

Dated, 23<sup>rd</sup> January, 2020

**OFFICE MEMORANDUM**

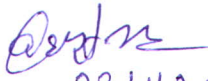
**Subject: New Transmission schemes to be taken up under compressed time schedule through regulated tariff mechanism (RTM) route.**

The undersigned is directed to inform that the Hon'ble MoSP(IC) has approved the implementation of following transmission schemes by Power Grid Corporation of India Limited (PGCIL), under regulated tariff mechanism (RTM), on the recommendation of the 4<sup>th</sup>, 5<sup>th</sup> & 6<sup>th</sup> meetings of the National Committee on Transmission (ECT), held on 31.7.2019, 21.8.2019 and 30.9.2019 respectively:

S. No.	Name of Scheme
1.	Transmission system for evacuation of power from RE projects in wind energy zones in Osmanabad area of Maharashtra (1 GW) - Conversion of 50MVAR fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable line reactors
2.	Transmission Scheme for Solar Energy Zone in Gadag (2500 MW), Karnataka – Part B
3.	Common transmission system strengthening in Southern Region for enabling evacuation and export of power from Solar & Wind Energy Zones in Southern Region"
4.	Transmission system strengthening for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part A1 (765/400kV ICT augmentation at Fatehgarh-II)
5.	Transmission system strengthening Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part B1 (765/400/220 ICT augmentation at Fatehgarh-II and Bhadla-II)
6.	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part F1
7.	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part G1 ( Maharanibagh/ Gopalpur- Narela 765/400 kV substation 400 kV interconnection)
8.	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Power reversal in Balia-Bhiwadi HVDC line

Detailed scope of works for the above schemes, as recommended by NCT, is at **Annexure.**

2. It is requested that necessary action may be taken accordingly.
3. This issues with the approval of Competent Authority.

  
23/1/2020  
(Bihari Lal)

Under Secretary (Trans)  
Telefax: 23325242  
Email: transdesk-mop@nic.in

To,  
Member (PS),  
Central Electricity Authority  
Sewa Bhawan, R.K. Puram, New Delhi-110066

Copy forwarded to: CMD, PGCIL, Gurugram, for information and necessary action.

**Annexure**

- (1) Name of the Scheme: Transmission system for evacuation of power from RE projects in wind energy zones in Osmanabad area of Maharashtra (1 GW) - Conversion of 50MVA fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable line reactors**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1	Conversion of 50MVA fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable.	400kV Reactor bays -2

The scheme to be implemented in matching time frame of Transmission system for evacuation of power from RE projects in wind energy zones in Osmanabad area of Maharashtra (1 GW) i.e. December 2021.

- (2) Name of the Scheme: Transmission Scheme for Solar Energy Zone in Gadag (2500 MW), Karnataka – Part B**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Upgradation of Narendra (New) to its rated voltage of 765 kV level along with 2x1500 MVA, 765/400 kV transformer and 765 kV, 1x330 MVA Bus Reactor	765/400 kV, 1500 MVA ICT – 2 765 kV ICT bays – 2 400 kV ICT bays – 2 765 kV line bays – 2  330 MVA, 765 kV reactor - 1 765 kV reactor bay – 1 500 MVA/ 765/400 kV 1-phase ICT (spare unit) – 1 110 MVA, 765 kV, 1 ph Reactor (spare unit) -1 (for both the bus reactor and 1x330 MVA line reactor on Madhugiri (Tumkur) - Narendra New 765 kV D/c line)
2.	Upgradation of Kolhapur (PG) to its rated voltage of 765 kV level along with 2x1500 MVA, 765/400 kV transformer and 765 kV, 1x330 MVA Bus Reactor	765/400 kV, 1500 MVA ICT – 2 765 kV ICT bays – 2 400 kV ICT bays – 2 765 kV line bays – 2  330 MVA, 765 kV reactor - 1 765 kV reactor bay – 1  500 MVA/ 765/400 kV 1-phase ICT (spare unit) – 1 110 MVA, 765 kV, 1 ph Reactor (spare unit) -1

		(for both the bus reactor and 1X330 MVAR line reactor on Narendra new - Kolhapur (PG) 765 kV D/c line )
3.	Upgradation/charging of Narendra new - Kolhapur (PG) 765 kV D/c line (initially charged at 400 kV) to its rated voltage of 765 kV	
4.	1x330 MVAR, 765 KV switchable Line Reactor on Kolhapur (PG) end of each circuit of Narendra new - Kolhapur (PG) 765 kV D/c line	765 kV, 330 MVAR line reactor – 2 nos. Switching equipments for line reactor- 2

The scheme to be completed in matching time frame of Evacuation system for RE projects in Gadag and Koppal RE potential zones i.e December'2021.

