

I/33358/2024



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 सत्रवर्षी बैठक की अतिरिक्त कार्यसूची - के सम्बन्ध में

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**Subject: Additional Agenda for the 17<sup>th</sup> Meeting of National Committee on Transmission (NCT) –regarding.**

महोदया (Madam) / महोदय (Sir),

The additional agenda for the 17<sup>th</sup> meeting is enclosed herewith.

भवदीय/Yours faithfully,

(राकेश गोयल / Rakesh Goyal)

मुख्य अभियन्ता एवं सदस्य सचिव, एन.सी.टी.  
/Chief Engineer & Member Secretary (NCT)

परतिलिपि / Copy to:

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

I/33358/2024

**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. Lalit Bohra, Joint Secretary, Room no 602, 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 (PSETD), CEA**

## Additional agenda items for 17<sup>th</sup> meeting of NCT

### **A. Modification of the agenda mentioned at Sl No. 4.2 (Augmentation of transformation capacity at Jam Khambhaliya PS (JKTL))**

- With respect to **Item 4.2 of the Agenda**, “Augmentation of transformation capacity at Jam Khambhaliya PS (JKTL)”, Scope of the Transmission Scheme under Sl. is proposed to be slightly modified as under, as space for 7<sup>th</sup> ICT (or 3<sup>rd</sup> ICT on 220kV Sec-II) has recently been confirmed by JKTL vide e-mail dated 15.01.2024:

<b>Original Scope</b>	<b>Proposed revised scope</b>
Creation of New 220 kV Bus Section at Jam Khambhaliya PS Space to be kept for 1 no. 220 kV line bay in the same GIS Hall for RE Interconnection being implemented by the RE developer	Creation of New 220 kV Bus Section at Jam Khambhaliya PS Space to be kept for 1 no. 220 kV line bay <b>and 1 no. 220kV ICT bay</b> in the same GIS Hall for RE Interconnection being implemented by the RE developer

Members may deliberate.

### **B. Modifications in the earlier approved/notified transmission schemes:**

#### **3.8 Transmission system for evacuation of RE power from renewable energy parks in Leh (5GW Leh- Kaithal transmission corridor)**

3.8.1 Transmission system (EHVAC+HVDC) for evacuation of RE power from renewable energy parks in Leh (5GW Leh- Kaithal transmission corridor) was approved in 7th NCT meeting held on 03.12.21. Same was allocated to POWERGRID in RTM vide MOP OM dated 13.01.22 with implementation time frame of 5 years from approval i.e. approval of the Central Government for providing Central Grant for part funding of the project. Subsequently, due urgent requirement of 1500 MVA, 765/400 kV ICT at Bhiwani S/s, this element was delinked from earlier RTM scope in 15th NCT meeting and subsequent MOP OM dated 06/11/23.

3.8.2 Further, a meeting of the EFC was held on 3rd June 2022 under the chairmanship of Finance Secretary & Secretary (Expenditure) for appraisal of the proposal of Ministry of New and Renewable Energy (MNRE) on Green Energy Corridor Phase-II - Inter State Transmission system for 13 GW Renewable Energy Projects in Ladakh. In the meeting, following was inter-alia concluded:

*The Ministry should re-examine the TBCB mode, especially the feasibility of transmission system in TBCB mode. The Transmission system beyond Kaithal would come up in the plain areas, where not much challenges are envisaged. Accordingly, at the very least the transmission system beyond Kaithal should be considered under TBCB.*

The AC system would be required in the matching timeframe of HVDC system.

3.8.3 Members may deliberate.

### C. New Transmission Schemes:

#### 4.5 Augmentation of transformation capacity at Bhuj-II PS- request for change in implementation timeframe

The scheme was approved in 16<sup>th</sup> NCT with implementation timeframe of 21 months. However, M/s ABREL (RJ) vide e-mail dated 19.01.2024 has requested that considering the targeted schedule of their RE project as 31.05.2025, the timeline for the Sl. 1 & Sl. 3 of the scheme i.e. 220kV new bus section (with Sectionaliser) and 220kV Bay may be kept as 18 months.

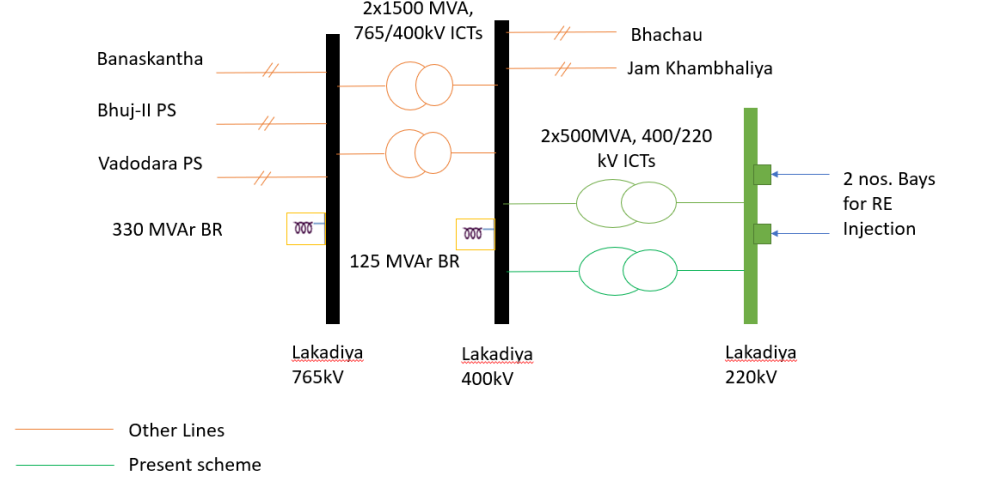
Sl. No.	Scope of transmission scheme	Revised Timeframe (Proposed)
1	Creation of New 220kV Bus Section-II at Bhuj-II PS	18 months in place of 21 months
2	Augmentation of transformation capacity at Bhuj-II PS (GIS) by 2x500 MVA, 400/220 kV ICT (5th & 6th) (Terminated at New 220 kV Bus Section-II) and by 1x1500 MVA, 765/400kV ICT (3 <sup>rd</sup> )	21 months
3	Implementation of 220 kV GIS line bay at Bhuj-II PS for ABREL (RJ) Projects Limited (Terminated at New 220 kV Bus Section-II)	18 months in place of 21 months

Members may deliberate.

#### 4.6 Augmentation of transformation capacity at 765/400 kV Lakadia S/s (WRSS XXI(A) Transco Ltd) in Gujarat

- This agenda item is in continuation to the agenda item 4.3.
- The proposed system shall enable evacuation of RE power from various generation projects in Lakadia area who have applied for connectivity under GNA at Lakadia S/s at 220kV level.
- The estimated cost of the scheme is less than INR 500 Cr and accordingly, same was not sent to WRPC for deliberations.
- Details of the proposed scheme is given below:

S. No.	Items	Details
1.	Name of Scheme	Augmentation of transformation capacity at 765/400kV Lakadia S/s (WRSS XXI(A) Transco Ltd) in Gujarat

S. No.	Items	Details		
2.	Scope of the scheme	<i>Sl.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
		1.	<b>Creation of 220kV switchyard at Lakadia 765/400kV S/s along with 220kV line bays for RE Interconnection</b>	220kV switchyard & 220kV line bays – 2 nos. 220kV Bus coupler – 1no. 220kV Transfer bus coupler – 1no.
		2.	<b>Installation of 2x500 MVA, 400/220kV ICTs (1<sup>st</sup> &amp; 2<sup>nd</sup>) at Lakadia PS along with associated ICT bays</b>	400/220kV, 1x500MVA ICT – 2 No. 400kV bay – 2 No. 220kV bay – 2 No. Associated 400 kV Bus Bar extension
3.	Depiction of the scheme on Transmission Grid Map	<p style="text-align: center;"><b>Augmentation of transformation capacity at 765/400kV Lakadia S/s (WRSS XXI(A) Transco Ltd.) in Gujarat</b></p>  <p>The diagram illustrates the augmentation of transformation capacity at the 765/400kV Lakadia S/s. It shows three main bus levels: 765kV, 400kV, and 220kV. The 765kV bus is connected to other lines from Banaskantha, Bhuj-II PS, and Vadodara PS. The 400kV bus is connected to the 765kV bus via 2x1500 MVA, 765/400kV ICTs and to the 220kV bus via 2x500MVA, 400/220kV ICTs. The 220kV bus is connected to other lines from Bhachau and Jam Khambhaliya. The diagram also shows 330 MVAr BR and 125 MVAr BR at the 765kV level, and 2 nos. Bays for RE Injection at the 220kV level. A legend indicates that orange lines represent 'Other Lines' and green lines represent the 'Present scheme'.</p>		
4.	Upstream/downstream system associated with the scheme	<p>2 nos. 220kV bays at Lakadia S/s allotted to:</p> <ul style="list-style-type: none"> <li>• Avaada Inclean Pvt. Ltd. (AIPL) (50MW): Appl. No. 2200000011</li> <li>• Avaada Energy Private Limited (AEPL) (300MW): Appl. No. 2200000131</li> </ul> <p>Further, M/s Avaada Energy Private Limited (200MW) : Appl. No. 2200000200 is sharing the 220kV bay of M/s AIPL (Appl. No. 2200000011).</p> <p>Cumulative capacity granted In-principle connectivity at Lakadia S/s is 550MW (50+300+200MW).</p>		
5.	Objective Justification /	<p>The proposed system shall enable evacuation of RE power from various generation projects in Lakadia area who have applied for connectivity under GNA at Lakadia S/s at 220kV level. The 2x500MVA ICTs proposed at Lakadia form part of ATS of RE projects mentioned above.</p>		
6.	Estimated Cost	<b>INR 142 Crore</b>		
7.	Impact on the total Annual	A. ATC (considering levelized tariff @ 15% of estimated cost): about ₹21.3Cr.		

