

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 197/MP/2019

Coram:

Shri P.K. Pujari, Chairperson

Dr. M. K. Iyer, Member

Shri I. S. Jha, Member

Date of Order: 10th October, 2019

In the matter of:

Petition under Section 38(2) of the of the Electricity Act, 2003 read with Section 79(1)(c) and Section 79(1)(k) of the Act, alongwith (i) Central Electricity Regulatory Commission (Grant of Regulatory Approval for execution of Inter-State Transmission Scheme to Central Transmission Utility) Regulations, 2010; (ii) Regulation 111 & 114 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 and (iii) Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2010 for Grant of Regulatory Approval for execution of the Transmission System for Evacuation of Power from potential Solar and Wind energy zones in Western Region – Phase I & II (REZ Phase I & II) and Transmission System for providing Immediate Connectivity to Dholera UMSP.

And

In the matter of

Power Grid Corporation of India Limited.
B-9, Qutab Institutional Area,
Katwaria Sarai, New Delhi and

Also At: Saudamini, Plot No.: 2,
Sector-29, Gurgaon (Haryana)- 122 001.

.....Petitioner

Vs

1. Madhya Pradesh Power Management Company Limited
Shakti Bhawan, Rampur
Jabalpur - 482 008
Represented by Its MD

2. Maharashtra State Electricity Distribution Co. Limited
Hongkong Bank Building, 3rd floor
M.G. Road, Fort, Mumbai-400 001
represented by its MD

3. Gujarat Urja Vikas Nigam Limited
Sardar Patel Vidyut Bhawan,
Race course road, Vadodara – 390007
4. Electricity Department
Govt. of Goa
Vidyut Bhawan, Panaji,
Near Mandvi Hotel, Goa - 403 001
Represented by Its Chief Engineer (Electrical)
5. Electricity Department
Administration of Daman & Diu
Daman - 396 210
Represented by its Secretary (Fin.)
6. Electricity Department
Administration of Dadra Nagar Haveli
U.T., Silvassa - 396 230
Represented by its Secretary (Fin.)
7. Chhattisgarh State Electricity Board
P.O.Sunder Nagar, Dangania, Raipur
Chhatisgaarh-492013
Represented by its Chairman
8. Madhya Pradesh Audyogik Kendra
Vikas Nigam (Indore) Ltd.
3/54, Press Complex, Agra-Bombay Road,
Indore-452 008
9. Madhya Pradesh Power Transmission Company Limited
Shakti Bhawan, Rampur
Jabalpur - 482 008
Represented by its MD
10. Maharashtra State Electricity Transmission Co. Limited
Prakashganga, 6th Floor, Plot No. C-19,
E-BLOCK, Bandra Kurla Complex,
Bandra (East) Mumbai - 400 051.
Represented by its MD
11. Gujarat Energy Transmission Corporation Limited
Sardar Patel Vidyut Bhawan,
Race Course Road, Vadodara - 390 007
Represented by its Chairman
12. Chhattisgarh State Power Transmission Co. Limited
Office of the Executive Director (C&P)
State Load Despacth Building,

Dangania, Raipur – 492 013

13. Chhattisgarh State Power Distribution Co. Limited
P.O.Sunder Nagar, Dangania, Raipur
Chhatisgaarh-492013
Represented by its Chairman

14. Solar Energy Corporation of India Limited
D-3, A Wing, 1st Floor, Religare Building,
District Centre, Saket,
New Delhi, Delhi - 110017

15. Adani Green Energy Limited
Achalraj Opposite Mayor
Bungalow Law Garden
Ahmedabad 380006

16. Adani Green Energy MP Limited
5th Floor, Sambhav House,
Judges Bungalow Road,
Bodakdev, Ahmedabad - 380009

17. Airpower Windfarms Private Limited
9th Floor, Godrej Coliseum,
C Wing, Sion -Trombay Raod,
Sion (East) Mumbai 400 022,
Maharashtra,India

18. Alfanar Energy Private Limited
419-424,4th FLOOR,
JMD Megapolis,
Sohana Road Gurgaon,

19. Avikiran Solar India Private Limited
C/O BLP Energy Private Limited,
Crescent One, 12th Floor,
Prestige Shantiniketan, Hoodi,
ITPL Main Road, Whitefield, Bangalore - 560048

20. Green Infra Wind Energy Limited
5th floor, Tower C, Building No. 8,
DLF Cyber City, Gurgaon -122002
Haryana, India

21. Inox Wind Infrastructure Services Limited
Plot no.- 17, Sector 16-A,
Film City, Noida, Uttar Pradesh

22. Netra Wind Private Limited
419-424,4th Floor,

JMD Megapolis,
Sohana Road Gurgaon

23. Ostro Kutch Wind Private Limited
Commercial Block-1, Zone 6,
Golf Course Road, DLF City Phase-V
Gurugram-122009

24. ReNew Power Limited
ReNew Hub, Commercial Block-1, Zone 6,
Golf Course Road, DLF City,
Phase-V, Gurugram-122009, Haryana

25. Sitac Kabini Renewables Private Limited
507-508, Ashoka Estate 24 Barakhamba Road
New Delhi - 110001

26. Srijan Energy Systems Private Limited
102, El Tara Building,
Orchard Avenue Hiranandani, Powai,
Mumbai-400076

27. Torrent Power Limited
Samanvay, 600, Tapovan Ambawadi,
Ahmedabad - 380015

28. Vaayu Renewable Energy Private Limited Mumbai
A-204, Siddhivinayak Towers,
Beside Kataria Arcade, Makarba,
Ahmedabad-380051, Gujarat

29. Toramba Renewable Energy Private Limited
D.No.5/154, Uma Co-Cooperative Housing Society,
Juni Mill Compound, Solapur – 413001

.....Respondents

Parties present:

Ms. Manju Gupta, PGCIL
Shri Rajesh Verma, PGCIL
Shri Ashok Pal, PGCIL
Ms. Jyoti Prasad, PGCIL
Dr. V. N. Paranjape, PGCIL

ORDER

The present Petition has been filed by the Petitioner, Power Grid Corporation of India Limited (hereinafter to be referred as PGCIL) under Section 38(2) of the Electricity Act, 2003 (hereinafter referred to as the 2003 Act) read with Section 79(1)(c) and 79(1)(k) of the 2003 Act for grant of Regulatory approval for execution of the transmission system for Solar and Wind Energy Zones in Western Region(REZ Phase I & II) and transmission system for providing Immediate Connectivity to Dholera Ultra Mega Solar Project (UMSP). The Petitioner has made the following prayers:

- a) Grant Regulatory approval for taking up implementation of identified transmission system;
- b) Grant of approval for recovery of transmission charges of the assets through CERC (Sharing of Transmission charges and losses for ISTS) Regulations, 2010 and its amendment(s) notified by CERC from time to time.; and
- c) Grant of approval for inclusion of the above system under the TSA notified by CERC.

Background

2. The Petitioner has mainly submitted as under:

- (i) The Government of India has set a target of establishing 175 GW of renewable capacity by 2022, which includes 100 GW solar capacity and 60 GW wind capacity. In order to identify ISTS connectivity of renewable energy projects from potential solar energy zones and potential wind energy zones, Ministry of New and Renewable Energy (MNRE) vide its order dated 8.6.2018 had constituted a sub-committee to identify ISTS connectivity of renewable energy projects from the potential Solar Energy Zones (SEZs) and potential Wind Energy Zones (WEZs) of about 50 GW and 16.5 GW respectively. SEZs and WEZs envisaged in seven RE-rich States, namely, Tamil Nadu, Andhra Pradesh, Karnataka, Gujarat, Rajasthan, Maharashtra and

Madhya Pradesh were identified by Solar Energy Corporation of India (SECI) in association with MNRE and in consultation with RE power developers.

(ii) In respect of the above 66.5 GW Solar and Wind generation potential, transmission system has been planned as under:

	Region	RE Capacity (GW)		
		Phase - I	Phase - II	Total
1.	Northern Region	8.9	11.1	20
2.	Western Region	10.5	17.5	28
3.	Southern Region	10	8.5	18.5
	Total	29.4	37.1	66.5

(iii) 28 GW Solar and Wind generation potential is envisaged to be developed in Western Region and is likely to be completed by December 2021, which includes 20 GW Solar generation and 8 GW Wind generation both in Phase-I and Phase-II. The details of above SEZs and WEZs alongwith phasing as per transmission system planning is as under:

State	Taluk/ Tehsil	Pooling Station/ S/s Name	Phase-I		Phase-II		Total	
			Wind	Solar	Wind	Solar	Wind	Solar
Gujarat								
Kutch	Rapar	Kutch (Rapar) SEZ PP/ 3 GW				3		3
Banaskantha	Vav/Tharad	Radhanesda PS				2.5		2.5
Jamnagar	Lalpur	Lalpur (Jamnagar) SEZ PP				2.5		2.5
Kutch	Bhuj	Bhuj-II PS	2				2	
Kutch	Lakadia	Lakadia PS	2	2			2	2
Dwarka	Jam Khambhaliya	Jam Khambhaliya PS	1.5		0.5		2	
		Subtotal	5.5	2	0.5	8	6	10
Maharashtra								

State	Taluk/ Tehsil	Pooling Station/ S/s Name	Phase-I		Phase-II		Total	
			Wind	Solar	Wind	Solar	Wind	Solar
Solapur		Solapur (PG) (1 GW) Solapur PP (1.5 GW)		1		1.5		2.5
Wardha		Wardha SEZ PP				2.5		2.5
Osmanabad		Kallam PS	2*				2*	
		Subtotal	2	1	0	4	2	5
Madhya Pradesh								
Rajgarh		Rajgarh SEZ PP (Near Agar Malwa)				2.5		2.5
Khandwa		Khandwa SEZ PP				2.5		2.5
		Subtotal	0	0	0	5	0	5
		WR Total	7.5	3	0.5	17	8	20

*1GW being implemented under Intra-State in Osmanabad area in Maharashtra

(iv) In addition to the above, MNRE has given in-principle approval of 5000 MW Dholera UMSPP to be implemented by Gujarat Power Corporation Limited. The Dholera UMSPP has been split into two different projects:

- Dholera UMSPP (Phase-I): 1000 MW Solar Power Park would be developed by Gujarat Power Corporation Limited (GPCL) and the scheme for power evacuation would be evolved by GETCO.
- Dholera UMSPP (Phase-II): 4000 MW would be developed by Solar Energy Corporation of India (SECI) and the scheme for power evacuation has to be evolved under ISTS. This 4 GW capacity is in addition to the aforesaid 66.5 GW RE capacity identified by MNRE.

(v) Accordingly, transmission system for providing immediate connectivity to Dholera UMSPP (4 GW) under ISTS has also been planned and balance evacuation system for Dholera UMSPP would be further studied in another joint study meeting after SECI

indicates the likely beneficiaries of Dholera UMSP.

(vi) The Regulatory Approval has been sought for the following transmission system in the Western Region:

- i. REZ Phase I
- ii. REZ Phase II and Transmission System for providing immediate connectivity to Dholera UMSP

REZ Phase I

3. The details of SEZs & WEZs in WR under Phase – I as per transmission system planning is as under:

State	Taluk/Tehsil	Pooling Station / S/s Name	Phase-I	
			Wind	Solar
Gujarat				
Kutch	Bhuj	Bhuj-II PS	2	
Kutch	Lakadia	Lakadia PS	2	2
Dwarka	Jam Khambhaliya	Jam Khambhaliya PS	1.5	
		Subtotal	5.5	2
Maharashtra				
Solapur		Solapur (PG) (1GW) Solapur PP (1.5GW)		1
Osmanabad		Kallam PS	2*	
		Subtotal	2	1
		WR Total	7.5	3

*1GW under Intra-state (in Osmanabad area in Maharashtra) as discussed in the 2nd WRSCT held on 21.5.19

4. The broad transmission scheme pertaining to REZ Phase I is as under:

- **PART A:**
Additional 1x500 MVA 400/220 kV (9th) ICT, for injection from any additional RE project (beyond 4000 MW) at Bhuj PS
- **PART B**

Western Region Strengthening Scheme-21 (WRSS-21) Part A - Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS

- PART C
Western Region Strengthening Scheme-21 (WRSS-21) Part B - Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS
- PART D
Transmission system associated with RE generations at Bhuj II, Dwarka & Lakadia
- PART E
Transmission System for providing connectivity to RE projects at Bhuj II (2000 MW) in Gujarat
- PART F
 - a) Jam Khambhaliya PS for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat)
 - b) Interconnection of Jam Khambhaliya PS for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat)
- PART G
400 kV line bay at Solapur PS for St-II connectivity to M/s Toramba Renewable Energy Pvt. Ltd.
- PART H
Transmission System for providing connectivity to RE projects in Gujarat [Lakadia (2000MW)]
- PART I
Transmission system associated with RE generations from potential wind energy zones in Osmanabad area of Maharashtra
- PART J
Transmission system associated with RE generations from potential Solar Energy Zone in Maharashtra (1000 MW under Ph-I)

5. The Petitioner has submitted that the transmission schemes for evacuation of 10.5 GW power (7.5 GW Wind and 3 GW Solar) under Phase-I were discussed and

agreed in the 1st meeting of Western Region Standing Committee on Transmission (WR SCT) held on 5.9.2018. The transmission system associated with RE generations in Gujarat [Wind: Bhuj II (2000 MW), Lakadia (2000 MW) & Dwarka (1500 MW); Solar: Lakadia (2000 MW)] and Maharashtra [Wind: Osmanabad (2000 MW) & Solar: Solapur (1000 MW)] were agreed subject to receipt of Stage-II connectivity applications. Subsequently, the schemes were discussed in the 2nd National Committee on Transmission (NCT) meeting held on 4.12.2018 and 3rd Empowered Committee on Transmission (ECT) meeting held on 21.12.2018, wherein after discussions, it was agreed to implement the aforesaid schemes to cater to 10.5 GW RE generation projects in Gujarat & Maharashtra.

