years needs to be ascertained. After detailed deliberations, it was decided to review the scheme subsequently.”. Accordingly, the subject scheme was inter alia deliberated in a meeting held on 20-10-2023 under the chairmanship of Member (PS), CEA, wherein following was noted/recorded:</p> <p>(i) In case of Bus fault or Maintenance on Bus</p>

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Sl. No.	Items	Details
		<p>related components (Bus Isolator, insulator cleaning etc.), complete station suffers outage which will not only require load shedding and generation back-down but may likely to cause grid incidence in the area. Thus, it was proposed that the bus scheme needs to be upgraded from Single Main and Transfer scheme to Double Main Scheme for Reliability of power supply point of view.</p> <p>(ii) Due to space constraints, upgradation of the bus scheme has been proposed with GIS. Due to conversion in GIS, space for future bay extension can also be created. In addition to existing 8 nos. of bays at Badarpur S/s, 2 nos. more bays can be accommodated considering the constraints for line entry corridor.</p> <p>(iii) Green initiative needs to be taken on pilot basis, as it is alternative to SF₆ gas, which has very high global warming potential. It was also recorded that various vendors have confirmed long term availability of gas used in Green GIS.</p> <p>After detailed analysis and deliberations it was inter alia agreed to upgrade Badarpur (POWERGRID) 132kV switching station from Single Main and Transfer Bus scheme to Double Main Bus scheme by converting from AIS to Green GIS as a pilot project.</p>
6.	Estimated Cost	<p>INR 110 Cr.</p> <p><i>Note: CTU has done the cost estimation on quotation basis for the first time in India for new technology based on Green GIS. The practice for such type of cost estimate being followed by POWERGRID Cost Engg. was discussed with them, and it was gathered from them that lowest budgetary quote is considered for estimating the cost of such scheme. Accordingly, the cost estimate for this scheme has been worked out as per the said assumption i.e. lowest budgetary quote has been considered.</i></p>
7.	Impact on the total Annual Transmission Charges in % along with the existing ATC	<p>G. ATC (considering levelized tariff @15% of estimated cost): ₹16.5 Cr.</p> <p>H. Present ATC: ₹44617.55 Cr.*</p>

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Sl. No.	Items	Details
		I. A/B: 0.037%
8.	Need of phasing, if any	Nil
9.	Implementation timeframe	30 months from date of allocation
10.	Inclusion of any wildlife/ protected area along the transmission line route	No
11.	Deliberations with RPC along with their comments	Estimated cost of the ISTS scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to ERPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt (5) dated 28-10-2021 regarding reconstitution of NCT.
12.	System Study for evolution of the proposal	Refer justification at Sl. No. 5 above.