S. No.	Items	Details
	Transmission charges (ATC) in % along with the existing ATC	B. Present ATC: ₹44582.2 Cr.* C. A/B: about 0.04778%
8.	Need of phasing, if any	Not Applicable
9.	Implementation timeframe	M/s AIPL / AEPL vide e-mail dated 25.11.2023 have requested that the ICTs be implemented in compressed time-frame by Jun-25. Hence time-frame is proposed as 18 months from date of allocation to implementing agency (By 30.06.2025 on best effort basis)  The scheme shall be taken up for implementation upon receipt of Conn-BGs, as applicable under GNA Regulations, 2022 from: <ul style="list-style-type: none"> <li>• Avaada Inclean Pvt. Ltd. (AIPL) (50MW): Appl. No. 2200000011. (In-principle connectivity granted on 06.11.2023)</li> <li>• Avaada Energy Private Limited (AEPL) (300MW): Appl. No. 22000000131. (In-principle connectivity granted on 06.11.2023)</li> <li>• Avaada Energy Private Limited (200MW) : Appl. No. 22000000200. (In-principle connectivity granted on 17.11.2023)</li> </ul>
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 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 21st (2nd sitting) & 22nd (1st sitting) Consultation Meetings for Evolving Transmission Schemes in Western Region held on 28.08.2023 & 23.10.2023 respectively

\* Total YTC allowed for June 2023, as per notification of transmission charges payable by DICs for billing month of Aug 2023 dated 31-08-2023 published on NLDC website (available @ [https://posoco.in/download/amendment-to-notification\\_transmission-charges-for-dics\\_billing-month\\_august\\_2023/?wpdmdl=53317](https://posoco.in/download/amendment-to-notification_transmission-charges-for-dics_billing-month_august_2023/?wpdmdl=53317))

Members may deliberate.

#### **4.7 Additional Transmission system for evacuation of power from Bhadla-III PS as part of Rajasthan REZ Phase-III scheme (20GW)**

4.7.1 Connectivity application of about 7GW (against potential of 6.5GW) is already received at Bhadla-III PS, out of which 6.5GW is already granted/agreed for grant. Out of above RE application of about 3GW (400kV - 1GW, 220kV- 2GW) is granted through EHVAC system (Sch. Progressively from Mar'25) and balance 3.5GW is being granted on HVDC

system (Expected Sch.: Feb'28) at Bhadla-III PS. With fulfilment of connectivity grant process (Intimation, BGs etc.), total 5 nos. of 400/220kV ICTs are required, out of which 3 nos. ICTs already under implementation (Ph-III Part B1). Therefore, balance 2 nos. ICTs (4th & 5th) are required with 18 months' schedule considering RE generation schedule.

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

4.7.3 Detailed scope of the scheme is given below:

S. No.	Items	Details
1.	<b>Name of Scheme</b>	<b>Additional Transmission system for evacuation of power from Bhadla-III PS as part of Rajasthan REZ Phase-III scheme (20GW)</b>
2.	<b>Scope of the scheme</b>	<ul style="list-style-type: none"> <li>➤ Augmentation of 2x500 MVA (4<sup>th</sup> &amp; 5<sup>th</sup>) 400/220 kV ICTs at Bhadla-III PS</li> <li>➤ 220 kV bus sectionalizer (1 set) along with 220kV BC (1 no.) bay and 220kV TBC (1 no.) bay at Bhadla-III PS</li> <li>➤ Augmentation of 2x1500 MVA 765/400kV (3rd &amp; 4th ) ICTs at Bhadla-III PS</li> </ul>
3.	<b>Depiction of the scheme on Transmission Grid Map</b>	Given below
4.	<b>Upstream/downstream system associated with the scheme</b>	<p>765/400/220KV Bhadla-III PS (765/400kV: 2x1500MVA, 400/220 kV: 3x500MVA) is under implementation by Bhadla III Transmission Limited (POWERGRID) as part of Phase-III Part B1 package. Bhadla-III PS shall be interconnected to Sikar-II PS, Bikaner-III PS and Ramgarh PS at 765kV level and Fatehgarh-III PS at 400kV level.</p> <p>Further, Bhadla-III PS will be interconnected to proposed Bhadla (HVDC) substation through 400kV (2xD/c) lines. Further various RE developers granted connectivity at Bhadla-III PS on 220kV and 400kV level with schedule progressively from Jun'25.</p>
5.	<b>Objective / Justification</b>	<ol style="list-style-type: none"> <li>1. The present scheme comprises Additional Transmission system for evacuation of power from Bhadla-III PS as part of Rajasthan REZ Phase-III scheme (20GW)</li> <li>2. Transmission System requirement for additional 20 GW REZ in Northern Region (Phase-III) was approved in 5th NCT meeting held on 25.08.21 &amp; 02.09.21. As part of above scheme, establishment of 765/400/220KV Bhadla-III PS (765/400kV: 2x1500MVA, 400/220kV: 3x500MVA) was approved in Phase-III Part B1 package, which is under implementation. Further, 7x500MVA ICTs (incl. 10 nos. of 220kV line bays &amp;</li> </ol>

S. No.	Items	Details
		<p>220kV sectionalizer was also approved) under RTM in Phase-III Part B1 package with following condition.</p> <ul style="list-style-type: none"> <li>➤ The implementation of number of 220 kV bays and 400/220 kV transformers to be taken up based on receipt of stage-II connectivity and commensurate LTA respectively (beyond 1500 MW at Bhadla-III).</li> <li>➤ 220 kV line bays and Transformer augmentations shall be reviewed based on stage-II connectivity at 220 kV voltage level and LTA applications respectively.</li> </ul> <p>3. Further, connectivity application of about 7GW (against potential of 6.5GW) is already received at Bhadla-III PS, out of which 6.5GW is already granted/agreed for grant. Out of above RE application of about 3GW (400kV - 1GW, 220kV- 2GW) is granted through EHVAC system (Sch. Progressively from Mar'25) and balance 3.5GW is being granted on HVDC system (Expected Sch.: Feb'28) at Bhadla-III PS.</p> <p>4. With fulfilment of connectivity grant process (Intimation, BGs etc.), total 5 nos. of 400/220kV ICTs are required, out of which 3 nos. ICTs already under implementation (Ph-III Part B1). Therefore, balance 2 nos. ICTs (4<sup>th</sup> &amp; 5<sup>th</sup>) are required with 18 months schedule considering RE generation schedule.</p> <p>Further total 4 nos. of 765/400kV ICTs are also required, out of which 2 nos. 765/400kV ICTs (Ph-III Part B1) are already under implementation. Additionally, 2 nos. of 765/400kV ICTs (3<sup>rd</sup> &amp; 4<sup>th</sup>) are required (ICT-3:18 months (best effort Jun'25) &amp; ICT-4: Dec'25) considering about 3-3.5GW power evacuation requirement from envisaged Bhadla-III PS as well as power flow through 400kV Fatehgarh-III- Bhadla-III PS D/c line. The above ICTs (765/400kV &amp; 400/220kV) at Bhadla-III are also considered as part of connectivity transmission system.</p> <p>Additionally, total 5 nos. of 220kV line bays are already under implementation in ISTS (Ph-III Part B1) which is sufficient at present.</p> <p>5. The proposal was deliberated in 27<sup>th</sup> CMETS-NR meeting held on 10.01.24. CEA enquired about utilization of 765/400kV ICTs (3<sup>rd</sup> &amp; 4<sup>th</sup>) after commissioning of Bhadla-Fatehpur HVDC System. CTU stated that due to time gap (about 3 years) in implementation time of EHVAC and HVDC system, ICTs would be required. Optimal utilization of 765/400kV may be planned with other future RE schemes from Bhadla-IV PS or other system strengthening schemes. CEA &amp; Grid-India agreed for proposal.</p>



S. No.	Items	Details
		<p>6. CEA enquired that whether more power can be evacuated from Bhadla-III PS beyond 6.5GW identified potential. CTU stated that beyond 6.5GW, connectivity will be granted at Bhadla-IV PS on HVDC system for which system is under planning. It is not recommended to inject more generation at Bhadla-III PS, due to very less margin availability in Bhadla-III onwards EHVAC system.</p> <p>7. SECI enquired that balance potential of Ramgarh PS (2.2GW) may be evacuated to EHVAC system in place of HVDC. CTU stated that Common transmission corridors were planned for Ramgarh (2.9GW) and Bhadla-III (6.5GW) RE potential as part of integrated transmission planning. In order to facilitate evacuation of RE power from Ramgarh/Bhadla-III PS, EHVAC system towards Sikar-II S/s &amp; and 6GW HVDC corridor (Bhadla-Fatehpur) is being implemented as part of Ph-III scheme. The common transmission system for evacuation of power to various RE developers were allotted based on application priority combinedly to Ramgarh &amp; Bhadla-III PS applicants.</p> <p>8. The transmission scheme was agreed (as per S.No.2) in 27th CMETS-NR meeting held on 10.01.24</p>
6.	<b>Estimated Cost</b>	<b>Rs. 368.83 Cr.</b>
7.	<b>Impact on the total Annual Transmission charges in % along with the existing ATC</b>	<p>A. ATC (considering Levelized Tariff @15% of estimated cost): Rs 55.32 Cr.</p> <p>B. Present ATC: Rs. ₹46043.07 Cr.*</p> <p>C. A/B (%): 0.1201 %</p>
8.	<b>Need of phasing, if any</b>	Not Applicable
9.	<b>Implementation timeframe</b>	<p>1. Augmentation of 2x500 MVA (4<sup>th</sup> &amp; 5<sup>th</sup>) 400/220 kV ICTs at Bhadla-III PS</p> <p>2. 220 kV bus sectionalizer (1 set) along with 220kV BC (1 no.) bay and 220kV TBC (1 no.) bay at Bhadla-III PS</p> <p><b>18 months from allocation (for both S.No 1 &amp; 2)</b></p> <p>3. Augmentation of 2x1500 MVA 765/400kV (3rd &amp; 4th ) ICTs at Bhadla-III PS</p> <p><b>ICT-3 : 18 months from allocation (Best effort: Jun'25)</b>  <b>ICT-4 : Dec'25 (30.12.25)</b></p>
10.	<b>Inclusion of any wild life/protected area along the transmission line route</b>	Not Applicable