6. The Petitioner has submitted that the schemes were again discussed during the 2nd WR SCT meeting held on 21.5.2019, wherein the following modifications to the scope of work were agreed:

a) Provision of spare reactors and ICTs: The detail of the reactor unit included additionally is as under:

S. No	Approved in the 3 rd ECT meeting held on 21/12/2018	Corresponding Spare ICT/ Reactors units to be additionally included
1	Establishment of 2x1500MVA, 765/400kV Lakadia PS with 765kV (1x330MVAR) & 400kV (1x125 MVAR) bus reactor (under PART B above)	<ul style="list-style-type: none"> • 1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) at Lakadia end • 1x110 MVAR, 765 kV, 1-ph Reactor (spare unit) at Lakadia end (for both 1x330MVA bus reactor under Part A and 1x330MVA line reactor on Lakadia – Vadodara line under Part B)
2	330MVA switchable line reactors at both ends of Lakadia–Vadodara 765kV D/c line (under PART C above)	<ul style="list-style-type: none"> • 1x110 MVAR, 765 kV, 1-ph switchable line reactor (spare unit) at Vadodara end
3	240MVA switchable Line reactor at	<ul style="list-style-type: none"> • 1x80 MVAR, 765 kV, 1-ph

S. No	Approved in the 3 rd ECT meeting held on 21/12/2018	Corresponding Spare ICT/ Reactors units to be additionally included
	Lakadia PS end of Lakadia PS – Banaskantha PS 765kV D/c line (under PART D above)	switchable line reactor (spare unit) at Lakadia end
4	Establishment of 2x1500 MVA, (765/400kV), 4x500MVA (400/220kV) Bhuj-II PS (GIS) with 765kV (1x330MVAR) and 420kV (1x125 MVAR) bus reactor (under PART E above)	<ul style="list-style-type: none"> • 1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) at Bhuj-II PS • 1x110 MVAR, 765 kV , 1-ph Bus Reactor (spare unit) at Bhuj-II PS

b) Additional scope of work at Bhuj II PS under Part E: The original location of Bhuj-II PS indicated in the survey report was on eastern side of Bhuj PS and the length of Bhuj II – Lakadia PS was estimated to be less than 100km and accordingly no line reactors were envisaged. A meeting was held in CEA on 10/05/2019 to discuss boundary limits of the Pooling Stations at Bhuj II, Lakadia and Jam Khambhaliya. In the meeting, a revised location was decided for Bhuj-II pooling station as per which the line length from Bhuj-II to Lakadia 765 kV D/c line would become more than 150 km and hence there would be requirement of line reactors for the line along with necessary spare reactor as under:

- (i) 240MVAR switchable line reactor along with NGR of 400 Ohms in each circuit of Bhuj-II – Lakadia 765kV D/c line at Bhuj-II PS end
- (ii) 1x80MVAR, 765 kV, 1-ph switchable line reactor (spare unit) at Bhuj-II PS.

c) Deletion in scope of work at Kallam PS under Part I: MSETCL is planning Intra-State Transmission system for evacuation of about 1 GW of RE potential in Osmanabad Area. Hence, it was decided to reduce the capacity under ISTS at Kallam PS to 1GW only for which 2x500MVA ICTs shall be sufficient. Kallam substation was decided to be planned for only 1GW RE projects (instead of

originally envisaged 2GW RE capacity) and hence the following changes were agreed at Kallam S/s:

Scope of the Transmission Scheme	Original Capacity/ckm	Revised Capacity/ ckm
Establishment of Kallam PS	4x500MVA, 400/220kV ICTs 400kV ICT bay- 4 220kV ICT bay- 4 400kV line bay- 4 220kV line bay- 8	2x500MVA, 400/220kV ICTs 400kV ICT bay- 2 220kV ICT bay- 2 400kV line bay- 4 220kV line bay- 4

7. The Petitioner has submitted that the present Transmission scheme was discussed in 37th Western Regional Power Committee (WRPC) held on 17th - 18th December, 2018 and further in 38th WRPC held on 27th – 28th June, 2019. During the 38th WRPC meeting, while according technical approval of the Transmission Scheme, it has been noted that there should not be any commercial burden on DISCOMs on account of implementing the above technically recommended schemes.

8. The Petitioner has submitted that the final approved transmission scheme for Phase I is as under:

Transmission Lines:

- Bhuj PS – Lakadia PS 765 kV D/c line
- LILO of Bhachau – EPGL 400 kV D/c (triple) line at Lakadia PS
- Lakadia – Vadodara 765 kV D/c line
- Lakadia PS – Banaskantha PS 765 kV D/c line
- Reconfiguration of Bhuj PS – Lakadia PS 765kV D/c line so as to establish Bhuj II – Lakadia 765 kV D/c line as well as Bhuj – Bhuj II 765kV D/c line
- Extension of Essar – Lakadia/Bhachau 400kV D/c (triple) line up to Jam Khambhaliya PS
- LILO of both circuits of Parli(PG) – Pune(GIS) 400kV D/c line at Kallam PS
- Solapur pooling point – Solapur (PG) 400 kV D/c line (twin HTLS)

Substation:

- Additional 1x500 MVA 400/220 kV (9th) ICT, for injection from any additional RE project (other than the above 4000 MW) in existing Bhuj PS with associated 400 kV GIS bay and 220 kV hybrid/MTS bay.
- 3 nos. of 220 kV line bays(hybrid/MTS) for termination of dedicated lines of RE developers with Stage-II connectivity
- Establishment of 2x1500 MVA, 765/400 kV Lakadia PS along with associated ICT bays
- 2 nos. 765 kV line bays at Lakadia PS for Bhuj PS - Lakadia 765 kV D/c line
- 4 nos. 400 kV line bays at Lakadia PS for LILO of Bhachau – EPGL 400 kV D/c (triple) line at the substation
- 2 nos. of 765 kV line bays at Bhuj PS for Bhuj PS – Lakadia PS 765kV D/c line
- Conversion of existing 2x63 MVAR line reactors at Bhachau end of Bhachau – EPGL 400 kV D/c line to switchable line reactors along with associated reactor bays
- 1x330 MVA, 765 kV Bus reactor & 1x125 MVA, 420 kV Bus reactor at Lakadia PS along with associated reactor bays
- 2 nos. 765 kV line bays at Vadodara for Lakadia – Vadodara 765kV D/c line
- 2 nos. 765 kV line bays at Lakadia PS for Lakadia – Vadodara 765kV D/c line
- 330 MVA switchable line reactors at both ends of Lakadia – Vadodara 765 kV D/c line along with associated reactor bays at both ends
- 240 MVA switchable Line reactor at Lakadia PS end of Lakadia PS – Banaskantha PS 765kV D/c line along with reactor bays
- 2 nos. 765 kV line bays at Lakadia for Lakadia PS – Banaskantha PS 765 kV D/c line
- 2 nos. 765 kV line bays at Banaskantha for Lakadia PS – Banaskantha PS 765 kV D/c line
- Establishment of 2x1500 MVA (765/400 kV), 4x500 MVA (400/220 kV) Bhuj II PS (GIS) along with associated ICT bays
- 7 nos. 220 kV line bays at Bhuj II PS for interconnection of RE developers
- 4 nos. 765 kV line bays at Bhuj II PS for reconfiguration of Bhuj PS – Lakadia PS 765 kV D/c line so as to establish Bhuj II – Lakadia 765 kV D/c line as well as Bhuj – Bhuj II 765 kV D/c line
- 1x330 MVA, 765 kV & 1x125 MVA, 420 kV Bus reactor at Bhuj II PS along with reactor bays
- 240MVA line reactor (along with NGR of 400 Ohms) in each circuit of Bhuj-II – Lakadia 765kV D/c line at Bhuj-II PS end
- Establishment of 4x500 MVA, 400/220kV Jam Khambhaliya PS (GIS) along with associated ICT bays
- 1 no. 400 kV line bay & 7 nos. 220 kV line bays at Jam Khambhaliya PS for interconnection of RE developers
- 1x125 MVA, 420 kV Bus reactor at Jam Khambhaliya PS along with reactor bays

- 63 MVAR switchable Line Reactor at both ends of Lakadia - Jam Khambhaliya PS 400 kV D/c line along with reactor bays
- 2 nos. 400 kV line bays at Jam Khambhaliya PS end for line termination of extension of Essar – Lakadia / Bhachau 400 kV D/c (triple) line up to Jam Khambhaliya PS
- 1 nos. of 400 kV line bay at Solapur (PG) for St-II connectivity to M/s Toramba
- Establishment of 4x500MVA, 400/220kV ICTs at Lakadia (GIS) PS along with associated ICT bays
- 7 nos. 220 kV line bays at Lakadia PS for interconnection of RE developers
- Establishment of 2x500MVA, 400/220kV Kallam PS along with associated ICT bays
- 1x125MVAR, 420kV bus reactor at Kallam PS along with reactor bays
- 4 nos. line bays at Kallam PS for LILO of both circuits of Parli(PG) – Pune(GIS) 400kV D/c line at Kallam PS
- Conversion of 50MVAR fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable along with reactor bays.
- Provision of new 50MVAR switchable line reactor at Kallam PS end of Kallam – Pune (GIS) 400kV D/c line along with reactor bays.
- 4 nos. 220 kV line bays at Kallam PS for interconnection of RE developers
- Establishment of 400/220 kV, 2x500 MVA at Solapur PP (near Mohol) along with associated ICT bays
- 2 nos. 400kV line bays each at Solapur PP & Solapur (PG) for Solapur pooling point – Solapur (PG) 400 kV D/c line
- 1x125 MVAR, 420 kV Bus Reactor at Solapur PP along with reactor bays
- Corresponding Spare ICT / Reactors units

9. The status of RE Stage-II connectivity & LTA received/granted by CTU in Western Region is as under:

Sl.	Location	Stage-II Conn. Quantum (MW)	LTA applied/ granted (MW)	Firm LTA (with PPA)
1	Bhuj PS	4990	3839.5	2140
2	Jam Khambhaliya PS	600.6	0	0
3	Bhachau S/s	650	650	600
4	Solapur S/s	300	0	0
5	Bhuj - II PS	900	600*	0
	Total	7440.6	5089.5	2740

*Excluding 200MW LTA granted to subsidiaries of M/s Inox Wind whose Stage-II connectivity has been revoked.

10. The Petitioner has submitted that the present transmission system shall cater to the requirement for the existing Stage-II Connectivity (~7500MW) / LTA (~5200MW) applicants as well as to the future RE potential in Gujarat and Maharashtra. The estimated cost of the proposed transmission system is ₹ 5664 Crore.

11. The Petitioner has submitted that the details of the scheme of transmission system for Phase-I, its justification, estimated cost and its tariff impact, results of the system studies, study assumptions, stakeholder consultation/approval details etc. were published on the website of CTU on 23.4.2019. Petitioner has submitted that stakeholders (generators, STUs, RLDCs, SLDCs and Distribution Licensees) were also requested vide email dated 23.4.2019 to send their observations. In reply, GUVNL, POSOCO and Torrent Power have submitted their observations. The Petitioner has further submitted that observations from individuals have not been considered.

12. The Petitioner has submitted the observations of the stakeholders as under:

A. Comments of GUVNL (vide letter dated 10.6.2019)

(i) With up gradation of technology and competition, the rate of renewable power has come down significantly. With the steep reduction in RE power rates, it is imperative that the waiver in transmission charges and losses are withdrawn and the RE developer/ end user is made to pay the same.

(ii) In the State of Gujarat, STU is developing its own evacuation facility for the entire RE power tied up by GUVNL. At the same time, the instant transmission system has been planned by CTU for the evacuation of renewable power from potential RE zones in Western Region. Since Gujarat is going to bear the burden of entire transmission system being developed in the State of Gujarat

for its own use, the burden of PoC transmission charges should not be socialized putting additional huge burden on the host State which is not a beneficiary of the proposed transmission system.

(iii) The cost of the transmission system developed for evacuation of RE power should not be included in the total cost for PoC slab determination. Instead, there should be mechanism wherein such charges for such RE corridor is separately determined and is shared not by the existing DICs but only by the prospective RE power procurers who shall tie up such power.

(iv) The actual erection work of the proposed transmission system may be commenced only commensurate with the actual open access granted (5.9 GW as per PGCIL's statement of which only 1.5 GW is firm) and matching with the progress of generator to avoid setting up of huge redundant capacity which may get stranded.