**(3) Name of the Scheme: Common transmission system strengthening in Southern Region for enabling evacuation and export of power from Solar & Wind Energy Zones in Southern Region”**

Sl no	Scope of the Transmission Scheme	Capacity / ckm / nos.
1.	<p>(i) Upgradation of Tuticorin PS to its rated voltage of 765kV level alongwith 2x1500 MVA, 765/400kV ICTs and 1x330 MVAR, 765kV Bus Reactor</p> <p>(ii) Upgradation of Dharmapuri (Salem New) to its rated voltage of 765kV level alongwith 2x1500 MVA, 765/400kV ICTs and 1x240 MVAR, 765kV Bus Reactor</p> <p>(iii)Upgradation of Madhugiri (Tumkur) to its rated voltage of 765kV level alongwith2x1500 MVA, 765/400kV ICTs and 1x240 MVAR, 765kV Bus Reactor</p> <p>(iv) Upgradation/ charging of Tuticorin PS - Dharmapuri (Salem New) 765 kV D/c line (initially charged at 400 kV) to its rated voltage of 765 kV along with 1x330 MVAR switchable Line Reactor on both end of each circuit.</p> <p>(v) Upgradation/charging of Dharmapuri (Salem New) - Madhugiri (Tumkur) 765 kV 2xS/c line (initially charged at 400 kV) to its rated voltage of 765 kV along with 1x330 MVAR switchable Line Reactor on Dharampuri (Salem New) end of both circuits</p> <p>(vi) Upgradation/ charging of Madhugiri (Tumkur) - Narendra New 765 kV D/c</p>	<p>1500MVA, 765/400kV - 6</p> <p>765kV ICT bay-6 400kV ICT bay-6 765kV line bay-12 330 MVAR reactor-1 240 MVAR reactor-2 330 MVAR LR-10 Switching equipments for 330 MVAR LR – 10 765kV bus reactor bay-3 400kV bus reactor bay-10</p> <p><b>Spare for Tuticorin PS :</b></p> <p>1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) 1x110 MVAR, 765 kV, 1 ph. Switchable reactor (spare unit) (for 330 MVAR line/bus reactor)</p> <p><b>Spare for Dharmapuri (Salem New):</b></p> <p>1x500 MVA, 765/400 kV, 1-ph ICT (spare unit), 1 ph. Switchable reactor (spare unit) (for 330 MVAR line reactor) &amp;1x80 MVAR, 765 kV, 1 ph. Switchable reactor (spare unit) (for 240 MVAR bus reactor)</p>

Sl no	Scope of the Transmission Scheme	Capacity / ckm / nos.
	<p>line (initially charged at 400 kV) to its rated voltage of 765 kV along with 1x330 MVAR switchable Line Reactor on both end of each circuit.</p> <p>(vii) Conversion of 400 kV Line Reactors installed on 765 kV circuits/ lines (initially charged at 400 kV) mentioned at Sl No. iv, v and vi into 400 kV bus Reactor with suitable arrangements at respective substations.</p>	<p><b>Spare for Madhugiri (Tumkur):</b></p> <p>1x500 MVA, 765/400 kV, 1-ph ICT (spare unit), 1 ph. Switchable reactor (spare unit) (for 330 MVAR line reactor) &amp; 1x80 MVAR, 765 kV, 1 ph. Switchable reactor (spare unit) (for 240 MVAR bus reactor)</p>

**(4) Name of scheme: Transmission system strengthening for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part A1 (765/400kV ICT augmentation at Fatehgarh-II)**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Augmentation with 765/400kV, 1x1500MVA transformer (5th) at Fatehgarh- II PS.	765/400 kV, 1500 MVA ICT – 1 765 kV ICT bays –1 400 kV ICT bays –1

The completion schedule for scheme would be same as the completion schedule of the scheme "Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part A".