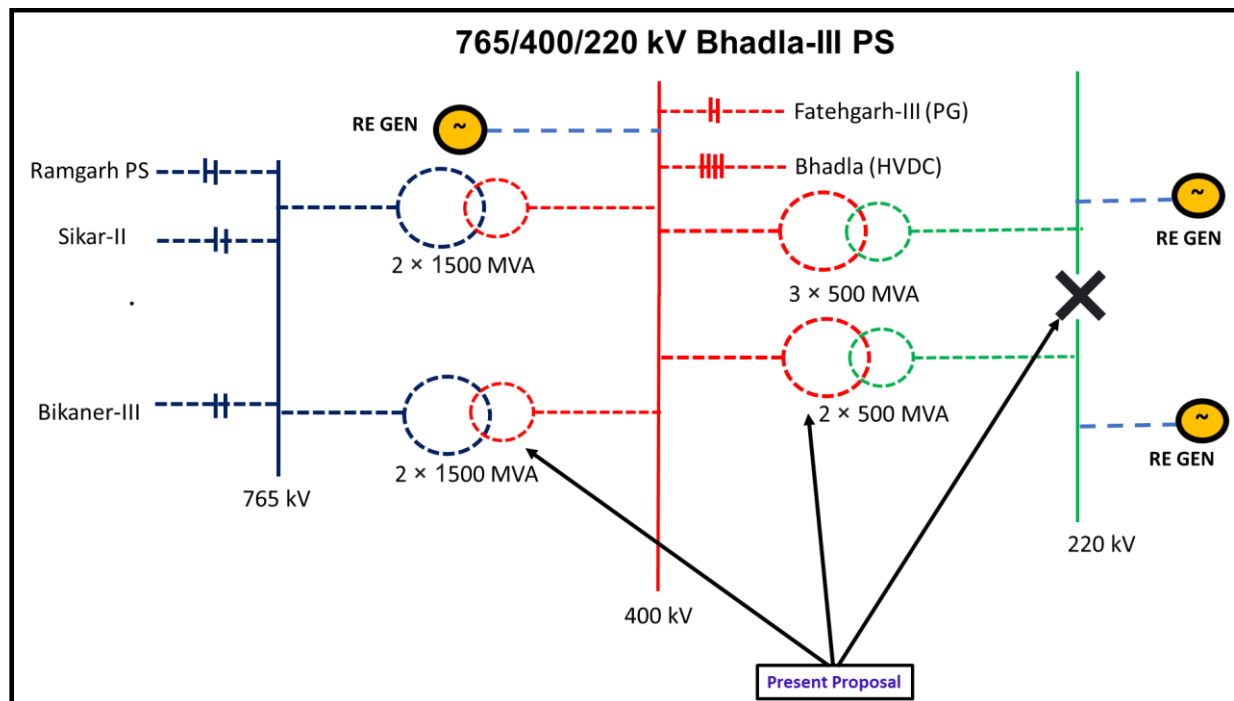
S. No.	Items	Details
11.	<b>Deliberations with RPC along with their comments</b>	The estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to RPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
12.	<b>System Study for evolution of the proposal</b>	Studies discussed and agreed in following meeting. <ul style="list-style-type: none"> <li>5<sup>th</sup> NCT meeting held on 25.08.21 and 02.09.21 27<sup>th</sup> CMETS-NR meeting held on 10.01.24</li> </ul>

\*Total YTC allowed for Oct'23, as per notification of transmission charges payable by DICs for Billing Month of December 2023 dated 25.11.2023 published on NLDC website (available at <https://posoco.in/transmission-pricing/notification-of-transmission-charges-for-the-dics/>)

4.7.4 Accordingly, the detailed scope of the scheme is given below:

Sl.	Scope of the Transmission Scheme
1.	<ul style="list-style-type: none"> <li>Augmentation of 2x500 MVA (4<sup>th</sup> &amp; 5<sup>th</sup>) 400/220 kV ICTs at Bhadla-III PS</li> <li>220 kV bus sectionalizer (1 set) along with 220kV BC (1 no.) bay and 220kV TBC (1 no.) bay at Bhadla-III PS</li> <li>Augmentation of 2x1500 MVA 765/400kV (3rd &amp; 4th ) ICTs at Bhadla-III PS</li> </ul>

4.7.5 The schematic of the above scheme is given below:



4.7.6 Members may deliberate.

#### **4.8 Transmission System for integration of Nizamabad REZ (1 GW) in Telangana**

- 4.8.1 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.
- 4.8.2 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.
- 4.8.3 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.
- 4.8.4 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.
- 4.8.5 The scheme was discussed in the 46<sup>th</sup> 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.
- 4.8.6 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.
- 4.8.7 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**

<b>Sl. No.</b>	<b>Items</b>	<b>Details</b>						
1.	Name of Scheme	Transmission System for integration of Nizamabad REZ (1 GW REZ) under Phase-I						
2.	Scope of the scheme	<table border="1"> <thead> <tr> <th><i>Sl. No.</i></th> <th><i>Scope of the Transmission Scheme</i></th> <th><i>Capacity /km</i></th> </tr> </thead> <tbody> <tr> <td>1.</td> <td> <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><b>Future Space Provisions: (Including space for Phase-II)</b></p> <ul style="list-style-type: none"> <li>• 765/400 kV, 1500 MVA, ICTs – 7 nos. (22x500) (incl. 1 spare unit)</li> <li>• 765 kV ICT bays – 7 Nos.</li> <li>• 400 kV ICT bays – 7 Nos.</li> <li>• 765 kV, 330 MVA bus reactors – 2 nos. (7x110 MVA including 1 switchable spare unit)</li> <li>• 765 kV Bus Reactor bays – 2 Nos.</li> <li>• 400/220 kV, 500 MVA, ICTs – 9 Nos.</li> <li>• 400 kV ICT bays – 9 Nos.</li> <li>• 220 kV ICT bays – 9 Nos.</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>•400/220 kV, 500 MVA ICTs – 2 Nos.</li> <li>•400 kV ICT bays – 2 Nos.</li> <li>•220 kV ICT bays – 2 Nos.</li> <li>•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)</li> <li>•220 kV line bays – 6 Nos.</li> <li>•220 kV Bus Coupler (BC) Bay – 1 No.</li> <li>•220 kV Transfer Bus Coupler (TBC) Bay – 1 No.</li> </ul> </td> </tr> </tbody> </table>	<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>	1.	<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><b>Future Space Provisions: (Including space for Phase-II)</b></p> <ul style="list-style-type: none"> <li>• 765/400 kV, 1500 MVA, ICTs – 7 nos. (22x500) (incl. 1 spare unit)</li> <li>• 765 kV ICT bays – 7 Nos.</li> <li>• 400 kV ICT bays – 7 Nos.</li> <li>• 765 kV, 330 MVA bus reactors – 2 nos. (7x110 MVA including 1 switchable spare unit)</li> <li>• 765 kV Bus Reactor bays – 2 Nos.</li> <li>• 400/220 kV, 500 MVA, ICTs – 9 Nos.</li> <li>• 400 kV ICT bays – 9 Nos.</li> <li>• 220 kV ICT bays – 9 Nos.</li> </ul>	<ul style="list-style-type: none"> <li>•400/220 kV, 500 MVA ICTs – 2 Nos.</li> <li>•400 kV ICT bays – 2 Nos.</li> <li>•220 kV ICT bays – 2 Nos.</li> <li>•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)</li> <li>•220 kV line bays – 6 Nos.</li> <li>•220 kV Bus Coupler (BC) Bay – 1 No.</li> <li>•220 kV Transfer Bus Coupler (TBC) Bay – 1 No.</li> </ul>
<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>						
1.	<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><b>Future Space Provisions: (Including space for Phase-II)</b></p> <ul style="list-style-type: none"> <li>• 765/400 kV, 1500 MVA, ICTs – 7 nos. (22x500) (incl. 1 spare unit)</li> <li>• 765 kV ICT bays – 7 Nos.</li> <li>• 400 kV ICT bays – 7 Nos.</li> <li>• 765 kV, 330 MVA bus reactors – 2 nos. (7x110 MVA including 1 switchable spare unit)</li> <li>• 765 kV Bus Reactor bays – 2 Nos.</li> <li>• 400/220 kV, 500 MVA, ICTs – 9 Nos.</li> <li>• 400 kV ICT bays – 9 Nos.</li> <li>• 220 kV ICT bays – 9 Nos.</li> </ul>	<ul style="list-style-type: none"> <li>•400/220 kV, 500 MVA ICTs – 2 Nos.</li> <li>•400 kV ICT bays – 2 Nos.</li> <li>•220 kV ICT bays – 2 Nos.</li> <li>•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)</li> <li>•220 kV line bays – 6 Nos.</li> <li>•220 kV Bus Coupler (BC) Bay – 1 No.</li> <li>•220 kV Transfer Bus Coupler (TBC) Bay – 1 No.</li> </ul>						

		<ul style="list-style-type: none"> <li>• 765 kV line bays – 12 Nos. (with provision for SLR)</li> <li>• 400 kV line bays – 12 Nos. (with provision for SLR)</li> <li>• 220 kV line bays – 12 Nos.</li> <li>• 220 kV Sectionaliser: 3 sets</li> <li>• 220 kV Bus Coupler (BC) Bay – 3 Nos.</li> <li>• 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos.</li> <li>• 400 kV Sectionaliser : 1 sets</li> </ul>	
		2. Nizamabad-II PS – Nizamabad 765 kV D/c line (initially charged at 400 kV level)	<ul style="list-style-type: none"> <li>• Route length ~30 km</li> <li>• 400 kV line bays – 2 Nos. (GIS) (at Nizamabad)</li> </ul>
		3. 2x125 MVAr 420 kV bus reactors at Nizamabad-II	<ul style="list-style-type: none"> <li>• 420 kV, 125 MVAr bus reactors – 2 Nos.</li> <li>• 420 kV, 125 MVAr bus reactor bays – 2 Nos.</li> </ul>
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>	

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 considering the Energy Storage System. The details of district wise potential are as below:

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
<b>Total</b>	<b>3</b>	<b>10</b>	<b>13</b>	<b>11.5</b>	<b>3</b>	<b>8.5</b>

#### Potential identified under Phase-I

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
<b>Total</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>0</b>

#### Potential identified under Phase-II

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
<b>Total</b>	<b>0</b>	<b>7.5</b>	<b>7.5</b>	<b>3</b>

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.