B. Comments of Torrent Power (vide email to CTU dated 3.6.2019)

(i) Bid Process Coordinator i.e. REC Transmission Project Company Limited (RECTPCL) and PFC Consulting Limited (PFCCL) have initiated the process of Tariff Based Competitive Bidding (TBCB) for eight transmission projects and last date for submission of bid for five projects of RECTPCL is on 3.6.2019 and 4.6.2019 and that for three projects of PFCCL is on 4.6.2019. CTU has invited comments as part of the process for obtaining regulatory approval for these projects from this Commission, which is pending. It is mentioned in the Request for Proposal (RFP) of these projects that if the bidding process gets delayed,

the period for construction will get compressed and the Schedule Commercial Operation Date (SCOD) will not be changed. Therefore, the bid submission date should be kept after obtaining regulatory approval from the Commission. Further, in case of any delay in the bidding process including delay due to approval, SCOD should be modified to the same extent so that the time for construction remains the same.

- (ii) The construction time given for the eight projects is grossly inadequate and would lead to higher tariff as bidder would factor the implications of not being able to achieve the Scheduled COD.
- (iii) In case the Dependent Project is ready for commissioning and Independent Project is not available, it should be clarified as to who will compensate for the loss of revenue to the Bidder who has completed the project on time.

C. Comments of POSOCO (vide letter dated 7.6.2019)

- (i) CTU has provided the PSS/E base file used for transmission planning of potential wind and solar energy zones in WR (Phase II) and NR as agreed in the WR 2nd Standing Committee Meeting on Transmission held on 21.5.2019 and 3rd Standing Committee Meeting on Transmission held on 24.5.2019. Two files were given to POSOCO by CTU. Study result shown in first file were corresponding to potential wind energy zones in WR (Phase II) and in second file, potential solar energy zones in NR were considered. Difference in both the cases are mainly on account of the following:

- Region wise Load Generation balance;
- Different RE generation (RAPAR SEZ, Lakadia, Jamnagar, Radha Banas etc);

- Topology of the network (Some branches were not found in case or branch On/ Off status different);
- Parameters of the transmission lines;
- Machine status (some machines were not modelled in once case or machine On/ Off status different)

(ii) In RE generator modelling, whole capacity is modelled in one single generator.

There is no equivalent model representation. Most of the RE plants are expected to get connected at 220 kV or below level. Cable/ Line R and X for equivalent model is required to be estimated. In absence of 220 kV level modelling, fault level strength and network connectivity are not known.

(iii) A total of 13 STATCOM devices are planned/ under operation for installation across the Indian grid. However, in base files, 29 STATCOM devices have been modelled. The extra STATCOMS have been placed in both ends of HVDC terminal with +/- 9999 VAR limits.

(iv) All the studies were done considering high RE scenario where power from RE pooling station in Western, Northern and Southern Region to Central India and power flows towards East and North East part of India. Low RE scenario has not been studied at planning stage, which can lead to multiple line opening to control over voltage and reversal of power.

13. With regard to the contention raised by GUVNL pertaining to withdrawal of waiver of transmission charges and losses for RE developers and formulation of new mechanism for recovery of transmission charges for the proposed RE system, the Petitioner has clarified that the above said aspects are in accordance with the Govt. of India order and prevailing regulations of the Central Commission. Further, with respect to the implementation of transmission system commensurate with the actual open

access granted, the Petitioner has clarified that as decided in the 3rd Meeting of ECT held on 21.12.2018, the various transmission elements are to be taken up as per progress of connectivity/ LTA application.

14. The Petitioner has submitted that comments of Torrent Power pertaining to SCOD of the Projects, extension of bid submission date etc. have been forwarded to CEA/ BPC (RECTPL and PFCCL) for further necessary action and similarly, for the consideration of comments forwarded by POSOCO a joint study meeting was held amongst CEA, POSOCO, Petitioner and STUs on 10th, 20th and 21st June, 2019 and the concerns of POSOCO have been suitably addressed.

REZ Phase II and Transmission system for providing immediate Connectivity to Dholera UMSPP

15. The details of SEZs and WEZs in Western Region under Phase-II as per transmission system planning is as under:

State	Taluk/Tehsil	Pooling Station/ S/s Name	Phase-II	
			Wind	Solar
Gujarat				
Kutch	Rapar	Kutch (Rapar) SEZ PP (3GW)		3
Banaskantha	Vav /Tharad	Radhanesda PS		2.5
Jamnagar	Lalpur	Lalpur (Jamnagar) SEZ PP		2.5
Dwarka	Jam Khambhaliya	Jam Khambhaliya PS	0.5	
		Subtotal	0.5	8
Maharashtra				
Solapur		Solapur (PG) (1GW) Solapur PP (1.5GW)		1.5
Wardha		Wardha SEZ PP		2.5
		Subtotal	0	4
MP				
Rajgarh		Rajgarh SEZ PP (near Agar Malwa)		2.5
Khandwa		Khandwa SEZ PP		2.5
		Subtotal	0	5
		WR Total	0.5	17

16. The transmission scheme pertaining to Phase-II and immediate connectivity to Dholera UMSP is as under:

Transmission Lines:

A. REZ Phase II

- Radhanesda PS - Sankhari 400 kV D/c line (Twin HTLS)
- Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line
- LILO of Lakadia – Banaskantha 765kV D/c line at Kutch (Rapar) SEZ PP
- LILO of Pirana(T) – Pirana(PG) 400kV D/c line at Ahmedabad with twin HTLS along with reconductoring of Pirana – Pirana(T) D/c line with twin HTLS conductor
- Ahmedabad – Indore 765 kV D/c line
- Lalpur (Jamnagar) SEZ PP - Rajkot 400 kV 2xD/c line (Twin HTLS)
- Lalpur (Jamnagar) SEZ PP – Jam Khamabliya PS 400 kV D/c line (Twin HTLS)
- LILO of CGPL- Jetpur 400 kV D/C(triple) at Rajkot
- Rajkot – Ahmedabad 400 kV D/c line (Twin HTLS)
- LILO of Wardha - Warora Pool 400 kV D/c (Quad) line at Wardha SEZ PP
- Rajgarh SEZ PP -Bhopal (Sterlite) 400 kV D/c line (HTLS)
- Rajgarh SEZ PP – Shujalpur 400 kV D/c line (HTLS)
- Khandwa SEZ PP - Khandwa Pool 2XD/c line (Twin HTLS)

B. DHOLERA UMSP Immediate Connectivity System

- LILO of Lakadia – Vadodara 765 kV D/c line at Dholera PS
- Dholera PS – Ahmedabad 765kV D/c line

Substation

A. REZ Phase II

- Establishment of 765/400 kV, 3x1500 MVA & 400/220kV, 6x500MVA Kutch(Rapar) SEZ Pooling Point
- Augmentation of transformation capacity at Lakadia PS by 1x1500MVA, 765/400kV and 4x500MVA, 400/220kV ICTs for interconnection with SEZ
- Augmentation of transformation capacity at Radhanesda PS by 5X500 MVA, 400/220kV ICTs for interconnection with SEZ
- Establishment of 765/400kV, 2X1500 MVA S/s at suitable location near Ahmedabad (towards eastern side of Ahmedabad)
- Establishment of 400/220 kV, 5X500 MVA Lalpur (Jamnagar) SEZ PP
- Establishment of 400kV switching station at Rajkot
- Augmentation of 400/220 kV, Solapur PP with 1x500MVA, 400/220kV transformer
- Establishment of 400/220 kV, 5X500 MVA Wardha SEZ PP

- Establishment of 400/220 kV, 5X500 MVA Rajgarh SEZ PP (near Agar Malwa)
- Establishment of 400/220 kV, 5X500 MVA Khandwa SEZ PP
- Augmentation of 1X1500 MVA, 765/400kV ICT at Khandwa Pool (Sterlite)
- 220 kV line bays for interconnection of solar projects(33 nos for Gujarat REZs, 13 nos. for Maharashtra SEZs & 16 nos for MP SEZs)
- Associated Reactive Compensation (Line + Bus) & Spare reactors and transformers

B. DHOLERA UMSP Immediate Connectivity System

- Establishment of 765/400kV, 3x1500MVA Dholera Pooling station
- Associated Reactive Compensation (Line + Bus) & Spare reactors and transformers

17. For the Phase II SEZ, Joint Study Meetings amongst CEA, the Petitioner and POSOCO were held on 24.4.2019 and 25.4.2019 in order to identify the broad transmission schemes to cater to the balance REZs in WR. The same were subsequently discussed in the 2nd meeting of Western Region Standing Committee on Transmission (WRSCT) held on 21.5.2019 wherein the members broadly agreed with the transmission system for 17.5 GW RE projects in WR under Phase-II Subsequently, joint studies among CEA, the Petitioner, POSOCO and STUs were carried out on 10.6.2019, 20.6.2019 and 21.6.2019 in order to address the concerns of various stakeholders. During the joint studies with the stakeholders, an elaborate exercise was carried out focusing on the RE-rich States viz. Gujarat, Maharashtra and Madhya Pradesh in which the network topology, load-generation balance, generation dispatches during high RE period, retirement of old conventional generation projects, etc. were carried out.

18. For Dholera UMSP Immediate Connectivity System 4000 MW would be developed by Solar Energy Corporation of India (SECI) for which the land would be provided on long term lease basis by Gujarat Power Corporation Limited (GPCL)/

Dholera Special Investment Region Development Authority (SIRDA) and appropriate agreement would be executed between SECI and GPCL/Dholera SIRDA. The 4 GW capacity is in addition to 66.5 GW RE capacity (50GW solar & 16.5 GW wind) identified by the MNRE constituted sub-committee. In the 43rd WRSCM held on 11.5.2018, it was decided that GPCL shall apply for both connectivity and LTA for its Dholera Ultra Mega Solar Park at the earliest in view of anticipated commissioning schedule of December 2019, December 2020 and December 2021 for Phase I (1000 MW), Phase II (2000 MW) and Phase III (2000 MW) of the project respectively. The matter was again deliberated in the 2nd WRSCT held on 21.5.2019 wherein SECI requested to finalize the evacuation system for Dholera UMSP so that implementation time of evacuation system could be estimated and other activities for implementation of the solar park could be initiated to align it with timeframe of evacuation system. After deliberations in the meeting, the transmission system for providing immediate connectivity to Dholera UMSP was discussed and the following system was broadly agreed:

- a) Power injection from the Solar Park may be at 400kV level.
- b) Establishment of 765/400kV Dholera Pooling station
- c) LILO of Lakadia – Vadodara 765 kV D/c line at Dholera UMSP
- d) Dholera UMSP – Ahmedabad 765kV D/c line

19. Further, the Transmission scheme for SEZ Phase II and Dholera UMSP was discussed and technically agreed in 38th WRPC on 27th - 28th June 2019. During the 38th WRPC meeting, while according technical approval of the Transmission Schemes, it was deliberated that there should not be any commercial burden on DISCOMs on account of implementing the above technically recommended schemes.

Submissions during Hearing of the Petition:

20. The Petition was admitted on 23.7.2019 and notices were issued to the Respondents.

21. Petitioner vide affidavit dated 20.8.2019 has submitted that some modification were approved in “Transmission System for Evacuation of Power from potential solar and wind energy zones in WR – Phase I and II” vide corrigendum dated 5.8.2019 issued by CEA to the minutes of 2nd WRSCT held on 21.5.2019 based on the request for corrigendum vide letters dated 3.7.2019, 4.7.2019 and 1.8.2019 from MPPTCL, GETCO and CTU respectively. The following modification were issued by CEA vide corrigendum dated 5.8.2019:

Para/ item as recorded in the MoM of 2 nd WRSCT (issued on 29.6.2019)	Modified/ Corrected para/item (issued on 5.8.2019)
Changes agreed in REZ Phase I scheme	
<p>Sl. No. 25.14 -----</p> <p>4. Transmission system associated with RE generations at Bhuj –II, Dwarka & Lakadia: -----</p> <p>3. 240MVA_r switchable Line reactor at Lakadia PS end of Lakadia PS – Banaskantha PS 765kV D/c line</p> <p>a. POWERGRID to provide space for 2 nos of 765kV bays at Banaskantha S/s for Lakadia – Banaskantha 765kV D/c line</p> <p>b. Developer of Lakadia S/s to provide space for 2 nos of 765kV bays and space for 2 nos. of 240MVA_r switchable line reactors at Lakadia for Lakadia – Banaskantha 765kV D/c line</p>	<p>Sl. No. 25.14 -----</p> <p>4. Transmission system associated with RE generations at Bhuj –II, Dwarka & Lakadia: -----</p> <p>3. 240MVA_r switchable Line reactor (along with 1x80 MVA_r, 765 kV, 1ph. spare unit) at <u>Banaskantha PS</u> end of Lakadia PS – Banaskantha PS 765kV D/c line)</p> <p>a. POWERGRID to provide space for 2 nos of 765kV bays <u>and space for 2 nos. of 240 MVA_r switchable line reactors at Banaskantha end</u> for Lakadia – Banaskantha 765kV D/c line</p> <p>b. Developer of Lakadia S/s to provide space for 2 nos of 765kV bays at Lakadia for Lakadia – Banaskantha 765kV D/c line</p> <p>Reason for proposed modification: After the proposed LILO of Lakadia – Banaskantha 765kV D/c line at Rapar (under REZ Phase-II), the Rapar – Banaskantha 765kV line section</p>