4.8.4 Detailed scope of the scheme is given below:

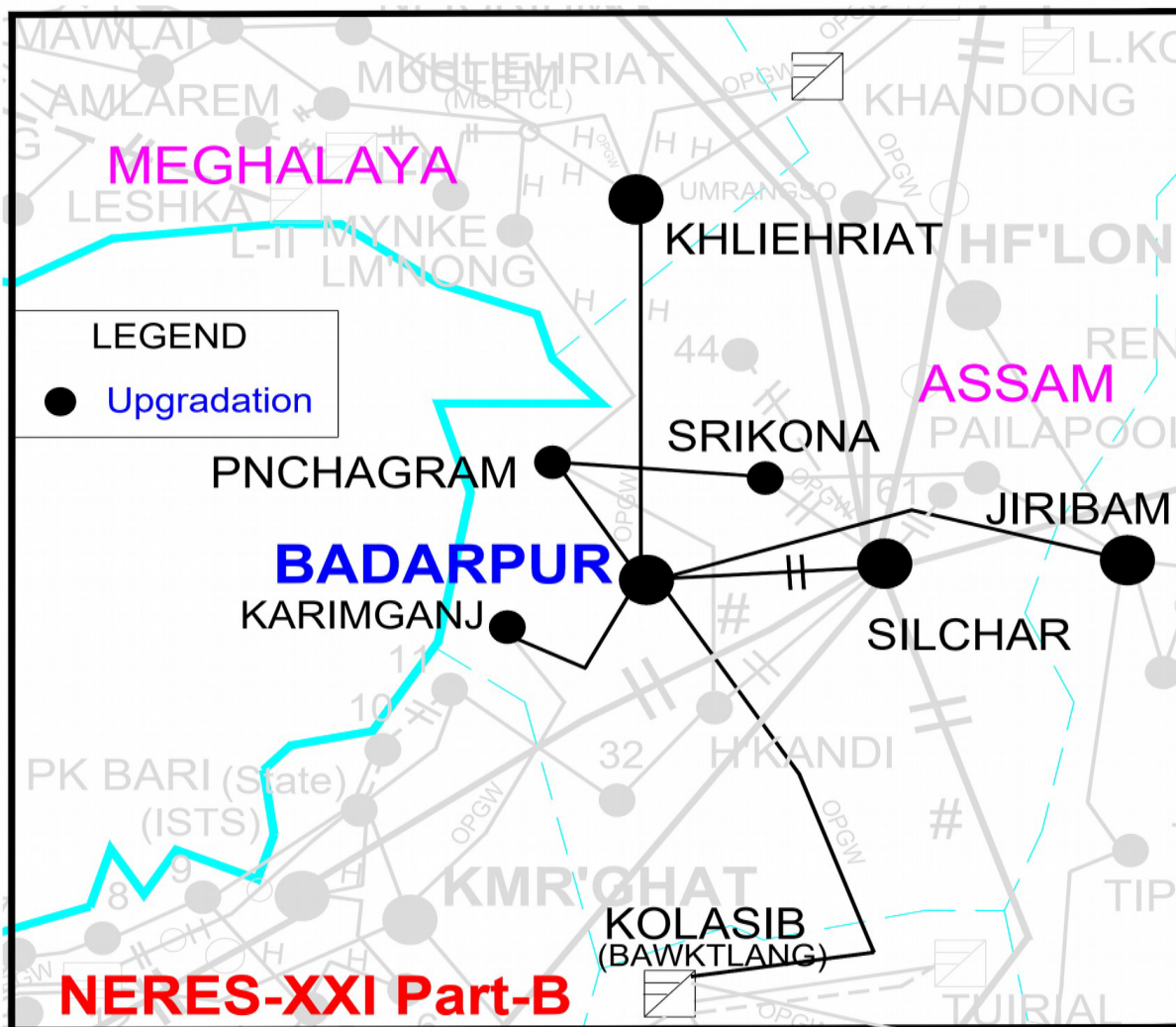
Sl. No.	Scope of the Transmission Scheme	Capacity/ km	Estimated Cost (₹ Cr.)
1.	<ul style="list-style-type: none"> Upgradation of Single Main & Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station along with upgradation of necessary Control, Protection, Communication, Automation & LT auxiliary system <p>Note: As the Green GIS is being introduced for first time in ISTS in the Indian network, the ISTS transmission licensee shall involve CTU officials at various stages of implementation such as detailed engineering, design, testing, commissioning etc., and also after commissioning, so as to assess the environmental impact, operational performance, ageing characteristics etc. of the Green GIS.</p>	-	#110
	Total		#110

#CTU has done the cost estimation on quotation basis for the first time in India for new technology based on Green GIS. The practice for such type of cost estimate being followed by POWERGRID Cost Engg. was discussed with them, and it was gathered from them that lowest budgetary quote is

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considered for estimating the cost of such scheme. Accordingly, the cost estimate for this scheme has been worked out as per the said assumption i.e. lowest budgetary quote has been considered.

4.8.5 Schematic of the scheme is given below:



4.8.6 Members may deliberate.

4.9 **OPGW installation on existing line 765/400 kV Pune (PG) (GIS) – 400 kV Parli (PG) line which is to be LILOed at Kallam Substations under TBCB project.**

4.9.1 It is apparent that, there is no OPGW on the above said existing main line and without OPGW availability on the main line, redundancy of data communication of the new Kallam substation to RLDC cannot be maintained. Further OPGW installation on above line shall create one more intra-state ISTS communication paths. Thus, OPGW needs to be provided by replacing one earthwire on the main D/C existing line and integrating it with OPGW of the upcoming LILO section.

4.9.2 The scheme was deliberated in the 46th & 47th TCC/ WRPC meeting held on 2-3 Feb & 14-15 June 2023 respectively. After deliberations, WRPC concurred the proposal of

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“Supply and Installation of OPGW on existing line which is to be LILOed at Kallam Substation under TBCB project” at estimated cost of Rs 14 Cr excluding taxes.