		<p>During the meeting, it was decided that transmission system for evacuation of power from other RE Zones suggested by SECI viz. Devangere/Chitradurga &amp; 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> <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 SECIRE 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<sup>#</sup></p> <p>C. A/B (%): 0.513%</p>
8.	Need of phasing, if any	Not Applicable
9.	Tentative Implementation timeframe	<b>24 months</b> 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 <sup>th</sup> 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 <b>Annexure-I.</b>
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

# 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

4.8.8 Schematic of the scheme is given below:



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

Sl. No.	Items	Details
1.	Name of Scheme	Transmission System for integration of Medak REZ (1 GW)
2.	Scope of the scheme	



		<b>Sl. No.</b>	<b>Scope of the Transmission Scheme</b>	<b>Capacity /km</b>
		1.	Establishment of 400/220 kV 2x500 MVA Pooling Station near Medak (Medak PS)  <b>Future Space Provisions: (Including space for Phase-II)</b> <ul style="list-style-type: none"> <li>• 400/220 kV, 500 MVA, ICTs – 9 Nos.</li> <li>• 400 kV ICT bays – 9 Nos.</li> <li>• 220 kV ICT bays – 9 Nos.</li> <li>• 400 kV line bays – 6 Nos. (with provision for SLR)</li> <li>• 220 kV line bays – 14 Nos.</li> <li>• 220 kV Sectionaliser: 3 sets</li> <li>• 220 kV Bus Coupler (BC) Bay – 3 Nos.</li> <li>• 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos.</li> </ul>	<ul style="list-style-type: none"> <li>• 400/220 kV, 500 MVA, ICTs – 2 Nos.</li> <li>• 400 kV ICT bays – 2 Nos.</li> <li>• 220 kV ICT bays – 2 Nos.</li> <li>• 400 kV line bays – 2 Nos. (at Medak PS for termination of Medak PS – Nizamabad-II line)</li> <li>• 220 kV line bays – 4 Nos.</li> <li>• 220 kV Bus Coupler (BC) Bay – 1 No.</li> <li>• 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.</li> </ul>
		2.	Medak PS – Nizamabad-II 400 kV (Quad ACSR moose) D/c line	<ul style="list-style-type: none"> <li>• Route length~60 km</li> <li>• 400 kV line bays – 2 Nos. (at Nizamabad-II PS)</li> </ul>
		3.	2x125 MVAr, 420 kV bus reactors at Medak PS	<ul style="list-style-type: none"> <li>• 420 kV, 125 MVAr Bus Reactors – 2 Nos.</li> <li>• 420 kV, 125 MVAr Bus Reactor bays – 2 Nos.</li> </ul>
3.	Depiction of the scheme on Transmission Grid Map	<b>Given below</b>		
4.	Upstream/downstream system associated with the scheme	Not applicable		
5.	Objective / Justification	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.		

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.

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 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:

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

Potential identified under Phase-I by March, 2025

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

A comprehensive transmission system has been identified for immediate integration and evacuation of the above potential.

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

		<p>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 &amp; 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, 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 15<sup>th</sup> CMETS(SR) held on 30.01.2023.</p> <p>The scheme was discussed in the 46<sup>th</sup> 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. 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<sup>#</sup></p> <p>C. A/B (%): 0.176%</p>
8.	Need of phasing, if any	Not Applicable
9.	Tentative Implementation timeframe	<b>24 months</b> 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 <sup>th</sup> 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

*# 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*

4.8.9 Schematic of the scheme is given below:



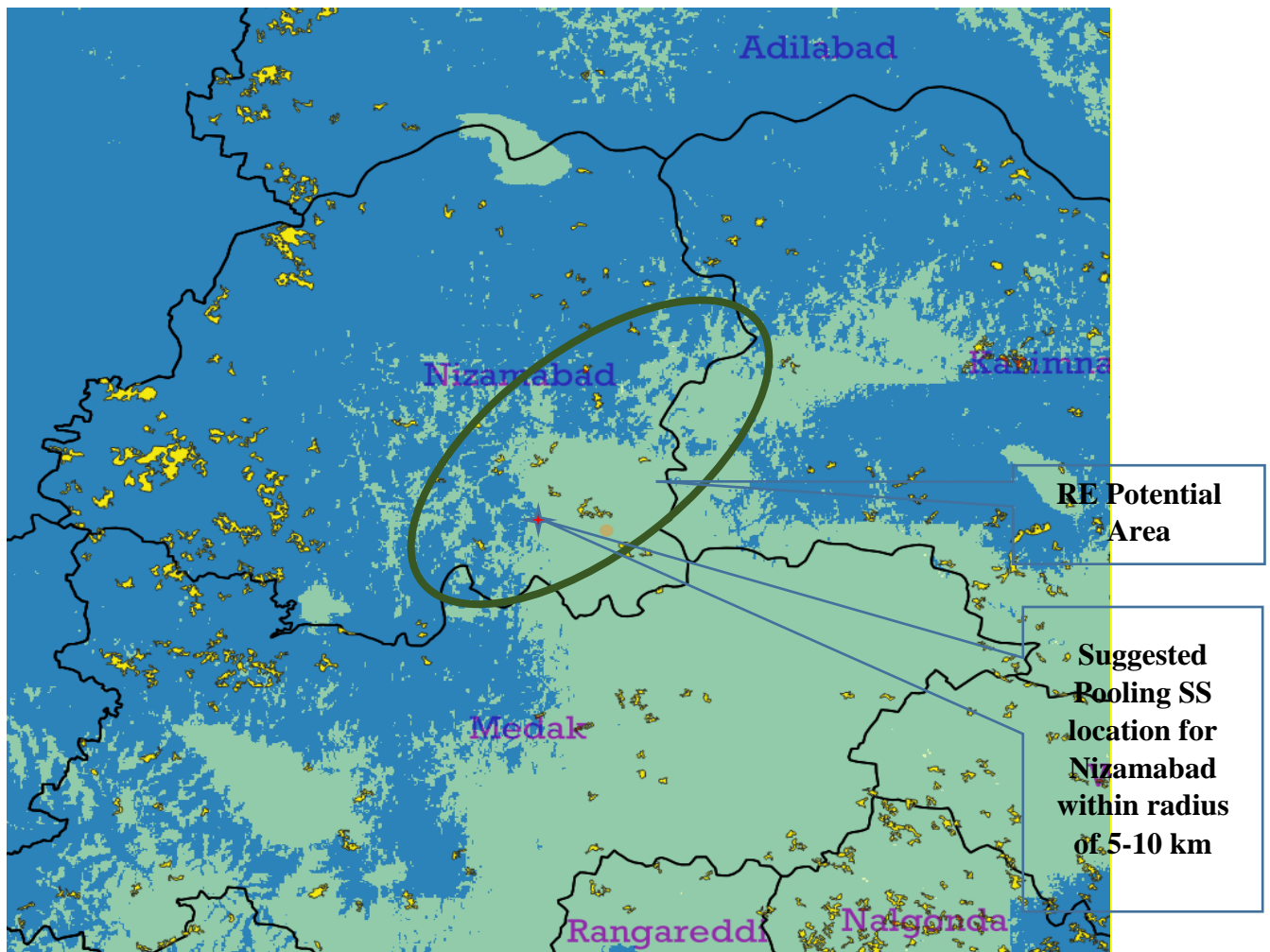
4.8.10 Transmission System for integration of Nizamabad REZ (1 GW) and Transmission System for integration of Medak REZ (1 GW) in Telangana was discussed in the 16<sup>th</sup> NCT meeting. In the meeting, representative of CTUIL stated that for proper planning of transmission system,

the exact location of pooling stations both at Nizamabad and Medak has to be provided by SECI.

4.8.11 In the 16<sup>th</sup> meeting of NCT, SECI was directed to provide the exact location of pooling stations at Nizamabad and Medak to CEA/CTUIL.