Para/ item as recorded in the MoM of 2 nd WRSCT (issued on 29.6.2019)	Modified/ Corrected para/item (issued on 5.8.2019)
<p>8. Name of Scheme: Transmission System for providing connectivity to RE projects in Gujarat [Lakadia (2000MW)]:</p> <p>1. Establishment of 4x500MVA, 400/220kV ICTs at Lakadia PS (GIS)</p> <p>4x500MVA, 400/220kV 400kV ICT bay-4 220kV ICT bay- 4 220kV line bays -7</p>	<p>(~150km) shall remain uncompensated whereas Rapar – Lakadia 765kV line section (~70-80km) shall become over-compensated. In view of the above, it is proposed that the 240MVA switchable LR at Lakadia end of Lakadia – Banaskantha 765kV D/c line may be implemented at Banaskantha end of Lakadia – Banaskantha 765kV D/c line (instead of Lakadia end).</p> <p>-----</p> <p>8. Name of Scheme: Transmission System for providing connectivity to RE projects in Gujarat [Lakadia (2000MW)]:</p> <p>1. Establishment of 4x500MVA, 400/220kV ICTs at Lakadia PS <u>(400kV AIS and 220kV GIS)</u></p> <p>4x500MVA, 400/220kV 400kV ICT bay-4 (AIS) 220kV ICT bay- 4 (GIS) 220kV line bays -7 (GIS)</p> <p>Reason for proposed modification: 765/400kV Lakadia PS is being developed under WRSS-21 Part-A as AIS. <u>Accordingly, 400 kV ICT bays may be developed as AIS and 220 kV bays (for ICT's and lines) may be developed as GIS.</u></p>
Changes agreed in REZ Phase II scheme	
<p>26.16 A. Gujarat REZs [8GW Solar + 0.5GW Wind]</p> <p>(a) Kutch (Rapar) SEZ 5000 MW (3000MW near Rapar and 2000MW near</p>	<p>26.16 A. Gujarat REZs [8GW Solar + 0.5GW Wind]</p> <p>(a) Kutch (Rapar) SEZ 5000 MW (3000MW near Rapar and 2000MW near Lakadia (S/s</p>

Para/ item as recorded in the MoM of 2 nd WRSCT (issued on 29.6.2019)	Modified/ Corrected para/item (issued on 5.8.2019)
<p>Lakadia (S/s augmentation at Lakadia already planned in the 1st WRSCT)) & Banskantha SEZ 2500 MW</p> <p>Estimated cost: ~Rs. 5250Cr.</p> <p>-----</p> <p>(ii) Augmentation of transformation capacity at Lakadia PS by 1x1500MVA, 765/400kV and 4x500MVA, 400/220kV ICTs for interconnection with SEZ</p> <p>-----</p> <p>(v) Radhanesda PS - Sankhari 400 kV D/c line (Twin HTLS)</p>	<p>augmentation at Lakadia already planned in the 1st WRSCT)) & Banskantha SEZ 2500 MW</p> <p>Estimated cost: ~Rs. 5250Cr.</p> <p>-----</p> <p>(ii) Augmentation of 765/400 kV transformation capacity at Lakadia PS by 1x1500MVA, 765/400kV ICT and augmentation of 400/220 kV transformation capacity by 4x500MVA, 400/220kV ICTs <u>(400kV AIS and 220kV GIS) for interconnection with SEZ in case of injection from RE projects are at 220 kV level at Lakadia</u></p> <p>Reason for proposed modification: The augmentation of 400/220 kV transformation capacity to be taken up only in case of injection from RE projects are at 220 kV level at Lakadia.</p> <p>-----</p> <p><u>(v) Radhanesda PS - Banaskantha 400 kV D/c line (Twin HTLS) and Banaskantha – Zerda 400 kV D/c line</u></p> <p>Reason for proposed modification: The required changes are based on the request of GETCO to reduce the loadings of their Intra State Transmission Lines</p>

22. The Petitioner has submitted that with the modification, the revised scope of works of the WR REZ Phase-I and Phase-II schemes is as given below:

REZ Phase I

Transmission Lines:

- Bhuj PS – Lakadia PS 765 kV D/c line
- LILO of Bhachau – EPGL 400 kV D/c (triple) line at Lakadia PS

- Lakadia – Vadodara 765 kV D/c line
- Lakadia PS – Banaskantha PS 765 kV D/c line
- Reconfiguration of Bhuj PS – Lakadia PS 765kV D/c line so as to establish Bhuj II – Lakadia 765 kV D/c line as well as Bhuj – Bhuj II 765kV D/c line
- Extension of Essar – Lakadia/Bhachau 400kV D/c (triple) line up to Jam Khambhaliya PS
- LILO of both circuits of Parli(PG) – Pune(GIS) 400kV D/c line at Kallam PS
- Solapur pooling point – Solapur (PG) 400 kV D/c line (twin HTLS)

Substation:

- Additional 1x500 MVA 400/220 kV (9th) ICT, for injection from any additional RE project (other than the above 4000 MW) in existing Bhuj PS with associated 400 kV GIS bay and 220 kV hybrid/MTS bay.
- 3 nos. of 220 kV line bays(hybrid/MTS) for termination of dedicated lines of RE developers with Stage-II connectivity
- Establishment of 2x1500 MVA, 765/400 kV Lakadia PS along with associated ICT bays
- 2 nos. 765 kV line bays at Lakadia PS for Bhuj PS - Lakadia 765 kV D/c line
- 4 nos. 400 kV line bays at Lakadia PS for LILO of Bhachau – EPGL 400 kV D/c (triple) line at the substation
- 2 nos. of 765 kV line bays at Bhuj PS for Bhuj PS – Lakadia PS 765kV D/c line
- Conversion of existing 2x63 MVAR line reactors at Bhachau end of Bhachau – EPGL 400 kV D/c line to switchable line reactors along with associated reactor bays
- 1x330 MVAR, 765 kV Bus reactor & 1x125 MVAR, 420 kV Bus reactor at Lakadia PS along with associated reactor bays
- 2 nos. 765 kV line bays at Vadodara for Lakadia – Vadodara 765kV D/c line
- 2 nos. 765 kV line bays at Lakadia PS for Lakadia – Vadodara 765kV D/c line
- 330 MVAR switchable line reactors at both ends of Lakadia – Vadodara 765 kV D/c line along with associated reactor bays at both ends
- 240 MVAR switchable Line reactor at Banaskantha PS end of Lakadia PS – Banaskantha PS 765kV D/c line along with reactor bays

- 2 nos. 765 kV line bays at Lakadia for Lakadia PS – Banaskantha PS 765 kV D/c line
- 2 nos. 765 kV line bays at Banaskantha for Lakadia PS – Banaskantha PS 765 kV D/c line
- Establishment of 2x1500 MVA (765/400 kV), 4x500 MVA (400/220 kV) Bhuj II PS (GIS) along with associated ICT bays
- 7 nos. 220 kV line bays at Bhuj II PS for interconnection of RE developers
- 4 nos. 765 kV line bays at Bhuj II PS for reconfiguration of Bhuj PS – Lakadia PS 765 kV D/c line so as to establish Bhuj II – Lakadia 765 kV D/c line as well as Bhuj – Bhuj II 765 kV D/c line
- 1x330 MVAR, 765 kV & 1x125 MVAR, 420 kV Bus reactor at Bhuj II PS along with reactor bays
- 240MVAR line reactor (along with NGR of 400 Ohms) in each circuit of Bhuj-II – Lakadia 765kV D/c line at Bhuj-II PS end
- Establishment of 4x500 MVA, 400/220kV Jam Khambhaliya PS (GIS) along with associated ICT bays
- 1 no. 400 kV line bay & 7 nos. 220 kV line bays at Jam Khambhaliya PS for interconnection of RE developers
- 1x125 MVAR, 420 kV Bus reactor at Jam Khabhaliya PS along with reactor bays
- 63 MVAR switchable Line Reactor at both ends of Lakadia - Jam Khambhaliya PS 400 kV D/c line along with reactor bays
- 2 nos. 400 kV line bays at Jam Khambhaliya PS end for line termination of extension of Essar – Lakadia / Bhachau 400 kV D/c (triple) line up to Jam Khambhaliya PS
- 1 nos. of 400 kV line bay at Solapur (PG) for St-II connectivity to M/s Toramba
- Establishment of 4x500MVA, 400/220kV ICTs at Lakadia PS (400kV AIS and 220kV GIS)
- 7 nos. 220 kV GIS line bays at Lakadia PS for interconnection of RE developers
- Establishment of 2x500MVA, 400/220kV Kallam PS along with associated ICT bays
- 1x125MVAR, 420kV bus reactor at Kallam PS along with reactor bays
- 4 nos. line bays at Kallam PS for LILO of both circuits of Parli(PG) – Pune(GIS) 400kV D/c line at Kallam PS

- Conversion of 50MVAR fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable along with reactor bays.
- Provision of new 50MVAR switchable line reactor at Kallam PS end of Kallam – Pune (GIS) 400kV D/c line along with reactor bays.
- 4 nos. 220 kV line bays at Kallam PS for interconnection of RE developers
- Establishment of 400/220 kV, 2x500 MVA at Solapur PP (near Mohol) along with associated ICT bays
- 2 nos. 400kV line bays each at Solapur PP & Solapur (PG) for Solapur pooling point – Solapur (PG) 400 kV D/c line
- 1x125 MVAR, 420 kV Bus Reactor at Solapur PP along with reactor bays
- Corresponding Spare ICT / Reactors units

REZ Phase II

Transmission Lines:

- Radhanesda PS - Banaskantha 400 kV D/c line (Twin HTLS) and Banaskantha – Zerda 400 kV D/c line*
- Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line
- LILO of Lakadia – Banaskantha 765kV D/c line at Kutch (Rapar) SEZ PP
- LILO of Pirana(T) – Pirana(PG) 400kV D/c line at Ahmedabad with twin HTLS along with reconductoring of Pirana – Pirana(T) D/c line with twin HTLS conductor
- Ahmedabad – Indore 765 kV D/c line
- Lalpur (Jamnagar) SEZ PP - Rajkot 400 kV 2xD/c line (Twin HTLS)
- Lalpur (Jamnagar) SEZ PP – Jam Khamabliya PS 400 kV D/c line (Twin HTLS)
- LILO of CGPL- Jetpur 400 kV D/C(triple) at Rajkot
- Rajkot – Ahmedabad 400 kV D/c line (Twin HTLS)
- LILO of Wardha - Warora Pool 400 kV D/c (Quad) line at Wardha SEZ PP
- Rajgarh SEZ PP -Bhopal (Sterlite) 400 kV D/c line (HTLS)
- Rajgarh SEZ PP – Shujalpur 400 kV D/c line (HTLS)
- Khandwa SEZ PP - Khandwa Pool 2XD/c line (Twin HTLS)

*In place of earlier proposed Radhanesda PS - Sankhari 400 kV D/c line (Twin HTLS)

Substation:

- Establishment of 765/400 kV, 3x1500 MVA & 400/220kV, 6x500MVA Kutch(Rapar) SEZ Pooling Point
- Augmentation of 765/400 kV transformation capacity at Lakadia PS by 1x1500MVA, 765/400kV ICT and augmentation of 400/220 kV transformation capacity by 4x500MVA, 400/220kV ICTs (400kV AIS and 220kV GIS) for interconnection with SEZ in case of injection from RE projects are at 220 kV level at Lakadia
- Augmentation of transformation capacity at Radhanesda PS by 5X500 MVA, 400/220kV ICTs for interconnection with SEZ
- Establishment of 765/400kV, 2X1500 MVA S/s at suitable location near Ahmedabad (towards eastern side of Ahmedabad)
- Establishment of 400/220 kV, 5X500 MVA Lalpur (Jamnagar) SEZ PP
- Establishment of 400kV switching station at Rajkot
- Augmentation of 400/220 kV, Solapur PP with 1x500MVA, 400/220kV transformer
- Establishment of 400/220 kV, 5X500 MVA Wardha SEZ PP
- Establishment of 400/220 kV, 5X500 MVA Rajgarh SEZ PP (near Agar Malwa)
- Establishment of 400/220 kV, 5X500 MVA Khandwa SEZ PP
- Augmentation of 1X1500 MVA, 765/400kV ICT at Khandwa Pool (Sterlite)
- 220 kV line bays for interconnection of solar projects(33 nos for Gujarat REZs, 13 nos. for Maharashtra SEZs & 16 nos for MP SEZs)
- Associated Reactive Compensation (Line + Bus) & Spare reactors and transformers

23. Part of REZ Phase I system, REZ Phase II complete system and Dholera immediate connectivity system was subsequently also discussed in the 4th NCT meeting held on 31.7.2019. The Estimated cost and impact on tariff for next five years of the instant transmission system for REZ (Phase –I and II) and Dholera UMSP is as under:

Sl. No.		REZ Phase I	REZ Phase II	Dholera
1.	Estimated Cost	Rs. 5664 Cr.	Rs. 8650 Cr.	Rs. 1800 Cr.
2.	Estimated impact on tariff for next 5 years	963 Cr. /year*	1776.5 Cr. /year*	
3.	Power Transfer Capacity	9.5 GW	21.5 GW	
4.	Cost of energy transferred	Rs. 4873 Cr.**	Rs. 9472 Cr.**	
5.	Tentative transmission tariff	Rs. 0.49 /Unit	Rs. 0.47 /Unit	
6.	Annual Energy Transferred	19491 MU	37887 MU	