4.9.3 Details of the scheme is summarized below:

S. No.	Items	Details
1.	Name of Scheme	Supply and Installation of OPGW on existing line 765/400kV Pune (PG) (GIS) – 400kV Parli (PG) line which is to be LILOed at Kallam Substation under TBCB project namely “ <i>Transmission system for evacuation of power from RE projects in Osmanabad area (1 GW) in Maharashtra</i> ”
2.	Scope of the scheme	<ol style="list-style-type: none"> 1. The OPGW Supply and installation alongwith accessories on the following line by replacing the existing one no. earthwire by Live Line installation: <ul style="list-style-type: none"> ➤ 765/400kV Pune (PG) (GIS) – 400kV Parli (PG) line 2. STM-16, 3 MSP (FOTEs of requisite configuration at Pune, Parli for establishing the communication in between Pune-Kallam-Parli.
3.	Depiction of the scheme on FO Map	
4.	Objective / Justification	<p>A new substation Kallam is proposed to be established by LILO of the following line :</p> <ul style="list-style-type: none"> ➤ 765/400kV Pune (PG) (GIS) – 400kV Parli (PG) line (272 kms.) <p>The line is owned by M/s Western Transmission Power Ltd. (M/s Adani). Further, it is to mention that, OPGW on the LILO portion is envisaged in time line with the construction of the proposed lines under TBCB project.</p> <p>From the diagram, it is apparent that, there is no OPGW on the above said existing main line and without OPGW availability on the main line, redundancy of data communication of the new Kallam substation to RLDC cannot be maintained. Further OPGW installation on above line shall create one more intra-state ISTS communication paths.</p> <p>Thus, OPGW needs to be provided by replacing one earthwire on the main D/C existing line and integrating it with OPGW of the upcoming LILO</p>

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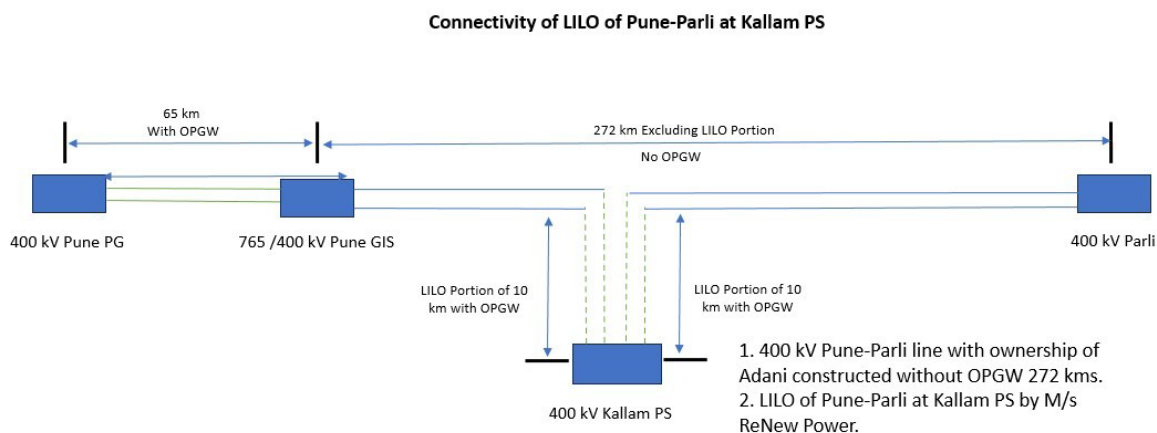
S. No.	Items	Details
		section.
5.	Estimated Cost	Rs. 14 Crore (excluding taxes) approx.
6.	Implementation timeframe	24 months from the date of allocation
7.	Implementation Mode	Through M/s Western Transmission Power Ltd. (M/s Adani) on RTM mode.
8.	Deliberations with NRPC along with their comments	The scheme was deliberated in the 46th & 47 th TCC/WRPC meeting held on 2-3 Feb & 14-15 June 2023 respectively. After deliberations, WRPC concurred the proposal of “Supply and Installation of OPGW on existing line which is to be LILLOed at Kallam Substation under TBCB project” at estimated cost of Rs 14 Cr excluding taxes.

4.9.4 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme
1.	<p>The OPGW Supply and installation alongwith accessories on the following line by replacing the existing one no. earthwire by Live Line installation:</p> <ul style="list-style-type: none"> 765/400kV Pune (PG) (GIS) – 400kV Parli (PG) line <p>STM-16, 3 MSP (FOTEs of requisite configuration at Pune, Parli for establishing the communication in between Pune-Kallam-Parli.</p>

4.9.5 Schematic of the scheme is given below:

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4.9.6 Members may deliberate.

4.10 OPGW installation on Itarsi-Dhule Transmission Line

4.10.1 The OPGW on main line i.e. Itarsi-Dhule line installed by POWERGRID in 2003 is at the end of useful life and the link is an important connectivity to send data of substations of MP locations to WRLDC.