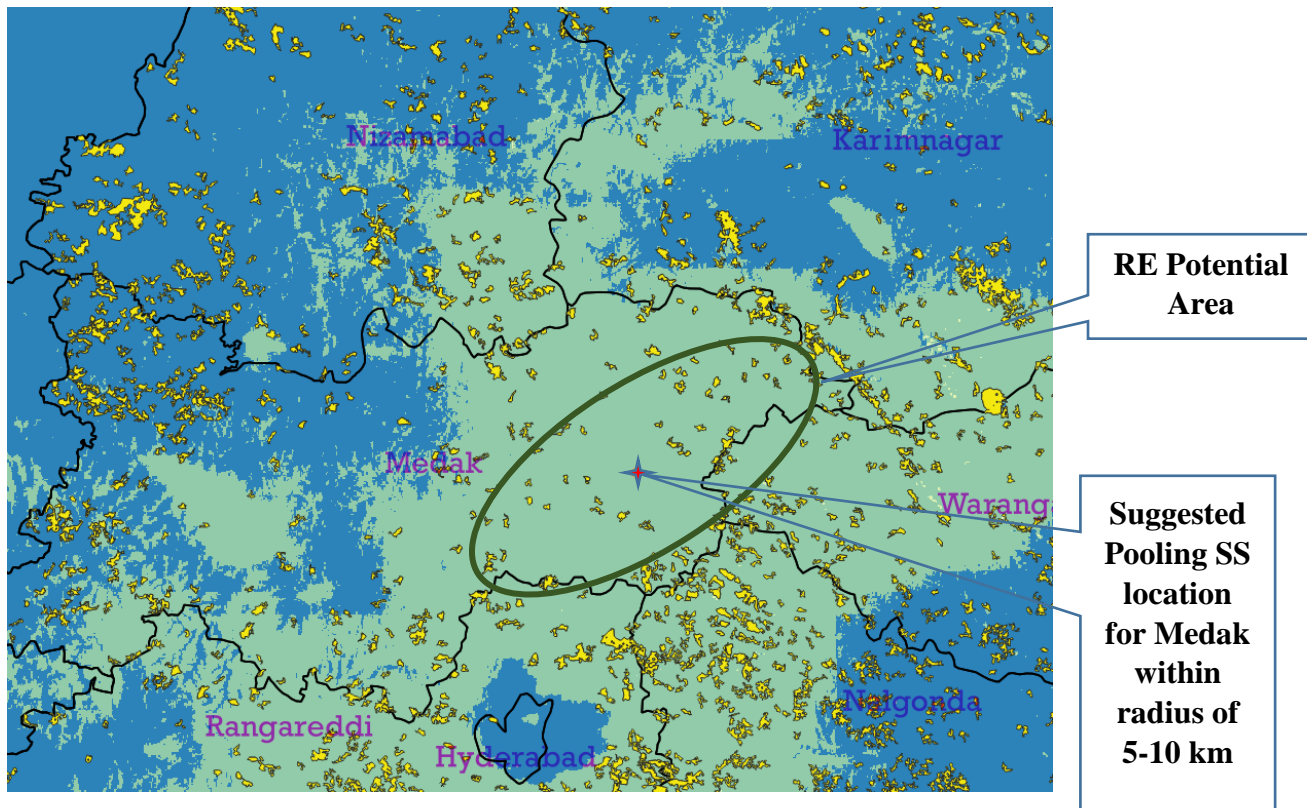
4.8.12 Accordingly, SECI had submitted the RE potential area and suitable pooling substation area in Yellapoda village (Nizamabad District) for Nizamabad-II PS and Arepalle Village (Medak District) for Medak PS and suggested that BPC shall carry out the survey nearby to the area suitable for the pooling station identified in the below maps.

#### **Nizamabad District**



The RE Potential Area shown herein corresponds to Wind Potential and Wasteland availability (Barren/ agricultural Fallow Land etc.) and Solar resource Potential is uniformly spread across the district.

#### **Medak District**



The RE Potential Area shown herein corresponds to Wind Potential and Wasteland availability (Barren/ agricultural Fallow Land etc.) Solar resource Potential is uniformly spread across the district.

4.8.13 Considering the location Nizamabad and Medak Pooling Station provided by SECI, there is no significant change in the line length of Medak PS – Nizamabad-II PS D/c 400kV line and Nizamabad-II PS – Nizamabad 765 kV D/c line (initially charged at 400 kV level).

4.8.14 Detailed scope of the scheme for integration of Nizamabad REZ (1 GW) under Phase-I 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><b>Future Space Provisions: (Including space for Phase-II)</b></p> <ul style="list-style-type: none"> <li>765/400kV, 1500 MVA, ICTs – 7 nos. (22x500) (incl. 1 spare unit)</li> <li>765kV ICT bays – 7 nos.</li> <li>400kV ICT bays – 7 nos.</li> </ul>	<ul style="list-style-type: none"> <li>400/220 kV, 500 MVA, ICTs – 2 Nos.</li> <li>400 kV ICT bays – 2 Nos.</li> <li>220 kV ICT bays – 2 Nos.</li> <li>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)</li> <li>220 kV line bays – 6 Nos.</li> <li>220 kV Bus Coupler (BC) Bay– 1 No.</li> <li>220 kV Transfer Bus Coupler (TBC) Bay – 1 No.</li> </ul>

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	<ul style="list-style-type: none"> <li>• 765kV, 330 MVA bus reactors – 2 nos. (7x110 MVA inc. 1 switchable spare unit)</li> <li>• 765 kV Bus Reactor bays – 2 nos.</li> <li>• 400/220kV, 500 MVA, ICTs – 9 nos.</li> <li>• 400kV ICT bays – 9 nos.</li> <li>• 220kV ICT bays – 9 nos.</li> <li>• 765kV line bays – 12 nos. (with provision for SLR)</li> <li>• 400kV line bays – 12 nos. (with provision for SLR)</li> <li>• 220kV line bays – 12 nos.</li> <li>• 220kV Sectionaliser: 3 sets</li> <li>• 220 kV Bus Coupler (BC) Bay – 3 nos.</li> <li>• 220 kV Transfer Bus Coupler (TBC) Bay – 3 nos.</li> <li>• 400kV Sectionaliser : 1 sets</li> </ul>	
5.	Nizamabad-II PS – Nizamabad 765 kV D/c line (initially charged at 400 kV level)	<ul style="list-style-type: none"> <li>• Route length ~30 km</li> <li>• 400 kV line bays – 2 Nos. (GIS) (at Nizamabad)</li> </ul>
6.	2x125 MVA 420 kV bus reactors at Nizamabad-II	<ul style="list-style-type: none"> <li>• 420 kV, 125 MVA bus reactors – 2 Nos.</li> <li>• 420 kV, 125 MVA bus reactor bays – 2 Nos.</li> </ul>

Members may deliberate.

4.8.15 Detailed scope of the scheme for integration of Medak REZ (1 GW) is given below:

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

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	• 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos.	
5.	Medak PS – Nizamabad-II 400 kV (Quad ACSR moose) D/c line	<ul style="list-style-type: none"> <li>• Route length~60 km</li> <li>• 400 kV line bays – 2 Nos. (at Nizamabad-II PS)</li> </ul>
6.	2x125 MVA, 420 kV bus reactors at Medak PS	<ul style="list-style-type: none"> <li>• 420 kV, 125 MVA Bus Reactors – 2 Nos.</li> <li>• 420 kV, 125 MVA Bus Reactor bays – 2 Nos.</li> </ul>

4.8.16 Members may deliberate

#### **4.9 Supply & Installation of AMR Compatible ISTS Interface Energy Meters along with AMR (Automatic Meter Reading) System under the scheme “5 min Interface Energy Meter along with AMR system-Southern Region”**

4.9.1 A Joint Committee (JC) comprising the members from each RPC, CEA, CTU/PGCIL & POSOCO has been prepared Technical Specifications (TS) of the “5/15 Minute Interface Energy Meters (IEMs) with Automatic Meter Reading (AMR) and Meter Data Processing (MDP)” for interstate transmission system at PAN India basis. NPC Division, CEA vide letter dated 6th July 2022 had circulated the final copy of the TS.

This Technical specification includes:

- All the procured IEMs shall be configured as 5 min time block. These meters shall record and send 5 min block data to regional AMR system for necessary computation to convert 5 min Time Block data to 15 min Time block data (in line with regulations).
- Provision of 1 min instantaneous MW power flow data from IEMs to SLDC, for viewing purpose.

4.9.2 In view of the above for making the system future ready for 5 min Time Block, while also complying the present regulations for 15 min time block for Scheduling, Accounting, Metering & Settlement; JC TS is being adopted for the above mentioned project proposal.

4.9.3 Accordingly, the following scheme is required:

<b>S. No.</b>	<b>Items</b>	<b>Details</b>
1.	Name of Scheme	Supply and installation of AMR compatible 5 min Interface Energy Meter along with AMR Systems- Southern Region
2.	Scope of the scheme	<ol style="list-style-type: none"> <li>1. Supply and Installation of AMR compatible 5 min Interface Energy Meters for all ISTS metering points of Southern region.</li> <li>2. Installation of new AMR compatible IEMs by replacing existing meters in case of existing points and for newly added metering points.</li> </ol>



S. No.	Items	Details
		<p>3. Supply and installation of AMR system along with DCU, Ethernet Switch and other accessories at substation end and AMR software along with servers, database, printer, firewall etc. at RLDC/RPC end to receive 5 min load profile data in auto mode.</p> <p>4. Provision of streaming online instantaneous MW data at a user configurable rate (minimum 1 min) via AMR system for viewing purpose.</p> <p>5. AMC for complete AMR system for 7 years</p> <p>The complete scope of IEM &amp; AMR scheme shall be as per the Technical Specification (Section 1 &amp; 2 of Part 1) circulated by NPC Division, CEA vide letter dtd. 6<sup>th</sup> July 2022.</p> <p><i>Note: MDP system which is also part of the above TS mentioned shall be implemented by SRLDC/POSOCO and would match the timeline schedule with IEM &amp; AMR project.</i></p>
3.	Conceptual Architecture of AMR connectivity of ISTS Meters	
4.	Objective / Justification	<p>For Indian Power system, commercial settlements of energy generation and consumption are being computed through Availability Based Tariff (ABT) and Deviation Settlement Mechanism (DSM) which are in vogue for energy accounting. Availability Based Tariff was implemented in India in 2002/2003 considering the settlement period as 15-min.</p> <p>Government of India (GoI) has set a Renewable Energy (RE) target of 500 GW by 2030. In the last few years approximately since a decade, the need for implementing 5-minute meters along with AMR system for regional energy accounting and settlement at the Inter State level has been discussed and deliberated in various apex level forums &amp; Committees.</p> <p>A PAN India pilot project on 5-minute metering was implemented as per the directive from Hon'ble CERC in 2018. A report on the pilot project covering implementation aspects, challenges and suggested way forward has been submitted by POSOCO for perusal of the Hon'ble Commission</p> <p>This issue was discussed in OCC/TCC/RPC meetings at regional level and it was discussed to replace the existing SEMs (15-min Block) with AMR compatible Interface Energy Meters (5-min Block) and implementation of Automated Meter Reading (AMR)</p>