*Considering first year tariff @ 17%

**Assumption: Solar CUF=20%, Wind CUF=25%, Rate of Energy=Rs. 2.5 per Unit

24. The Commission during the hearing dated 21.8.2019 directed the petitioner to submit the following information:

- a) Details of LTA granted till date;
- b) Current status of the associated RE generation corresponding to LTA application received; and
- c) Comprehensive implementation program

25. In compliance to the Commission's direction vide RoP dated 21.8.2019, the Petitioner vide its affidavit dated 29.8.2019 has submitted as under:

- a) With regard to details of LTA granted till date, Petitioner has submitted that following LTAs for 1340MW have been granted on WR REZ Phase-I Part System:

Sl. No.	Name of Applicant (Organization)	RE Pooling Station	Date from which LTA required	LTA Granted (MW)	LTA Details
1	Adani Green Energy (MP) Ltd. (AGEMPL - Davapar)	Bhuj PS	18/01/20	75	MSEDCL
2	Adani Green Energy (MP) Ltd. (AGEML- Dayapar / Ratadiya)	Bhuj PS	24/11/19	250	WR (Target): 150MW Goa: 50MW (Firm) ER (Target): 50MW

Sl. No.	Name of Applicant (Organization)	RE Pooling Station	Date from which LTA required	LTA Granted (MW)	LTA Details
3	Adani Green Energy (MP) Limited	Bhuj PS	29/02/20	300	MSEDCL
4	Torrent Power Limited	Bhuj PS	31/03/20	115	NR:115MW (Target)
5	Adani Green Energy Ltd	Bhuj-II PS(GIS)	22/07/20	300	ER- 125MW (Target) NR- 175MW (Target)
6	Netra Wind Pvt Ltd (Alfanar Company)	Bhuj-II PS(GIS)	31/03/20	300	NR (Target)
			Total	1340	

b) With regard to Current status of the associated RE generation corresponding to LTA application received, Petitioner has submitted the Current Status of RE generation as per updates received from the applicants in the 24th WR JCC meeting held on 25.6.2019 as below:

Sl. No.	Applicant Name	Quantum of Stage-II granted (MW)	S/s at which Stage-II granted	Commissioning Schedule	Section 68	Dedicated line status			Status of Financial closure	Land Required for generation (Acres)	Land Acquired for generation (Acres)	Date of award of Pooling Station
						No. of Foundations (Total/Completed)	No. of Tower Erections (Total/Completed)	Stringing (ckm) (Total/Completed)				
1	Adani Green Energy (MP) Limited	75	Bhuj PS	31.12.2019	Obtained	201/193	201/188	58/40	Achieved	218.75 (for total 175MW)	218.75	1/03/2018
2	Adani Green Energy (MP) Limited	250	Bhuj PS	Progressively from 01.11.2019	Obtained	201/193	201/188	58/40	Achieved	312.5	312.5	1/03/2018
3	Adani Green Energy (MP) Limited	300	Bhuj PS	29.2.2020 (As per bid)	Obtained	201/193	201/188	58/40	Not achieved	375	150	1/03/2018

Sl. No	Applicant Name	Quantum of Stage-II granted (MW)	S/s at which Stage-II granted	Commissioning Schedule	Section 68	Dedicated line status			Status of Financial closure	Land Required for generation (Acres)	Land Acquired for generation (Acres)	Date of award of Pooling Station
						No. of Foundations (Total/Completed)	No. of Tower Erections (Total/Completed)	Stringing (ckm) (Total/Completed)				
4	Torrent Power Limited	115	Bhuj PS	Work in Progress Delay in project execution due to change in scenario of land acquisition of revenue land in Gujarat. Working closely with the EPC contractor & commissioning dates are being firmed up	Obtained	192/102	192/102	64 / 30.647	Not achieved	144	59.3	Pending
5	Adani Green Energy	300	Bhuj-II PS	22.7.2020 (As per bid)	Not Applied	Not yet awarded			Not achieved	375	0	Pending
6	Netra Wind Private	300	Bhuj-II PS	21.07.2020	Not Applied	Not yet awarded			Not Achieved	338	0	Pending

c) With regard to Comprehensive implementation program, Petitioner has submitted as below:

• WR REZ Phase-I Transmission System:

Part	Name of scheme	Implementation schedule
A	Additional 1x500 MV A 400/220 kV (9th) ICT, for injection from any additional RE project (beyond 4000 MW) at Bhuj PS	ICT schedule: On injection of additional RE project (beyond 4000MW) at Bhuj PS 220kV bays schedule: Jan-20 to Apr-20 or as per progress of Stage-II Connectivity grantees
B	Western Region Strengthening Scheme-21 (WRSS-21) Part A	Dec-20

Part	Name of scheme	Implementation schedule
C	Western Region Strengthening Scheme-21 (WRSS-21) Part B	Dec-20
D	Transmission system associated with RE generations at Bhuj II, Dwarka & Lakadia	Jun-21
E	Transmission System for providing connectivity to RE projects at Bhuj II (2000 MW) in Gujarat	Dec-20
F	a) Jam Khambhaliya PS for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat) b) Interconnection of Jam Khambhaliya PS for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat)	Mar-21
G	400 kV line bay at Solapur PS for St-II connectivity to M/s Toramba Renewable Energy Pvt. Ltd.	Jul-20 or as per progress of Stage-II Connectivity grantee (TREPL)
H	Transmission System for providing connectivity to RE	Dec-21

- WR REZ Phase-II Transmission System: The 4th NCT in its meeting held on 31.07.2019 has recommended the implementation time-frame for the entire WR REZ Phase-II Transmission System as Dec-21. Final decision in this regard shall be taken in the ECT forum.
- Transmission system for providing immediate connectivity to Dholera UMSP: SECI vide e-mail dated 27/08/2019 has intimated that award for 1st Phase (2000MW) of Dholera UMSP under ISTS is expected by Feb'20 with a commissioning schedule of Dec'21. The 4th NCT in its meeting on 31.7.2019 has recommended the implementation time-frame of Dec-21 or SCOD of RE project whichever is later for

the Transmission system for providing immediate connectivity to Dholera UMSP. Final decision in this regard shall be taken in the ECT forum.

26. With regard to status of consultation with stakeholders for WR REZ Phase-II scheme as well as Transmission system for immediate connectivity to Dholera UMSP, the details of the schemes, its justification, estimated cost and its tariff impact, results of the system studies, study assumptions, stakeholder consultation/approval details etc. were published on the CTU website on 5.7.2019 and the observations thereon, if any, were to be submitted by 20.8.2019. No observations/ comments have been received by the Petitioner regarding the same.

27. Srijan Energy Systems Private Limited (SESPL) vide affidavit dated 2.8.2019 has submitted that it has filed petition before this Commission, wherein the basic issue under consideration is, Whether SESPL is entitled to revised LTA or whether the LTA dated 11.7.2017 granted to it before the notification of the Detailed Procedure 2018 continues to be valid. Despite that, PGCIL is continuing to treat the old LTA as valid and acting as if this Commission has already dismissed the revised LTA Petition. PGCIL in the present petition has inter alia prayed for grant of approval for recovery of transmission charges of the assets, belonging to SESPL's old LTA dated 11.7.2017. In fact, by doing so, PGCIL is seeking to pre-judge and prevent this Commission from considering the merits of the Revised LTA Petition.

28. Petitioner has submitted that GETCO vide letter dated 16.8.2019 has provided certain comments on the corrigendum of the 2nd WRSCT issued by CEA on 5.8.2019 as below:

- Concerns of Gujarat STU are ignored while finalizing ISTS schemes planned under Phase-II.
- Major RE power addition for State DISCOMs will be through GUVNL bids and will be integrated with intra-State network only, barring few capacities like Radhanesda/ Harshad solar park. All these RE capacity will be located in Saurashtra, Kutch & North Gujarat region. Therefore, any additional power flow from planned ISTS corridors to intra-State network is not agreeable to Gujarat.
- As per case study submitted vide email dated 13.8.2019, huge powerflow is observed from ISTS corridors to intra-State corridors, on account of LILO of CGPL - Jetpur 400 KV D/C (triple) at Rajkot & 400 KV D/C Banaskantha - Zerda line over and above existing and planned ISTS-STU interconnections. A sample power flow difference for few elements is as under:

Sl. No.	Name of Transmission Line	Power flow(MW) in Basecase	Power flow (MW) as per GETCO suggestion
1	400 KV D/C Banaskantha - Zerda line (new line)	2 x 537 MW	
2	400 KV S/C Banaskantha - Zerda line (already planned)	537 MW	849 MW
3	400 KV D/C Banaskantha - Sankhari line	2 x 444 MW	2 x 552 MW
		2499 MW	1953 MW
4	400 KV D/C Hadala - Shapar line	2 x 633 MW	2 x 578 MW
5	400 KV S/C Jetpur - Hadala line	547 MW	356 MW
6	400 KV S/C Jetpur - Amreli line	571 MW	400 MW
7	400 KV S/C Chorania - Kasor line	776 MW	744 MW
8	400 KV S/C Chorania - Asoj line No. 2	550 MW	482 MW
9	400 KV D/C Fedra - Kasor line	2 x 1103 MW	2 x 1045 MW

- Further, in submitted case study, it is observed that 765 KV D/C Lakadia - Vadodara line is kept in sendee even after planned scheme of Dholera Solar park i.e. LILO of 765 KV D/C Lakadia - Vadodara line at Dholera solar park which may have resulted in reduced power flow on 765 KV Banaskantha - Vadodara corridors (suggested by GETCO).
- As per inputs from engineering department of GETCO, there is space constraint at 400 KV Zerda substation to accommodate 400 KV D/C Banaskantha - Zerda line. LILO of CGPL - Jetpur 400 KV D/C (triple) at Rajkot & Banaskantha - Zerda 400 KV D/C line should be dropped. Alternative schemes should be planned in a way to avoid any impact on STU elements on account of planned ISTS corridors.
- Alternatively, instead of planning additional 400 KV corridors to address loading of existing/ planned lines and to avoid ISTS powerflow through STU network, opening of few 400 KV interconnections may be thought of to divert power flow on 765 KV corridors planned under ISTS schemes.
- Above inputs need to be considered before finalization of transmission scheme planned under Phase-II for 17.5 GW RE in WR and MoM of 2nd WRSCT meeting should be amended accordingly. Also, a timeline shall be mentioned in MoM to address loading of other STU elements in Gujarat.

29. Petitioner has further submitted vide affidavit dated 1.10.2019 in regard to GETCO's letter dated 16.8.2019 as follows:

- a) CEA vide letter dated 29.8.2019 has given detailed justifications for the transmission system mentioned in the corrigendum of the 2nd WRSCT based on load flow studies as well as Grid support (w.r.t. short circuit strength) requirement for REZs in Jam Khambhaliya & Jamnagar. With regard to the issue of space

constraint at 400kV Zerda substation, it has been clarified that GIS bays may be planned at Zerda substation to reduce requirement of space.

b) In response to the above letter, GETCO vide letter dated 11/09/2019 has raised concerns regarding additional power flow from ISTS to intra-State network and that the proposed transmission schemes under Phase-II in WR should not cause any technical & commercial impact on Gujarat Grid. In light of the above, the Commission may consider the instant petition on its merits on urgent basis and grant Regulatory Approval for taking up implementation of identified transmission system.

30. SECI vide letter dated 26.8.2019 has informed that they are targeting bidding for 28GW RE capacity (Phase-I) for the year 2019-20 & 38.5GW RE capacity (Phase-II) for the year 2020-21 for which the scheduled COD for RE projects shall be 18 months from date of signing of PPA. Further, SECI shall be intimating CTU regarding award of SECI bids corresponding to REZ Phase-I & Phase-II systems from time to time.