4.10.2 The “OPGW installation on Itarsi-Dhule Transmission Line”, has been deliberated in 46th & 47th TCC/ WRPC meeting held on 2-3 Feb & 14-15 June 2023 respectively WRPC agreed to the installation of OPGW on 400kV Itarsi-Dhule (403 Km) to be installed on the 2nd peak of transmission line under ongoing WRCSS project for an estimated cost of Rs 16 Crores Excluding taxes.

4.10.3 Details of the schemes are summarized as below:

S. No.	Items	Details
1.	Name of Scheme	OPGW installation on Itarsi-Dhule Transmission Line.
2.	Scope of the scheme	1. Supply and installation of 24F OPGW for 403km. 2. STM-16, 5 MSP FOTE for Dhule S/s and repeater station. 3. Repeater Shelter including all shelter items/ Equipment i.e. telecom repeater equipment, auxiliary infrastructure like DG, SMPS, battery bank etc. in between Dhule-Khandwa section as the line length is approx. 263 kM. Repeater location may be finalized by transmission licensee preferably in existing ISTS/STU substations for optimizing operation & maintenance

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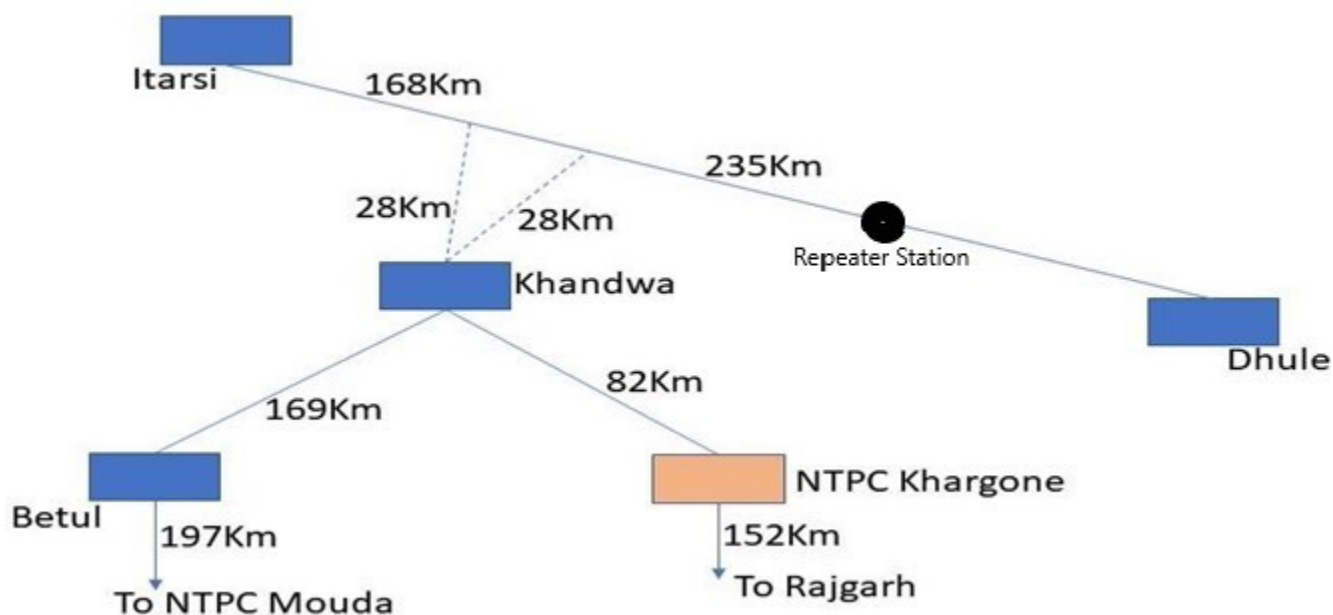
S. No.	Items	Details
		of repeater.
3.	Depiction of the scheme on FO Map	4.4.5
4.	Objective / Justification	<p>OPGW on Itarsi-Dhule (402Km-Excluding LILO portion at Khandwa) was commissioned in 2003 by POWERGRID. Later on, this line was LILOed at Khandwa and OPGW on LILO portion (2x28 Km) was installed under Master Communication Plan for WR in 2015 by POWERGRID.</p> <p>Presently the OPGW on Itarsi-Khandwa line and Khandwa-Dhule line is on STM-4 level bandwidth as STM-4 capacity FOTE is installed at Dhule S/s and STM-16 FOTE at Itarasi and Khandava S/s. For the replacement with STM-16 level, one number repeater station is also required to be considered in Khandwa-Dhule link as the link length is more than 225km.</p> <p>The OPGW on main line i.e. Itarsi-Dhule line installed by POWERGRID is at the end of useful life and the link is an important connectivity to send data of sub-stations of MP locations to WRLDC.</p>
5.	Estimated Cost & Funding	Rs. 15.4 Cr. (approx.) excluding Taxes.
6.	Implementation timeframe	Approx. 24 months from the date of allocation Through POWERGRID on RTM mode
7.	Deliberations with WRPC along with their comments	The “OPGW installation on Itarsi-Dhule Transmission Line”, has been deliberated in 46th & 47 th TCC/ WRPC meeting held on 2-3 Feb & 14-15 June 2023 respectively WRPC agreed to the installation of OPGW on 400kV Itarsi-Dhule (403 Km) to be installed on the 2 nd peak of transmission line under ongoing WRCSS project for an estimated cost of Rs 16 Crores Excluding taxes.