S. No.	Items	Details
		<p>and Meter Data Processing (MDP) system for efficient and faster accounting. Moreover, there is a need expressed by States to get streaming online instantaneous MW data at a user configurable rate (minimum 1 min) at SLDCs via AMR system for viewing purpose to manage their drawl.</p> <p>A Joint Committee (JC) comprising the members from each RPC, CEA, CTU/PGCIL &amp; POSOCO has been prepared Technical Specifications (TS) of the “5/15 Minute Interface Energy Meters (IEMs) with Automatic Meter Reading (AMR) and Meter Data Processing (MDP)” for interstate transmission system at PAN India basis. NPC Division, CEA vide letter dated 6th July 2022 had circulated the final copy of the TS.</p> <p>This Technical specification includes:</p> <ul style="list-style-type: none"> <li>• All the procured IEMs shall be configured as 5 min time block. These meters shall record and send 5 min block data to regional AMR system for necessary computation to convert 5 min Time Block data to 15 min Time block data (in line with regulations).</li> <li>• Provision of 1 min instantaneous MW power flow data from IEMs to SLDC, for viewing purpose.</li> </ul> <p>CTUIL sent a letter dtd. 27.06.2023 to CERC stating that nodal agency for AMR system implementation may be identified. CTUIL also informed NPC division, CEA vide letter dtd. 24.07.2023 that JC TS calls for 5 min Time block recording by ISTS IEMs whereas as per CEA metering regulation it is 15 min time block.</p> <p>In this regard, Grid-India NLDC specified to NPC, CEA that 5-minute time block could be considered for procurement of new ISTS IEM, AMR &amp; MDP. Subsequently NPC CEA, coordinated a joint meeting amongst the stakeholders comprising of CERC, Grid India (NLDC, RLDCs) &amp; CTUIL, chaired by CEA Regulatory division dated 18th August’23 to check the feasibility for amendment of the CEA metering regulation in line with the ongoing developments and requirements of 5 min time block recording in IEMs.</p> <p>In view of the above for making the system future ready for 5 min Time Block, while also complying the present regulations for 15 min time block for Scheduling, Accounting, Metering &amp; Settlement; JC TS is being adopted for the above mentioned project proposal.</p>

S. No.	Items	Details
5.	SRPC Deliberations	<p>In scheme was discussed in the 43<sup>rd</sup>/44<sup>th</sup>/47<sup>th</sup> and 49<sup>th</sup> SRPC meetings.</p> <p>In the 47th TCC meeting the forum noted that implementation of AMR is very much essential for the region, CTUIL is the entity responsible for implementation of AMR as brought out in IEGC 2023, CEA metering regulations. AMR project in SR had been approved for implementation in RTM mode, and directed PGCIL to take concrete actions for implementation of the project without further delay.</p> <p>Further, in 49th meeting of SRPC held on 09.12.2023, <b>SRPC noted the deliberations of TCC regarding AMR and noted that CTUIL/PGCIL to comply with SRPC decision of going on RTM mode with PSDF Funding.</b> Higher AMC of the project is acknowledged by constituents. Based on difficulties faced in AMC in other projects, the project may include 7 years AMC and provide a provision for extension of the same for additional 3 years on the mutually agreed same terms &amp; conditions.</p>
6.	Estimated Cost	<b>Rs. 83.57 Crore</b> (project cost Rs. 57.51Crore (Supply & Installation) & Rs 26.07 Crore for 7 yr AMC)
7.	Funding	Through PSDF Funding.
8.	Implementation timeframe	Approx. 30 months from gazette Notification.
9.	Implementation Mode	Through POWERGRID-RTM after availing PSDF funding by POWERGRID
10.	Location of AMR System	SRLDC- Banaglore

4.9.4 Detailed scope of the scheme is as given below:

S.No.	Scope of the scheme
1.	Supply and Installation of AMR compatible 5 min Interface Energy Meters for all ISTS metering points of Southern region.
2.	Installation of new AMR compatible IEMs by replacing existing meters in case of existing points and for newly added metering points.
3.	Supply and installation of AMR system along with DCU, Ethernet Switch and other accessories at substation end and AMR software along with servers, database, printer, firewall etc. at RLDC/RPC end to receive 5 min load profile data in auto mode.
4.	Provision of streaming online instantaneous MW data at a user configurable rate (minimum 1 min) via AMR system for viewing purpose.
5.	AMC for complete AMR system for 7 years

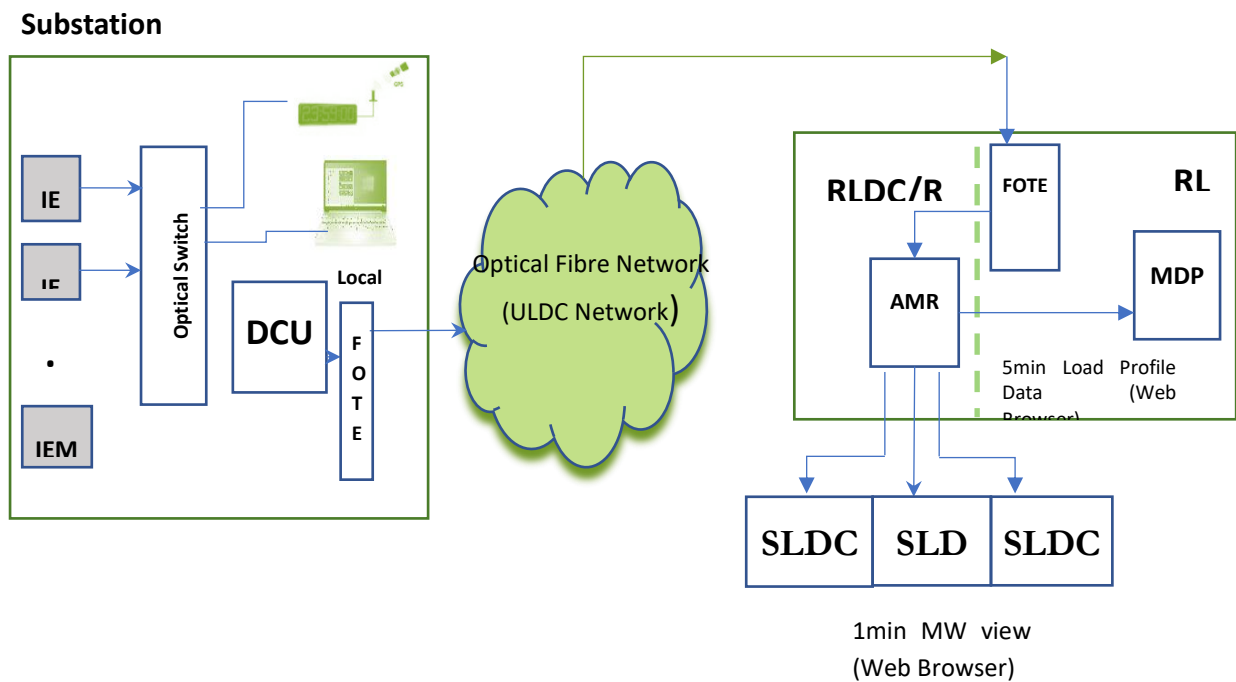
The complete scope of IEM & AMR scheme shall be as per the Technical Specification (Section 1 & 2 of Part 1) circulated by NPC Division, CEA vide letter dtd. 6<sup>th</sup> July 2022.

Note: MDP system which is also part of the above TS mentioned shall be implemented by SRLDC/POSOCO and would match the timeline schedule with IEM & AMR project.

4.9.5 The Raw and process data in AMR servers shall be stored for three years both for 5 min Load Profile data and 1 min instantaneous MW data.


4.9.6 POWERGRID, vide letter dated 2<sup>nd</sup> March'23 & 18<sup>th</sup> Oct'23, informed CTUIL, the consent to implement this project through one time recovery of cost from beneficiaries. It may be noted that the existing AMR scheme in ER has been implemented on "ONE TIME REIMBURSEMENT" basis.

4.9.7 Schematic of the scheme is depicted below:



4.9.8 Members may deliberate.

Email

भारतस रकार केंद्रीय विद्युत प्राधिकरण दक्षिण क्षेत्रीय विद्युत समिति 29, रेसकोर्स क्रॉस रोड बेंगलूर- 560 009		Government of India Central Electricity Authority Southern Regional Power Committee 29, Race Course Cross Road Bengaluru - 560 009	
Web site: www.srpc.kar.nic.in	Email: mssrpc@yahoo.com	Phone: 080-22287205	
सं/No.	SRPC/MS/2023-24/ 2442	दिनांक/ Date	22.06.2023

To

**The Chief Operating Officer**

Central Transmission Utility of India Limited (CTUIL)

Saudamini, 1<sup>st</sup> Floor,

Plot No.2, Sector-29,

Gurugram, Haryana-122 001

**Subject: ISTS Network Expansion schemes for integration of Renewable Energy Zones in Karnataka (Bijapur) and in Telangana (Nizamabad, Medak & Rangareddy in Southern Region -reg.**

Sir,

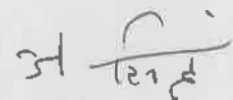
CTUIL vide letter dated 22<sup>nd</sup> May 2023 had submitted proposals of new ISTS Network Expansion schemes as given below:

1. Transmission Scheme for integration of Renewable Energy Zones in Bijapur (1GW)
2. Transmission Scheme for integration of Nizamabad Renewable Energy Zone (1 GW Wind, 1 GW Solar) under Phase-I
3. Transmission Scheme for integration of Nizamabad Renewable Energy Zone (1.5 GW Solar, 1 GW BESS) under Phase-II
4. Transmission Scheme for integration of Medak Renewable Energy Zone (1 GW Wind, 0.5 GW Solar)
5. Transmission Scheme for integration of Rangareddy Renewable Energy Zones (1GW Wind, 0.5 GW Solar)

The proposals were discussed in the 46<sup>th</sup> SRPC meeting on 31.05.2023. The views of SRPC constituents as deliberated in the meeting and as furnished by constituent states subsequently (decided in the meeting to be submitted to CTUIL) is enclosed for further taking up with NCT.