31. The Petitioner vide affidavit dated 1.10.2019 has submitted the revised phase-wise scheme as under:

a) As per the inputs from MNRE/SECI a meeting was held in the CEA on 30.8.2019 for prioritization of the already identified transmission system with the 66.5 GW potential RE capacity. During the meeting it was informed that the generation capacity is scheduled to come up in phases by Dec, 2020, Dec, 2021 and beyond 2021. The region wise details of phasing of 66.5 GW potential is as given below:

Region	Capacity (GW) by Dec, 2020		additional capacity (GW) by Dec, 2021		additional capacity (GW) beyond Dec, 2021		Total (GW)
	Wind	Solar	Wind	Solar	Wind	Solar	
NR		8.9		11.1			20.0
WR	3.5		2.0	2.5	2.5	17.5	28.0
SR			5.5	5.0	3.0	5.0	18.5
Total	3.5	8.9	7.5	18.6	5.5	22.5	66.5

b) Out of the 66.5 GW RE generations potential, details of 28 GW RE generation potential planned to be implemented in Western Region as per the area and time-frame are as below:

Potential locations in WR	Capacity (in GW) by Dec'20		Capacity (in GW) by Dec'21		Capacity (in GW) beyond Dec'21		Total
	Wind	Solar	Wind	Solar	Wind	Solar	
Gujarat							
Bhuj	2.0						2.0
Dwarka	1.5 [^]				0.5		2.0
Lakadia			2.0			2.0	4.0
Jamnagar						2.5	2.5
Rapar						3.0	3.0
Radhanesda						2.5	2.5
MP							
Rajgarh				2.5			2.5
Khandwa						2.5	2.5
Maharashtra							
Solapur (PG)						1	1
Kallam/Osmanabad					2 [*]		2
Solapur PP						1.5	1.5

Potential locations in WR	Capacity (in GW) by Dec'20		Capacity (in GW) by Dec'21		Capacity (in GW) beyond Dec'21		Total
	Wind	Solar	Wind	Solar	Wind	Solar	
Wardha						2.5	2.5
Total	3.5	0	2.0	2.5	2.5	17.5	28.0

*1GW under Intra-state

^Completion schedule of Jam Khambhaliya PS is Mar'21

32. The Petitioner vide affidavit dated 1.10.2019 has submitted the details of the revised phase-wise scheme as under:

A. Transmission system required by Dec'20/Mar'21 (3.5 GW)

1) Summary of transmission system

Sl. No.	Name of Scheme	Estimated Cost (in Rs. Cr.)
1	Additional 1x500MVA 400/220 kV (9th) ICT, for injection from any additional RE project (other than 4000 MW injection under SECI bids upto Tranche IV) at Bhuj PS. – Dec'20	56.3
2	WRSS-21 Part-A – Transmission system strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS – Dec'20	898
3	WRSS-21 Part-B- Transmission system strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS – Dec'20	1873
4	Transmission system for providing connectivity to RE projects at Bhuj-II (2000 MW) in Gujarat. – Dec'20	714
5	Jam Khambhaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat) – Mar'21	229
6	Interconnection of Jam Khambhaliya Pooling station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat) – Mar'21	169
	Sub-total	3939.3

2) Detailed scope of transmission system required by Dec'20/Mar'21 (3.5 GW)
Wind: 3.5GW [Bhuj (Wind: 2 GW): Dec'20 & Dwarka (Wind: 1.5 GW): Mar'21]

(i) Additional 1x500 MV A 400/220 kV (9th) ICT, for injection from any additional RE project (beyond 4000MW) at Bhuj PS:

Sl. No	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Additional 1x500MVA 400/220kV (9 th) ICT, for injection from any additional RE project (other than 4000MW injection under SECI bids upto Tranche IV) in existing Bhuj PS with associated 400 kV CIS bay and 220kV Hybrid/MTS bay.	1x500MVA, 400/220kV 400kV ICT bay-1 230kV ICT bay-1	37
2.	3 nos. of 220kV line bays(hybrid/MTS) for termination of dedicated lines of RE developers with Stage-II connectivity	220kV bays -3	19.3
	Total Rs (in Crore)		56.3

(ii) Western Region Strengthening Scheme-21 (WRSS-21) Part A - Transmission System strengthening for relieving over loadings observed in Gujarat Intrastate system due to RE injections in Bhuj PS:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs. Cr).
1.	Establishment of 2x1500MVA, 765/400kV Lakadia PS with 765kV (1x330MVAR) & 400kV (125 MVAR) bus reactor Future provisions: 765/400kV ICTs along with bays: 2 nos. 400/220kV ICTs along with bays:8 nos. 765kV line bays: 8 nos. 400kV line bays: 6 nos. 220kV line bays: 16 nos. 765k V bus reactor along with bays:1 no 400kV bus reactor along with bays: 1 no	2x1500MVA (765/400kV) 400kV ICT bay-2 765kV ICT bay-2 400kV line bay-4 765kV line bay-2 1x330MVA, 765 kV, 1x125MVA, 420kV 765kV Reactor bay-1 400kV Reactor bay -1 1x500 MV A, 765/400 kV, 1-ph ICT (spare unit) 1x110 MVAR, 765 kV, 1 ph Reactor (spare unit) (for both 1x330MVA bus reactor under Part A and 1x330 MVA line reactor on Lakadia - Vadodara line under Part B)	342
2.	LILO of Bhachau - EPGL 400kV D/c (triple) line at Lakadia PS	10km	37
3.	Conversion of existing 2x63MVAR line reactors at Bhachau end of Bhachau - EPGL 400kV D/c line to switchable line reactors	400kV Reactor bay -2	19
4.	Bhuj PS - Lakadia PS 765kV D/c line	100km	463
5.	2 nos of 765kV bays at Bhuj PS for Bhuj PS - Lakadia PS 765kV D/c line	765kV line bay-2	37
Total Rs (in Crore)			898

(iii) Western Region Strengthening Scheme-21 (WRSS-21) Part B - Transmission System strengthening for relieving over loadings observed in Gujarat Intrastate system due to RE injections in Bhuj PS:

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs.) Cr.
1.	Lakadia - Vadodara 765kV D/c line	350km	1619
2.	330MVAr switchable line reactors at both ends of Lakadia - Vadodara 765k V D/c line	330 MV AR line reactor -4 no. 765kV Reactor bay -4 no. 1x110 MVAR, 765 kV, 1 ph. switchable line Reactor (spare unit) At Vadodara end	180
3.	2 nos of 765kV bays at both Vadodara and Lakadia S/Ss for Lakadia - Vadodara 765kV D/c line	765kV line bays- 4	74
Total Rs (in Crore)			1873

(iv) Transmission System for providing connectivity to RE projects at Bhuj II (2000 MW) in Gujarat:

Sl. No.	Scope of the Transmission Scheme	Capacity/ckm	Estimated Cost (Rs.) Cr.
1	Establishment of 2x1500MVA (765/400kV), 4x500MVA(400/220kV) Bhuj-II PS (GIS) with 765kV (1x330MVAR) and 400kV (125 MVAR) bus reactor Future provisions: 765/400kV ICTs along with bays: 2 nos. 400/220kV ICTs along with bays: 5 nos. 765k V line bays: 4 nos. 400k V line bays: 6 nos. 220kV line bays: 9 nos 765kV bus reactor along with bays: 1 no 400kV bus reactor along with bays: 1 no	2x1500MVA, 765/400kV, 4x500MVA (400/220kV) 400kV ICT bay-6 765kV ICT bay-2 220kV ICT bay- 4 765kV line bay-4 220kV line bays -7 1x330MVAr, 765kV, 1x125MVAr, 420kV 765kV reactor Bays -1 400kV reactor Bays -1 1x500 MV A, 765/400 kV, 1-ph ICT (spare unit) 1x110 MVAR, 765 kV, 1 ph Reactor (spare unit)	575

Sl. No.	Scope of the Transmission Scheme	Capacity/ckm	Estimated Cost (Rs.) Cr.
2	Reconfiguration of Bhuj PS - Lakadia PS 765kV D/c line so as to establish Bhuj-II - Lakadia 765 kV D/C line as well as Bhuj-Bhuj-II 765kV D/C line	20 km	93
3	1X240MVAr switchable Line reactor for each circuit at Bhuj II PS end of Bhuj-II - Lakadia 765 kV D/c line	2x240 MVAR, 765 kV with 400 ohm NGR 765 kV Reactor Bays-2no. 1x80 MVAR, 765 kV, 1 ph switchable line Reactor (spare unit) at Bhuj II end	46
Total Rs (in Crore)			714

(v) Jam Khambhaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat):

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 4x500MVA, 400/220kV Jam Khambhaliya PS (GIS) Future provisions: 400/220kV ICTs along with bays: 4 nos. 400kV line bays: 8nos. 220kV line bays: 9 nos 400kV bus reactor along with bays: 1 no	4x500MVA, 400/220kV 400kV ICT bay-4 220kV ICT bay- 4 400kV line bay-1 220kV line bay-7	209
2.	1 no 400kV bay for M/s Vaayu 1 no of 220kV bay for M/s Air power 6 nos of 220kV bay for future developers		
3.	1x125MVAr, 420kV Bus reactor at Jam Khambhaliya PS along with reactor bay	1x125MVAr, 420kV 400kV reactor Bays -1	20
Total Rs (in Crore)			229

(vi) Interconnection of Jam Khambhaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat):

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Extension of Essar-Lakadia/Bhachau 400kV D/c (triple) line upto Jam Khambhaliya PS	40km	75
2.	2 nos. of 400kV line bays at Jam Khambhaliya PS for termination of Jam Khambhaliya PS-Lakadia 400kV D/c (triple) line	400kV line bay-2	23
3.	63MVAR switchable Line Reactor at both ends of Lakadia - Jam Khambhaliya 400kV D/c line	4x 63 MVAR 400kV reactor Bays - 4	71
Total Rs (in Crore)			169

B. Transmission system required by Dec'21 (4.5 GW)

1) Summary of transmission system

Part	Name of Scheme	Estimated Cost (in Rs. Cr.)
1	Transmission system associated with RE generation at Bhuj-II Dwarka & Lakadia.	1082
2	Transmission System for providing connectivity to RE projects in Gujarat [Lakadia (2000MW)]	196
3	Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh	640
	Sub-total	1918

2) Detailed scope of transmission system required by Dec'21 (4.5 GW)

Gujarat (Wind: 2GW): Lakadia

MP (Solar: 2.5GW): Rajgarh (Agar Malwa) (Solar: 2.5GW)

(i) Transmission System for providing connectivity to RE projects in Gujarat [Lakadia (2000MW)]

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 4x500MVA, 400/220kV ICTs at Lakadia (GIS) PS	4x500MVA, 400/220kV ICTs, 400kV ICT bay - 4 220kV ICT bay - 4 220kV line bays - 7	196
Total Rs (in Crore)			196

(ii) Transmission system associated with RE generations at Bhuj -II, Dwarka & Lakadia

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
1.	Lakadia PS - Banaskantha PS 765kV D/c line	200km	925
2.	765kV Bays at Lakadia and Banaskantha for Lakadia PS - Banaskantha PS 765kV D/c line	4 nos. 765kV Bays	74
3.	240 MVAR switchable Line reactor at Banaskantha end of Lakadia PS - Banaskantha PS 765kV D/c line	2x240 MVAR 765k V reactor Bays -2 1x80 MVAR, 765 kV, 1 ph switchable line Reactor (spare unit) At Banaskantha end	83
Total Rs (in Crore)			1082

(iii) Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in RsCr)
1	Establishment of 400/220 kV, 5X500 MVA at Rajgarh SEZ PP with 420kV (125 MVAR) bus reactor Future provisions: Space for 400/220kV ICTs along with bays: 3 nos. 400kV line bays: 6 nos. 220kV line bays: 6 nos. 400kV bus reactor along with bays: 1no	400/220 kV, 500 MVA ICT -5 400 kV ICT bays - 5 220 kV ICT bays - 5 400 kV line bays - 4 220 kV line bays - 9 125 MVA, 420 kV reactor 420 kV reactor bay - 1	247
2.	Rajgarh SEZ PP - Bhopal (Sterlite) 400 kV D/c line (HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length -130	220.78
3.	2 no. of 400 kV line bays at Bhopal (Sterlite) for Rajgarh SEZ PP -Bhopal (Sterlite) 400 kV D/c line (HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	400 kV line bays - 2	17.98
4.	Rajgarh SEZ PP - Shujalpur 400 kV D/c line (HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length -80	135.86
5.	2 no. of 400 kV line bays at Shujalpur for Rajgarh SEZ PP - Shujalpur 400 kV D/c line (HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	400 kV line bays - 2	17.98
		Total	640

C. Transmission system to be taken up for implementation with commissioning schedule beyond Dec'2021

1) Summary of the transmission System

Sl. No.	Name of Scheme	Estimated Cost (in Rs. Cr.)
1	400 kV line bay at Solapur PS for St-II connectivity to M/s Toramba	10
2	Transmission system for evacuation of power from RE projects in Sholapur (1000 MW under Ph-I+ 500 MW under Ph-II) SEZ and	500

Sl. No.	Name of Scheme	Estimated Cost (in Rs. Cr.)
	Osmanabad area (1 GW) in Maharashtra.	
3	Augmentation of transformation capacity at Lakadia PS for providing connectivity to RE projects (2000 MW) SEZ	247
4	Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part A	932
5	Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ– Part B	1373
6	Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part C	2168
7	Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part C (Ahmedabad 400 kV interconnection).	117.35
8	Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ- Part B	308
9	Transmission System for evacuation of power from RE projects in at Jamnagar (2500 MW) REZ	1347
10	Transmission system for evacuation of power from RE projects in Wardha (2500 MW) SEZ in Maharashtra	467
11	Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) in Madhya Pradesh	453
12	Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ - Part A (Augmentation of transformation capacity at Radhanesda PS)	193
13	Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) in Madhya Pradesh – ICT augmentation at Khandwa Pool	72.79
14	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	19
	Sub-total	8207.14

2) Detailed scope of transmission system beyond Dec'21 (as per schedule to be informed by SECI) [Wind: 2.5GW + Solar: 17.5 GW = 20 GW]

Maharashtra (Wind: 2GW, Solar: 5GW = 7GW); Solapur (existing) (Solar: 1 GW), Kallam / Osmanabad (Wind: 2 GW with 1 GW under Intra-State), Solapur (New) (Solar: 1.5 GW), Wardha: (Solar: 2.5 GW)

Gujarat (Wind: 0.5 GW + Solar: 10 GW = 10.5 GW): Jamkhambalia (Wind: 0.5 GW), Lakadia (Solar: 2 GW), Jamnagar (Solar: 2.5 GW), Rapar (Solar: 3 GW), Radhanesda (Solar: 2.5 GW)

MP (Solar: 2.5 GW): Khandwa (Solar: 2.5 GW)

a. Transmission System associated with Maharashtra REZs (7GW)

- (i) 400 kV line bay at Solapur PS for St-II connectivity to M/s Toramba Renewable Energy Pvt. Ltd. (1000MW WEZ)

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs.) Cr.
1.	1 nos. of 400k V bay at Solapur (PG) for St-II connectivity to M/s Toramba	400kV line bay -1	10
Total Rs (in Crore)			10

- (ii) Transmission system for evacuation of power from RE projects in wind energy zones in Osmanabad area of Maharashtra (1000 MW)

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs.) Cr.
1.	Establishment of 2x500MVA, 400/220kV near Kallam PS Future Provisions: Space for 400/220 kV ICTs along with bays: 4 nos. 400 kV line bays: 6 nos. 220kV line bays: 7 nos. 400 kV bus reactor along with bays: 1 no.	2x500MVA, 400/220kV 400kV ICT bay-2 220kV ICT bay-2 400kV line bay-4 220kV line bay- 4	179
2.	1x125MVAr bus reactor at Kallam PS	1x125 MV Ar 400kV reactor bay -1	18
3.	LILO of both circuits of Parli(PG) – Pune (GIS) 400kV D/c line at Kallam PS	10km	55

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs.) Cr.
4.	Provision of new 50MVAr switchable line reactor at Kallam PS end of Kallam - Pune(GIS) 400kV D/c line*	2x50 MV Ar 400kV Reactor bays -2	30
		Sub Total Rs (in Crore)	245

* 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 at an estimated cost of Rs. 19 Cr. has been recommended for implementation under RTM route by 4th NCT on 31.7.19.