**(5) Name of scheme: Transmission system strengthening Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part B1 (765/400/220 ICT augmentation at Fatehgarh-II and Bhadla-II)**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Augmentation with 765/400kV, 1x1500MVA transformer (6 <sup>th</sup> ) at Fatehgarh-II PS.	765/400 kV, 1500 MVA ICT – 1 765 kV ICT bays –1 400 kV ICT bays –1
2.	Augmentation with 400/220kV, 4x500MVA Transformer (6 <sup>th</sup> to 9 <sup>th</sup> ) at Fatehgarh-II PS with suitable Bus sectionalisation at 400 and 220 kV level.	400/220 kV, 500 MVA ICT – 4 400 kV ICT bays –4 220 kV ICT bays –4 220 kV line bays-7
3.	Augmentation with 400/220kV, 3x500MVA Transformer (6 <sup>th</sup> to 8 <sup>th</sup> ) at Bhadla-II PS with suitable Bus sectionalisation at 400 and 220 kV level.	400/220 kV, 500 MVA ICT – 3 400 kV ICT bays –3 220 kV ICT bays –3 220 line bays-5
4.	Augmentation with 765/400 kV, 1x1500 MVA transformer (4 <sup>th</sup> ) at Bhadla-II PS.	765/400, 1500 MVA ICT- 1 765 ICT bays-1 400 kV ICT bays-1

5.	STATCOM at Fatehgarh-II S/s	± 600 MVar, 4x125 MVar MSC, 2x125 MVar MSR
6.	STATCOM at Bhadla-II S/s	± 600 MVar, 4x125 MVar MSC, 2x125 MVar MSR

The completion schedule for scheme would be same as the completion schedule of the scheme "Transmission system strengthening for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part B".

**(6) Name of the scheme: Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part F1**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Removal of LILO of one circuit of Bhadla-Bikaner (RVPN) 400kV D/c(Quad) line at Bikaner(PG). Extension of above LILO section from Bikaner(PG) up to Bikaner-II PS to form Bikaner-II PS – Bikaner (PG) 400kV D/c(Quad) line	Length - 25
2.	2 nos. of 400 kV line bays at Bikaner-II PS for Bikaner-II PS – Bikaner (PG) 400kV D/c(Quad) line formed after removal of LILO of one circuit of Bhadla-Bikaner(RVPN) 400kV D/c(Quad)	400 kV line bays – 2

Note:

- i) Developer of Bikaner-II to provide space for 2 no of 400 kV bays for termination of Bikaner-II PS- Bikaner (PG) 400 kV D/c (Quad)
- ii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

The completion schedule for scheme would be same as the completion schedule of the scheme "Transmission system strengthening Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part F".

**(7) Name of the scheme: Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part G1 ( Maharani Bagh/Gopalpur- Narela 765/400 kV substation 400 kV interconnection)**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Removal of LILO of Bawana – Mandola 400kV D/c(Quad) line at Maharani Bagh /Gopalpur S/s. Extension of above LILO section from Maharani Bagh/ Gopalpur upto Narela S/s so as to form Maharani Bagh – Narela 400kV D/c(Quad) and Maharani Bagh -Gopalpur-Narela 400kV D/c(Quad) lines.	Length – 14 (2x7)
2.	2 no of line bays at Narela each for Maharani Bagh – Narela 400kV D/c(Quad) and Maharani Bagh -Gopalpur- Narela 400kV D/c(Quad) lines formed after removal of LILO of Bawana – Mandola 400kV D/c(Quad) line at Maharani Bagh/Gopalpur S/s and Extension of above LILO section from Maharani Bagh/Gopalpur upto Narela S/s.	400 kV line bays – 4

Note:

- (i) Developer of Narela substation to provide space for 4 no of 400 kV bays for Narela – Maharaniabagh/Gopalpur 400kV 2xD/c(Quad)
- (ii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

The completion schedule for scheme would be same as the completion schedule of the scheme “Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part G”.

**(8) Name of the scheme: Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Power reversal in Balia-Bhiwadi HVDC line**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Power reversal on $\pm 500$ KV, 2500 Balia- Bhiwadi HVDC line upto 2000 MW from Bhiwadi to Balia	2000 MW

The completion schedule for scheme would be same as the completion schedule of the scheme “Transmission system strengthening Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part F”.