Thanking You,

भवदीय/Yours faithfully,



(असित सिंह / Asit Singh)

सदस्य सचिव / Member Secretary

# SOUTHERN REGIONAL POWER COMMITTEE

## BENGALURU

The views of SRPC on the following CTUIL's Proposals:

1. Transmission Scheme for integration of Renewable Energy Zones in Bijapur (1GW)
2. Transmission Scheme for integration of Nizamabad Renewable Energy Zone (1 GW Wind, 1 GW Solar) under Phase-I
3. Transmission Scheme for integration of Nizamabad Renewable Energy Zone (1.5 GW Solar, 1 GW BESS) under Phase-II
4. Transmission Scheme for integration of Medak Renewable Energy Zone (1 GW Wind, 0.5 GW Solar)
5. Transmission Scheme for integration of Rangareddy Renewable Energy Zones (1GW Wind, 0.5 GW Solar)

**Reference:** CTUIL proposals received vide letter dated 22.05.2023

**Basis:** In the 46<sup>th</sup> SRPC Meeting held on 31.05.2023, CTUIL proposals were deliberated and Members were further requested to furnish their views to MS, SRPC for further submission to CTUIL.

### Views given in the 46<sup>th</sup> SRPC Meeting held on 31.05.2023:

#### **TSTRANSCO:**

- a) The connectivity from Medak to Nizamabad PS may not be optimal because Nizamabad is not a load centre hence the power to be again transmitted from Nizamabad to other load centre. Due to that, transmission losses are likely to increase.
- b) TSTRANSCO wish to have a bilateral discussion with CTUIL on the locations of the Pooling Stations of Nizamabad, Medak & Rangareddy for optimal evacuation of the power from these pooling stations. Land cost in Medak, Rangareddy and Nizamabad areas is also high.

#### **KSEBL:**

Bilateral discussions may be held between TSTRANSCO & CTUIL for optimal location of the pooling stations at Nizamabad, Medak & Rangareddy.

#### **APTRANSCO:**

The transmission assets being planned should not be stranded. Southern Region had one bitter experience in this regard as Krishnapatnam UMPP & Private Sector generation evacuation had been planned but generation had not been materialized.

#### **TANGEDCO:**

- a) Since this is part of 500 GW RE integration scheme, TANGEDCO requested CTUIL to conduct detailed Joint Studies specific to each location. In the absence of any Joint Study considering the cross RE allocation between the regions and in the absence of location specific bids, this will not be a viable proposal and hence reiterated to conduct Joint Studies for specific schemes.

- b) With respect to Nizamabad scheme, they had raised in the CMETS-SR meeting that there is over estimation of the transmission capacity requirement considering the assessed potential. Concerns were raised on 765kV Nizamabad- Warangal D/c line proposed in the Nizamabad Phase-II scheme as there is already a link between Nizamabad & Warangal via Hyderabad. Hence the additional D/c line between Nizamabad & Warangal is not required and requested CTUIL to revisit the scheme.
- c) Optimal transmission schemes can only be achieved through Joint Studies, otherwise it would end up with redundant transmission system as witnessed in the past.
- d) In the absence of no application received by CTUIL and no specific bid communicated by SECI and in the scenario of new Sharing Regulations which delinks the associated transmission system from generation capacity addition, all the DISCOMS are going to be burdened as the transmission charges are waived for the RE projects. Hence TANGEDCO have been reiterating to execute the schemes on receipt of firmed up generation projects and firmed up location specific bids.

#### **CTUIL:**

- a) They were keeping it open with regard to location of the RE Pooling Stations. Based on the inputs of TSTRANSCO during the bilateral meeting, location of the Pooling Stations would be frozen considering the optimal distance from the RE developers locations and also to facilitate in meeting the load of the nearby areas.
- b) These transmission systems for integration 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. Hence, CEA shall also be invited for the bilateral discussion/meeting with TSTRANSCO as CEA shall be consulted for any system changes. CTUIL can only do the phasing part.

#### **Chairperson, SRPC**

Members shall furnish their views in written to MS, SRPC within 10 days.

#### **Views of SR entities as furnished in written:**

##### **APTRANSCO vide email dated 15.06.2023 furnished the views as below:**

- 1) In the proposal of Transmission System for evacuation RE through 765/400/220 KV Nizamabad II\_PS, following observations were made.
  - i. Injection of RE Power at 400KV level at 765/400/220KV Nizamabad II PS
  - ii. Stepping up the same to 765KV level at Nizamabad\_II PS.
  - iii. For exporting the above power from Nizamabad\_II PS to Nizamabad\_PG, 2 Nos. 765KV DC lines are proposed.
  - iv. For stepping down the above power at Nizamabad\_PG, additional 765/400 KV ICT was proposed.

**Suggestion:** Connecting the RE Power from some of the Pooling Stations directly to 765/400KV SS Nizamabad\_PG through 400KV lines may be explored which may facilitate minimization of the following network proposals:

- i) No. of ICTs at 765/400/220KV Nizamabad\_II PS
- ii) Augmentation of ICT at 765/400KV SS at Nizamabad\_PG
- iii) 2<sup>nd</sup> 765KV DC line from 765/400 KV Nizamabad\_11 PS to 765/400KV SS Nizamabad\_PG

- 2) The proposed 765/400/220KV Nizamabad\_II PS is just 30kM away from the existing 765/400KV SS Nizamabad\_PG, which is negligible length at 765KV level. As per Transmission Planning criteria, Transformation Capacity of 765/400KV SS is 9000 MVA (6\*1500MVA). Hence, Augmentation of existing 765/400KV SS Nizamabad\_PG with necessary bus sectionalization arrangements to evacuate the RE Power from the proposed Pooling stations at 220KV or 400KV levels will facilitate elimination of the newly proposed 765/400/220KV Nizamabad\_II PS (Maps attached at **Annexure-A**)

**Suggestion:** It is also requested to explore to connect the RE Power from the proposed Pooling Stations directly to the nearest PGCIL Sub stations.

- i) With the connection of RE Power proposed in Nizamabad area directly to the nearby existing 765/400KV SS Nizamabad\_PG with the necessary augmentations, if any.
- ii) With the connection of RE Power proposed in Medak area directly either to the nearby existing 765/400KV SS Nizamabad\_PG or proposed Bidar\_PS with the necessary augmentations, if any.
- iii) With the connection of RE Power proposed in Rangareddy area directly to the nearby existing 765/400KV SS Maheswaram\_PG with the necessary augmentations, if any.
- iv) With the connection of RE Power proposed in Karimnagar area directly to the nearby existing 765/400KV SS Warangal\_PG with the necessary augmentations, if any.

- 3) CTU is requested to explore the utilization of the existing Transmission system especially at 400KV level to minimize the new network proposals for evacuation of RE power duly considering the retirements of Conventional Generators in the coming years.
- 4) From the deliberations made in the 19<sup>th</sup> CMETS, it is learnt that no applications were received from any of the Power Developer in that region. In this connection, it is requested to conduct location-based studies duly considering all the provisions in the existing surrounding Substations, Transmission Lines etc.,
- 5) Agenda of the CMETS Meeting may be communicated well in advance for study by STUs. It is also requested to communicate the corresponding PSS/E Files along with the following information, as 500GW RE Power evacuation Transmission System was



planned and implemented by CTU without involvement of STUs and without conducting joint studies and communicating power flow results to STU's:

i) The Details of the Proposed Pooling Stations, Connectivity, Target Regions, and Commissioning Time lines:

Sl. No.	Name of the Pooling Station	Solar (GW)	Wind (GW)	BESS (GW)	Stage -I Connectivity	Stage-II Connectivity	SR Target Capacity	Other Regions Target Capacity	Commissioning by 2025-26	Commissioning by 2026-27	Commissioning by 2027-28
1	Bijapur Pooling										
2	Rangareddy Pooling										
3	Medak Pooling										
4	Nizamabad Pooling										

ii) The Details of the proposals of Transmission system

Sl. No.	Name of the Pooling Station	GPS Coordinates of the proposed Pooling Stations	Nearest PGCIL Sub Stations to the proposed	Evacuating Capacity Available at Nearest	BEE Line length from the proposed PS to	Name of PGCIL Lines passing nearer	LILO Length (BEE) from nearest Passing PGCIL
1	Bijapur Pooling Station		1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
2	Rangareddy Pooling Station		1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
3	Medak Pooling Station		1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
4	Nizamabad Pooling Station		1. 2.	1. 2.	1. 2.	1. 2.	1. 2.

**KPTCL vide e-mail dated 09.06.2023 furnished the views as below:**

1. Necessary Joint studies are required to arrive at the suitable transmission scheme for Bijapur REZ. Further studies shall be conducted with other concerned regions for specific transmission schemes before finalising, by which over estimation of transmission scheme may be avoided.
2. Fault levels at the proposed REZ sub-stations along with existing stations in the vicinity needs to be furnished.
3. Further, the implementation of the transmission scheme shall be taken up in phases by CTUIL based on the receipt of GNA applications from generation projects.

**KSEBL vide letter dated 13.06.2023 furnished the views as below:**

1. As the impact of the cost of transmission system development reflects in the Annual Transmission Charges, the transmission system should be evolved with the identification of likely generation developers and identified beneficiaries and not merely based on the envisaged potential.
2. Optimal transmission system should be planned for the integration of actual Renewable generation with the grid so that the constituents are not burdened.
3. STATCOMs may be proposed in all major RE pooling stations to mitigate the system disturbances and also to improve the dynamic stability of the system.