(iii) Transmission system for evacuation of power from RE projects in Sholapur SEZ Solapur SEZ (1500MW)

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs. Cr.)
1.	Establishment of 400/220 kV, 3x500 MVA at Solapur PP (near Mohol) Future Provisions: Space for 400/220 kV ICTs along with bays: 3 nos. 400 kV line bays: 6 nos. 220kV line bays: 5 nos. 400 kV bus reactor along with bays: 1 no.	500MVA, 400/220kV ICT -3 400kV ICT bay -3 220kV ICT bay -3 400kV line bay -2 220 kV line bays- 5	132
2.	Solapur pooling point - Solapur (PG) 400 kV D/c line (twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	50km	85
3.	2 nos. of 400kV bays at Solapur PG for Solapur pooling point - Solapur (PG) 400 kV D/c line	400kV line bay -2	18
4.	1x125 MVAR, 420 kV Bus Reactor at Solapur PP	1x125 MVAR, 420kV bus reactor 420kV reactor bay	18
		Sub Total Rs (in Crore)	253

(iv) Transmission system for evacuation of power from RE projects in Wardha (2500 MW) SEZ in Maharashtra:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
1.	Establishment of 400/220 kV, 5X500 MVA at Wardha SEZ PP with 400kV (125 MVAR) bus reactor Future provisions: Space for 400/220kV ICTs along with bays: 3 nos. reactor Future provisions: Space for 400/220kV ICTs along with bays: 3 nos. 400kV line bays: 6 nos. 220kV line bays : 6 nos 400kV bus reactor along with bays: 1 no	400/220 kV, 500 MVA ICT -5 400 kV ICT bays - 5 220 kV ICT bays - 5 400 kV line bays - 4 220 kV line bays - 9 125 MVA, 420 kV reactor 420 kV reactor bay - 1	247
2.	LILO of Wardha - Warora Pool 400 kV D/c (Quad) line at Wardha SEZ PP	Length - 85	219.84
		Total	467

b. Transmission System associated with Gujarat REZs (10.5 GW)

(i) Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ - Part A

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
1.	Establishment of 765/400 kV, 3x1500 MVA & 400/220kV, 6x500MVA Kutch (Rapar) SEZ Pooling Point with 765kV (1x330MVAR) and 400kV (125 MV AR) bus reactor Future provisions: Space for 765/400kV ICTs along with bays: 1 no. 400/220kV ICTs along with bays: 2 nos. 765kV line bays: 4 nos. 400kV line bays: 8 nos. 220kV line bays: 4 nos. 765kV bus reactor along with bays: 1 no 400kV bus reactor along with bays: 1 no	765/400 kV, 1500 MVA ICT - 3 400/220 kV, 500 MVA ICT - 6 765/400 kV, 500 MVA spare ICT (1-phase) -1 765 kV ICT bays - 3 400 kV ICT bays - 9 220 kV ICT bays - 6 765 kV line bays - 4 220 kV line bays -10 330 MVA, 765 kV bus reactor 125 MVA, 420 kV bus reactor 765 kV reactor bay - 1 420 kV reactor bay - 1 110 MVAR, 765 kV, 1 ph Reactor (spare unit) -1	604
2.	LILO of Lakadia - Banaskantha 765kV D/c line at Kutch (Rapar) SEZ PP	LILO Route Length - 70	328
		Total	932

(ii) Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ- Part B

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs Cr)
1.	Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line	Length - 250	1171
2.	765 kV, 240 MV Ar switchable line reactor on each circuit at both ends of Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line	765 kV, 240 MV Ar reactor - 4 nos. 765 kV, 80 MV Ar reactor (1-ph) spare unit -1 no at Rapar end. Switching equipments for line reactor- 4	122
3.	2 no. of 765 kV line bays at Kutch (Rapar) end and 2 no. of 765 kV line bays at Ahmedabad end for Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line	765 kV line bays - 4	80
		Total	1373

(iii) Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ- Part C

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs Cr)
1.	Establishment of 765/400kV, 2X1500 MVA at suitable location near Ahmedabad (towards eastern side of Ahmedabad) with 765kV (1X330MVAR) and 400kV (125 MV AR) bus reactor Future provisions: Space for 765/400kV ICTs along with bays: 2 nos. 400/220kV ICTs along with bays: 4 nos. 765kV line bays: 10 nos. 400kV line bays: 8 nos. 220kV line bays: 8 nos. 765kV bus reactor along with bays: 1 no 400kV bus reactor along with bays: 1 no	765/400 kV, 1500 MVA ICT - 2 765/400 kV, 500 MVA spare ICT (1-phase) -1 765 kV ICT bays - 2 400 kV ICT bays - 2 765 kV line bays - 2 330 MV Ar, 765 kV reactor 125 MV Ar, 420 kV reactor 765 kV reactor bay - 1 420 kV reactor bay - 1 110 MVAR, 765 kV, 1 ph switchable Reactor (spare unit) -1 (for both 1x 330 MVAR bus reactor and 1x330 MVAR line reactor on Ahmedabad - Indore 765 kV D/c line)	263

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs Cr)
2.	Ahmedabad - Indore 765 kV D/c line	Length - 370	1733
3.	2 no. of 765 kV line bays at Indore for termination of Ahmedabad - Indore 765 kV D/c line	765 kV line bays - 2	40
4.	330 MV Ar, 765 kV switchable Line reactor for each circuit at both ends of Ahmedabad - Indore 765 kV D/c line	330 MV Ar, 765 kV Reactor - 4 Switching equipments for 765 kV reactor -4 80 MVAR, 765 kV, 1 line Reactor (spare unit) at Ahmedabad end -1 (for 240 MV Ar line reactor on Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line)	132
		Total	2168

(iv) Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ- Part C (Ahmedabad 400 kV interconnection)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
1.	LILO of Pirana(T) - Pirana(PG) 400kV D/c line at Ahmedabad with twin HTLS along with reconductoring of Pirana Pirana(T) line with twin HTLS conductor	LILO route length - 44 Reconductoring length - 6	81.39
2.	4 nos. of 400 kV line bays at Ahmedabad for termination of LILO of Pirana(T) - Pirana(PG) 400kV D/c line at Ahmedabad with twin HTLS (with minimum capacity of 2100 MVA/ ckt at nominal voltage)	400 kV line bays - 4	35.96
		Total	117.35

(v) Augmentation of transformation capacity at Lakadia PS for providing connectivity to RE projects (2000 MW) SEZ

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
1.	Augmentation of 765/400 kV transformation capacity at Lakadia PS by 1x1500MVA, 765/400kV ICT. Augmentation of 400/220 kV transformation capacity by 4x500MVA, 400/220kV ICTs (400kV AIS and 220kV GIS) for interconnection with SEZ in case of injection from RE projects are at 220 kV level at Lakadia	765/400 kV, 1500 MVA ICT - 1 400/220 kV, 500 MVA ICT - 4 765 kV ICT bays - 1 400 kV ICT bays - 5 220 kV ICT bays - 4(GIS) 220 kV line bays - 8 (GIS)	247

(vi) Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ - Part A (Augmentation of transformation capacity at Radhanesda PS)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
1.	Augmentation of transformation capacity at Radhanesda PS by 5X500 MV A, 400/220kV ICTs for interconnection with SEZ	400/220 kV, 500 MVA ICT - 5 400 kV ICT bays - 5 220 kV ICT bays - 5 220kV line bays- 9 nos	193
		Total	193

(vii) Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ- Part B

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
1.	Radhanesda PS - Banaskantha 400 kV D/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length - 95	161
2.	2 no. of 400 kV line bays at Radhanesda for Radhanesda PS - Banaskantha 400 kV D/c line	400 kV line bays - 2	18
3.	Banaskantha -Zerda 400 kV D/c line	Length - 50	75
4.	4 no. of 400 kV line bays at Banaskantha For both Radhanesda PS- Banaskantha 400 kV D/c line (Twin HTLS) and Banaskantha -Zerda 400 kV D/c line	400 kV line bays - 4	36
5.	2 no. of 400 kV line bays at Zerda for Banaskantha -Zerda 400 kV D/c line	400 kV line bays -2	18
		Sub-total	308

(viii) Transmission System for evacuation of power from RE projects in at Jamnagar
(2500 MW) REZ

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
1.	Establishment of 400/220 kV, 5X500 MVA at Lalpur (Jamnagar) SEZ PP with 400kV (125 MV AR) bus reactor Future provisions: Space for- 400/220kV ICTs along with bays: 3 nos. 400kV line bays: 4 nos. 220kV line bays: 6 nos 400kV bus reactor along with bays: 1 no	400/220 kV, 500 MVA ICT - 5 400 kV ICT bays - 5 220 kV ICT bays - 5 400 kV line bays - 6 220kV line bays-9 125 MV Ar, 420 kV reactor 420 kV reactor bay - 1	265
2.	Lalpur (Jamnagar) SEZ PP - Rajkot 400 kV 2xD/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length -100	340
3.	Lalpur (Jamnagar) SEZ PP - Jam Khamabliya PS 400 kV D/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length - 50	85
4.	2 no. of 400 kV line bays (GIS) at Jam Khamabliya PS for Lalpur (Jamnagar) SEZ PP - Jam Khamabliya PS 400 kV D/c line (Twin HTLS)	400 kV (GIS) line bays - 2	27
6.	Establishment of 400kV switching station at Rajkot with 420 kV (125 MV AR) bus reactor Future provisions: Space for 400/220kV ICTs along with bays: 4 nos. 400kV line bays: 4 nos. 220kV line bays: 10 nos 400kV bus reactor along with bays: 1 no	400 kV line bays - 10 125 MV Ar, 420 kV reactor 420 kV reactor bay -1	107
7.	LILo of CGPL-Jetpur 400 kV D/C(triple) at Rajkot	Route Length - 40	68
8.	Rajkot - Ahmedabad 400 kV D/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length - 230	391
9.	2 no. of 400 kV line bays at Ahmedabad for Rajkot - Ahmedabad 400 kV D/c line (Twin HTLS)	400 kV line bays - 2	18

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
10	63 MVA, 400 kV switchable line reactor on each circuit at both ends of Rajkot - Ahmedabad 400 kV D/c line (Twin HTLS)	63 MVA, 420 kV Reactor - 4 Switching equipments for 400 kV reactor- 4	46
		Sub-total	1347

c. Transmission System associated with Madhya Pradesh SEZs (2.5GW)

- (i) Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) in Madhya Pradesh:

Sl. No.	Scope of the Transmission Scheme	Capacity/km	Estimated Cost (Rs Cr)
1.	Establishment of 400/220 kV, 5X500 MVA at Khandwa SEZ PP with 420kV (125 MVAR) bus reactor Future provisions: Space for 400/220kV ICTs along with bays: 3 nos. 400kV line bays: 6 nos. 220kV line bays: 6 nos 400kV bus reactor along with bays: 1 no	400/220 kV, 500 MVA ICT - 5 400 kV ICT bays - 5 220 kV ICT bays - 5 400 kV line bays - 4 220 kV line bays - 9 125 MVA, 420 kV reactor 420 kV reactor bay - 1	247
2.	Khandwa SEZ PP - Khandwa Pool 400 kV 2XD/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length -100	170
3.	4 no. of 400 kV line bays at Khandwa Pool for Khandwa SEZ PP - Khandwa Pool 2XD/c line (Twin HTLS)	400 kV line bays - 4	36
		Total	453

- (ii) Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) in Madhya Pradesh - ICT augmentation at Khandwa Pool

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs Cr)
1	Augmentation of 1X1500 MV A, 765/400kV ICT at Khandwa Pool (Sterlite)	765/400 kV, 1500 MVA ICT - 1 765 kV ICT Bays-1 400 kV ICT Bays -1	72.79
		Total	72.79