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4.10.4 Detailed scope of the scheme is given below:

SI No.	Name of the scheme	Scope of the scheme
1.	Supply and Installation of OPGW installation on 400kV Itarsi-Dhule Transmission Line (403 kms.).	<p>1. Supply and installation of 24F OPGW for 403 km.</p> <p>2. STM-16, 5 MSP FOTE for Itarsi, Dhule Stations including repeater station and also for Khandwa Substation which is connected through LILO with the main line.</p> <p>3. Repeater Shelter including all shelter items/ Equipment i.e. telecom repeater equipment, auxiliary infrastructure like DG, SMPS, battery bank etc. in between Dhule-Khandwa section as the line length is approx. 263 kM. Repeater location may be finalized by transmission licensee preferably in existing ISTS/STU substations for optimizing operation & maintenance of repeater.</p>

4.10.5 Schematic of the scheme is given below:



4.10.6 Members may deliberate.

4.11 Additional FOTE at AGC locations for Redundancy in NER region

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4.11.1 Additional FOTE at all AGC operated generating stations in North Eastern region is required in view of resource disjoint and criticality of AGC operation for grid operation purpose as failure of single equipment may lead to disruption in AGC operation. Further, at many locations redundant ethernet port are not available as per NLDC requirement.

4.11.2 This scheme was deliberated and approved in 24th NERPC & TCC.

4.11.3 Details of the schemes are summarized as below:

S. No.	Items	Details
1.	Name of Scheme	Additional FOTE at Loktak and Bongaigaon AGC locations in NER region
2.	Scope of the scheme	One no. of FOTE STM-16 at Loktak and One no of FOTE STM-16 at Bongaigaon is proposed.
3.	Depiction of the scheme on FO Map	NA
4.	Objective / Justification	<p>Additional FOTE at all AGC operated generating stations in North Eastern region is required in view of resource disjoint and criticality of AGC operation for grid operation purpose as failure of single equipment may lead to disruption in AGC operation. Further, at many locations redundant ethernet port are not available as per NLDC requirement. The NLDC requirement is as follows:</p> <ul style="list-style-type: none"> ➤ 1+1 Ethernet port for main NLDC ➤ 1+1 Ethernet ports are for backup NLDC <p>In NER region, Loktak and Bongaigaon AGC locations are identified for availability of additional FOTE and ethernet ports.</p>
5.	Estimated Cost	Rs. 40 Lakhs (approx.)
6.	Implementation time frame	06 months from date of allocation to Implementing agency
7.	Implementation Agency	POWERGRID in RTM mode.
8.	Deliberations with NERPC along with their comments	The proposed scheme was deliberated in the 3 rd Communication planning meeting (CPM) of CTUIL held on 22.12.2022 where in POWERGRID informed that for both locations Loktak and Bongaigaon ethernet ports as per NLDC requirement is available but additional FOTE would be required at both locations. The same scheme was also deliberated in 25 th NETeST meeting held on 25.05.2023 wherein the members agreed for the same. This scheme was deliberated and approved in 24 th NERPC & TCC.

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4.11.4 Detailed scope of the scheme is given below

SI No.	Name of the scheme	Scope of the scheme
1.	Additional FOTE at Loktak and Bongaigaon AGC locations in NER region.	One no. of FOTE STM-16 at Loktak and One no of FOTE STM-16 at Bongaigaon is proposed.

4.11.5 Members may deliberate.

5 Evaluation of functioning of National Grid.

Grid-India may make the presentation apprising NCT of the performance of national Grid during April-September 2023.

6 Any other issues, with permission of chair