**TANGEDCO vide letter dated 20.06.2023(Annexure -B) furnished the views as below:**

1. The proposed scheme has 2x765 kV D/C connectivity from Nizamabad PS to Nizamabad (PG), In addition, one more 765 kV D/C line from Nizamabad PS to Warangal (New) is proposed.
2. In the Nizamabad 765/400 kV SS, 6x1500 MVA ICTs and 3x500 MVA, 400/230kV ICTs are proposed. Further, augmentation of 1x1500 MW ICT augmentation is proposed at Nizamabad (PG). In this regard, it is to be reiterated that the transmission capacity requirement is over estimated.
3. There is a 765 kV D/c link between Nizamabad (PS) to Warangal (New) through the Maheswaram 765 kV SS (PG). Under such circumstances, the proposed 765 kV D/C line from Nizamabad PS to Warangal (New) will be redundant and suboptimal and will impose unwarranted tariff burden on the beneficiaries.
4. Further, SRLDC has rightly pointed out in 19<sup>th</sup> CMETS meeting held on 29.05.2023, that the Rangareddy(Telangana) is nearer to Maheswaram(Hyderabad) 765/400 kV SS (10 to 15 km only) than the Nizamabad 765/400 kV SS. It can be depicted from the map furnished by CEA in the “The Report of Transmission System for Integration of over 500 GW RE Capacity by 2030”.
5. It is understood from the proposal that the total evacuation to be planned in Nizamabad PS is only 2.6 GW excluding RE injection in Rangareddy area.
6. In this regard, it was opined that CTUIL may examine the necessity of RE pooling station at 765 kV instead, planning of the same at 400kV which would reduce the investment quantum and to ensure that the planned transmission system/ICTs does not become stranded. Further, the margins available in the existing transmission system should be used to ensure optimal utilization of existing assets to the extent possible.
7. CASE STUDIES CARRIED OUT BY TANGEDCO:

**Base case:** With the CEA/CTU proposal for the RE schemes in Nizamabad, Medak, & Rangareddy in Telangana.

**Case 1:** Base Case + without Nizamabad-II PS – Warangal (New) 765 kV D/c line.

**Case 2:** With revised Transmission scheme as stated below.

- i. Establishment of 400/230 kV Pooling Station near Nizamabad (Nizamabad-II) along with 2x125 MVA (400 kV) bus reactors at Nizamabad-II PS
- ii. Nizamabad-II PS – Nizamabad(PG) 400 kV 2XD/c line
- iii. Establishment of 400/220 kV 2x500 MVA Pooling Station near Medak (Medak PS) along with 2x125 MVA (400 kV) bus reactors
- iv. Medak PS – Nizamabad-II 400kV (QM equivalent) D/c line
- v. Establishment of 400/220 kV 2x500 MVA Pooling Station near Medak (Medak PS) along with 2x125 MVA (400 kV) bus reactors.
- vi. The Rangareddy - Maheswaram (Hyderabad) 400 kV (QM equivalent) D/c line.

Out of the nine scenarios of CTUIL, Scenario-4 and Scenario-7 are considered as these scenarios correspond to maximum RE dispatch from wind & solar.

Option 1: Scenario 4 (June Solar max)

Option 2: Scenario 7 (Feb Solar max)

**From the study results, the following are observed:**

- i. In Base case, in both the scenarios, the proposed 765/400 kV ICTs at Nizamabad-II -6x1500 MVA & Nizamabad (PG)-4x1500 MVA (4<sup>th</sup> ICT proposed) and 765 kV lines are under loaded.
- ii. Further almost 80% of RE power injected in the 400 kV Bus of Nizamabad-II 765/400 kV PS (stepped up through 6x1500 MVA ICTs) flows to Nizamabad 765 kV bus (stepped down through 4x1500 MVA ICTs) and it is consumed there itself as it is a load centre. From the above, it is understood that it is unnecessary for RE injection at 765 kV level. Only 800MW of power flows in the proposed Nizamabad-II PS - Warangal (New) 765 kV D/c line.
- iii. In Case 1, without the Nizamabad-II PS - Warangal (New) 765 kV D/c line, the power is dispersed in Nizamabad (PG) SS. It is observed from the study results that with N-1 contingency of Hyderabad – Warangal (new) 765 kV DC line also, the power flow in other line is within the limit.
- iv. In Case 2, the Rangareddy 400/230 kV SS is connected to Maheswaram (Hyderabad) 765/400 kV SS, the evacuation scheme to be planned at Nizamabad PS is for **2.8 GW** considering capacity factor and BESS at Nizamabad-II PS and Medak RE injection. Hence, 2x400 kV D/C line is sufficient for RE power dispersal from Nizamabad-II PS – Nizamabad 765/400 kV SS.
- v. For Rangareddy RE injection of 1GW dispatch, the power will be dispersed in Maheswaram (Telangana) 765/400 kV SS without any constraint.

**8. Summarizing, the following are submitted by TANGEDCO:**

- i. If the Rangareddy 400/230 kV SS is connected to Maheswaram (Hyderabad) 765/400 kV SS, the evacuation scheme to be planned at Nizamabad PS is for 2.8 GW only considering capacity factor and BESS at Nizamabad-II PS and Medak RE injection. Hence, there is no necessity for planning 765/400kV Pooling station at this stage and 400kV level would be sufficient.
- ii. The proposed 765 kV D/C line from Nizamabad PS to Warangal (New) will be redundant and absolutely not required as there is a 765 kV D/c link between Nizamabad (PS) to Warangal (New) through the Maheswaram 765 kV SS(PG) and further the RE power will be dispersed in Nizamabad SS itself as per the study results of CTUIL as well as study results of TANGEDCO. The " additional 765 kV D/c link between Nizamabad (PS) to Warangal (New) will only be benefitting the transmission licensee and will be of no use neither for beneficiaries nor will be helpful for promoting RE and achieving the target. The very objective of adding

RE generation capacity will be defeated by creation of sub optimal transmission systems.

iii. Depending on the injection of RE GEN level i.e.230 or 400 kV, ICTs shall be planned based on the progress of generation projects and ground reality.

iv. The following scope of the schemes is found to be redundant.

- i. Proposal of Establishment of Nizamabad 765/400 kV PS with 6x1500 MVA, 765/400kV ICTs.
- ii. 2x765 kV line D/C circuit from Nizamabad PS to Nizamabad (PG) SS.
- iii. Proposed 765 kV D/C line from Nizamabad PS to Warrangal (New) for a distance of 180 kms.
- iv. Augmentation of 1x1500MVA, 765/400 kV ICT (4<sup>th</sup>) proposed at Nizamabad (PG) SS.

**In view of the above, it is requested to conduct comprehensive all India joint study involving all the RE rich regions. Further it is requested to review the transmission schemes based on realistic assumptions and facts so as to accomplish the real objective of adding RE generation capacity instead of creating redundant transmission asset at the cost of State Discoms and ultimately end consumers.**

**TSTRANSCO vide letter dated 17.06.2023 furnished the views as below:**

1. Director(Transmission), TSTRANSCO had requested CTUIL to furnish the exact locations (i.e latitudes and longitudes) of RE pooling stations proposed in Nizamabad, Medak and Rangareddy Districts to communicate views on the transmission system proposed keeping in view of the land cost and transmission losses.
2. Medak and Ranga Reddy Districts were going to be load centers in near future and getting back power from Nizamabad-II PS may lead to increase in transmission losses.
3. As it was proposed for installation of  $\pm 300$  MVAr STATCOM with 2x125 MVAr MSR and 1x125 MVAr MSC at 400kV level at Nizamabad-II PS in the Additional Agenda Item No. 2(i) (4), the duplicated item mentioned in 2(i) (3) i.e., 2x125 MVAr (400 kV) bus reactors at Nizamabad-II PS may be examined to ignore.
4. In the 15<sup>th</sup> CMETS(SR) meeting held on 30.01.2023, the transmission system for integration of Medak REZ was proposed considering 1 GW Wind and 0.5 GW Solar. But, against item B(2)(Telangana)(1)(i) of the minutes of the 15<sup>th</sup> CMETS(SR) meeting it was considered 1 GW injection at 220kV level and 1 GW injection at 400kV level mismatching the generation. The same is repeated at Rangareddy REZ also. The same may please be clarified.
5. It has been expressed in the SRPC and CMETS(SR) meetings that the CTUIL has been planning and showing much interest for establishing 765/400 kV, 400/220 kV Pooling stations and erection of 765 kV and 400 kV lines without getting the applications for establishing the solar/ wind plants in Telangana State.
6. Further, it was informed in the 46<sup>th</sup> SRPC meeting that the land cost in Nizamabad, Medak and Ranga Reddy Districts is very high and the upland areas are going to be irrigated with

the Lift Irrigation schemes are in advanced stage of construction and some of them are already completed at the following places:

Nizamabad District:

1. Mupkal LIS - 52 MW
2. Sarangapur LIS - 90 MW
3. Yacharam Thanda LIS - 90 MW
4. Manchippa LIS - 60 MW
5. Manjeera LIS (Vaddepalli and Pitlam)- 20 MW

Medak District:

1. Sangameshwara LIS - 140 MW
2. Basaweshwara LIS - 70 MW

Rangareddy District:

Uddandapur LIS - 725 MW

With the completion of the above projects, the cultivation of the land increases in and around the proposed Solar / wind plants and Pooling Stations. Hence the land may not be available for taking up the construction of Solar/ Wind projects.

7. The planning of transmission network even before getting the application without ensuring the land availability may not be correct. All the above said points have been brought to the notice of the CTUIL in all the meetings but still the CTUIL is going ahead for construction of 400 kV pooling SS & lines and 765/400 kV SS II at Nizamabad.
8. Further, during the 46<sup>th</sup> SRPC Meeting, TSTRANSCO had requested a meeting with CTUIL and CEA for arriving to further deliberations along with proposed locations of Solar plants and substations.
9. Sometimes the objections raised from TSTRANSCO in the CMETS (SR) meetings are not getting recorded in the minutes. Any network without the consent of TSTRANSCO is build-up by the CTUIL the transmission charges levied are not payable.

**In view of the above, it is requested to consider all the above points before taking an appropriate decision for establishment of the proposed transmission system for integration of REZs at Nizamabad, Medak and Ranga Reddy Districts.**

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