D. Detailed scope of transmission system required for providing immediate connectivity to Dholera UMSP (4000 MW) (Dec'21)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 765/400kV, 3X1500 MVA at Dholera Pooling station with 765kV (1x330MVAR) and 400kV (125 MVAR) bus reactor	765/400 kV, 1500 MVA ICT -3 765/400 kV, 500 MVA spare ICT (1-phase) -1 765 kV ICT bays - 3 400 kV ICT bays - 3 765 kV line bays - 6 400 kV line bays - 6 330 MVA, 765 kV reactor 125 MVA, 420 kV reactor 765 kV reactor bay - 1 420 kV reactor bay - 1 110 MVAR, 765 kV, 1 ph Reactor (spare unit) -1	469
2.	LILO of Lakadia - Vadodara 765 kV D/c line at Dholera UMSP	LILO Route Length -80	375
3.	Dholera UMSP - Ahmedabad 765kV D/c line	Length -100	468
4.	2 no. of 765 kV line bays at Ahmedabad for termination of Dholera UMSP - Ahmedabad 765kV D/c line	765 kV line bays - 2	40
5.	765 kV, 240 MV Ar switchable line reactor at Dholera PS end on each circuit of Dholera - Ahmedabad 765kV D/c line	240 MVA, 765 kV line Reactor- 2 Switching equipments for Line Reactor- 2 1x80 MVA, 765 kV switchable line reactor (1-ph), spare unit - 1 (at Dholera end)	64
		Total	1416

Note: Developer of Ahmedabad PS to provide space for 2 no. of 765 kV line bays at Ahmedabad for termination of Dholera UMSP - Ahmedabad 765kV D/c line

33. Petitioner has submitted additional details vide affidavit dated 1.10.2019 as follows:

- a) During the meeting held on 30.8.2019 with CEA and SECI on phasing out of transmission system, it was also agreed that Transmission system for providing immediate connectivity to Dholera Solar park (4000 MW) would be taken up for implementation with commissioning schedule as Dec'2021, considering bids are being invited by SECI for Dholera UMSPP with Dec'21 commissioning schedule. Establishment of 765/400kV Ahmedabad S/s and associated interconnections may be taken up matching with Dholera UMSPP to facilitate power transfer from the project.

- b) Petitioner has stated that during the meeting held on 30.8.2019 with CEA and SECI on phasing out of transmission system, it was also agreed that Transmission system for providing immediate connectivity to Dholera Solar park (4000 MW) would be taken up for implementation with commissioning schedule as Dec'2021. Considering that the bids are being invited by SECI for Dholera UMSPP with Dec'21 commissioning schedule. Establishment of 765/400kV Ahmedabad S/s and associated interconnections may be taken up matching with Dholera UMSPP to facilitate power transfer from the project.

- c) Phase-wise revised cost-benefit analysis as per the above specified schedules of transmission schemes is mentioned in below table:

Sl. No.		Dec'20/Mar'21		Dec'21		Beyond Dec'21		Dholera UMSP	
		Solar	Wind	Solar	Wind	Solar	Wind	Solar	Wind
1.	Capacity (GW)	0	3.5	2.5	2	17.5	2.5	4	0
2.	Estimated Cost	Rs. 3939 Crs.		1918 Crs.		8207 Crs.		1416 Crs.	
3.	Estimated impact on tariff for next 5 years	670 Cr. /year		326 Cr. /year		1395Cr. /year		240.7Cr. /year	
4.	Cost of energy transferred	Rs. 2682.7 Crs.		2901.7 Crs.		11497.5 Crs.		2190 Crs.	
5.	Tentative transmission tariff	Rs. 0.62 /Unit		Rs. 0.28 /Unit		Rs. 0.30 /Unit		Rs. 0.27 /Unit	

Analysis and Decision

34. We note that the Government of India (GoI) has set a target of installing 175 GW of Renewable Energy capacity by the year 2022, which includes 100 GW from solar, 60 GW from wind, 10 GW from bio-power and 5 GW from small hydro-power and in furtherance of its target, the GoI has taken the initiative for development of Solar Power Parks in various States such as Karnataka, Andhra Pradesh, Madhya Pradesh, Gujarat and Rajasthan. The large quantum of Renewable Energy getting connected to ISTS would require sufficient transmission capacity to ensure evacuation of power without constraint. The present petition involves the transmission scheme for transmission system for 20GW solar generation and 8 GW Wind generation in the Western Region (Gujarat, Maharashtra and Madhya Pradesh). In addition to the above, the transmission scheme for 4 GW Dholera UMSP is also under implementation. These schemes have been envisaged to be implemented in two phases i.e. REZ Phase-I and REZ Phase-II and Dholera UMSP.

35. The Petitioner has submitted that transmission schemes for evacuation of power for REZ Phase-I from potential Solar and Wind Energy Zones in WR (10.5 GW consisting of 7.5 GW wind and 3 GW solar) were discussed and agreed in the 1st meeting of Western Region Standing Committee on Transmission (WRSCT) held on 5.9.2018. Subsequently, the schemes were discussed in the 2nd meeting of National Committee on Transmission (NCT) held on 4.12.2018 and 3rd meeting of Empowered Committee on Transmission (ECT) held on 21.12.2018, wherein after discussions it was agreed to implement the present scheme in Gujarat, Maharashtra and Madhya Pradesh. The schemes were again discussed during the 2nd WRSCT meeting held on 21.5.2019 wherein the following changes/ modifications to the scope of works were agreed:

- a) Provision of spare reactor at ICTs
- b) Additional scope of works at Bhuj II PS under Part E
- c) Deletion in scope of works at Kallam PS under Part I

36. The Petitioner has submitted that information about the transmission scheme was given in the 37th meeting of Western Regional Power Committee (WRPC) held on 17th and 18th December, 2018 vide which constituents were advised to give their comments to CEA. The transmission scheme for Phase-I was technically agreed in 38th WRPC meeting held on 27th and 28th June, 2019 wherein GUVNL and representative of MP had submitted that there should not be any additional burden on DISCOMs while implementing the present transmission scheme. Relevant Para of 38th meeting of WRPC held on 27th and 28th June 2019 at Bhopal (M.P) is as under:

“TCC Discussion

.....

d) Representative of GUVNL stated CTU had uploaded the schemes in their website and sought comments and Gujarat sent comments on burden of PoC charges; DISCOMs could comment on PoC only because whatever system came up, burden was always on DISCOMs; when the system was planned, DISCOMs were not part of

the team; DISCOMs were not invited in meetings related to transmission planning; after planning, approval of DISCOMs were sought for those schemes which were planned in the absence of DISCOMs. He added that STU of Gujarat was well versed with the system and they took all decision keeping in view the best interest of the State on behalf of DISCOM. The only thing on which GUVNL commented on burden of PoC; however, Gujarat received a letter from CTU stating that the comments made by Gujarat could not be sent; comments were purely based on PoC and CTU did not consider those comments.

e) Representative of MP stated that the burden for system coming up in Gujarat should not be on MP.

f) Representative of GUVNL stated that their STU was planning network for RE evacuation and whatever system was planned by CTU at Gujarat was not for power to Gujarat. The RE power which would be generated at Gujarat would be consumed outside Gujarat, but burden of PoC would definitely come on Gujarat.

g) MS, WRPC stated that all the schemes proposed by CTU had been discussed in SCM (SCT) where STUs were present; therefore it was put up here for approval.

h) Representative of GUVNL stated that the comments were sought by CTU and Gujarat made the comments related to PoC burden and therefore those comments should be sent to CERC.

i) ED(LD&C), PGCIL stated that SCM studied the feasibility of transmission scheme technically; so, technical requirement was there. He added that members could decide whether the schemes were needed or not.

j) Representative of GUVNL stated that they were not opposing transmission schemes and their concern was burden of PoC on Gujarat for power that would be consumed outside the Gujarat.

k) Representative of MP stated that as per CERC amendment regulation regarding recovery of transmission charges, there would be no PoC charges for power flow from RE projects; in the proposal, PGCIL was stating that there would be burden of roughly 40 paise per unit in PoC; hence PGCIL should clarify to whom they would load the burden.

l) Representative of GUVNL stated that burden would be on all the stakeholders and the provision which MP was referring to applicable to RE projects only.

m) Representative of GUVNL stated that as per regulation, CTU had to inform the cost and tariff impact of the project. The purpose of the tariff impact was to assess the burden on beneficiaries.

n) GM, CTU (Plg.) clarified that the impact of tariff and any waiver would get socialized.

o) Sr.GM, WR-II, PGCIL stated that the cost of the scheme was tentative and CERC would decide on tariff and Gujarat could write to CERC.

p) Chairman TCC informed that as far as the forum was concerned, that type of request seeking recommendation was coming for the first time. He opined that if some members were having concern and before considering them, how the forum could recommend.

q) GM,CTU(Plg) stated that they did not want approval, but just recommendation because after that they would have to go to CERC for regulatory approval.

r) ED(LD&C), PGCIL stated that the forum could recommend the scheme and the concerns of the states regarding PoC charges could be mentioned.

s) GM, WRLDC stated that CTU had to study the base case and seek comments

from all constituents by June 7 and on behalf of all RLDC and NLDC, POSOCO had given comments on 7th June on technical issues.

t) CGM, MPPMCL stated that they strongly opposed the recommendation of the scheme because PoC concept was based on utilisation of the lines and the particular flavour of renewable energy did not qualify for that; one had to understand the nature of renewable power as compared with the conventional power; PoC had been based on conventional power; He added that they had no objection to any schemes approved by the standing committee, but WRPC forum should not be asked to recommend those schemes.

u) Sr. GM, NLDC suggested that in future while planning the transmission system by STU and CTU, the concerns had to be studied before project being proposed to the standing committee; Discoms should attend the standing committee meeting; SLDCs could take Discoms on their behalf as member of standing committee.

v) MD, GETCO stated that STUs could take the concern of Discoms to the standing committee.

w) Representative of GUVNL stated that STU had represented that (commercial) point in the standing committee, but the point was not entertained and it was told that as the meeting was technical, PoC or commercial issues would not be discussed there.

x) MD, GETCO stated that the schemes should be technically recommended as CTU was given assignment for evacuation of power of particular generation and if the work did not start immediately then the evacuation would not be possible; hence technically it should be recommended with the commercial concerns of Discoms being mentioned.

Chairman TCC concluded that with the commercial rider, TCC forum could go ahead with the technical recommendation of the schemes.

.....

“WRPC Decision:

Finally, the WRPC forum agreed for the following:

i) Technical recommendation of the schemes in MoM of 1st WRSCT meeting (Annexure-O.5.1)

ii) Technical recommendation of item no. 25 and 26 in MoM of the 2nd WRSCT meeting (Annexure-O.5.2)

iii) There should not be any commercial burden on Discoms on account of implementing the above technically recommended schemes as given in i) and ii) above.

iv) GUVNL comments on the issues should be forwarded to CERC by CTU as agreed by CTU. (Annexure-O.5.3)

Chairperson, WRPC approved the same.”

37. The Petitioner has submitted that evacuation of 17.5 GW power under REZ Phase-II was discussed in the 2nd meeting of Western Region Standing Committee on Transmission (WRSCT) held on 21.5.2019 wherein the members broadly agreed with the transmission system for 17.5 GW RE projects in WR under Phase-II. Subsequently, joint studies amongst CEA, the Petitioner, POSOCO and STUs were carried out on 10.6.2019, 20.6.2019 and 21.6.2019 in order to address the concerns of various

stakeholders. During the joint studies with the stakeholders, an elaborate exercise was carried out focusing on the RE-rich States viz. Gujarat, Maharashtra and Madhya Pradesh in which the network topology, load-generation balance, generation dispatches during high RE period, retirement of old conventional generation projects, etc. were carried out. POSOCO vide letter dated 7.6.2019 to CTU has submitted the observation on behalf of RLDCs/NLDC on CTU transmission planning in WR (Phase-II) and NR for RE 2021-22 scenario. POSOCO has submitted that all the studies were done considering high RE scenario where power is pooled from RE pooling point in Western, Northern and Southern region to central India, and power flows towards East and North-east part of India. However, Low RE Scenario has not been studied at planning stage. According to POSOCO, this can lead to multiple line openings to control over voltages and reversal of power (i.e. from East to West, North and South)., POSOCO has also submitted that the base case files considered for NR case and WR case are not identical with respect to region-wise load-generation balance as detailed below(Region wise) for 2021-22 scenario:

Area	WEZ Phase-II			Diff_Gen	Diff_load	NR Case		
	Generation	To	To			Generation	To	To
	Q	Load	Losses			Q	Load	Losses
1	64519.7	67442.1	2677.6	2911.4	3384.1	61608.3	64058	3077.7
North	-8958.6	21970.7	42998.4	-5750.2	915.8	-3208.4	21054.9	49462.5
2	2638.5	3726	184.5	0	0	2638.5	3726	182.9
North East	-708.3	757.7	2975.6	-68.3	0	-640	757.7	2973.5
3	77124.4	58799.4	2565.7	-974	-2.2	78098.4	58801.6	2860.9
West	-16448	9420.3	35850.4	-5671.3	-0.4	-10776.3	9420.7	40781.2

38. The Petitioner has submitted that the matter pertaining to Dholera UMSP immediate connectivity system was also discussed during 2nd meeting of Western Region Standing Committee on Transmission (WRST) held on 21.5.2019. After deliberations in the meeting, the transmission system for providing immediate connectivity to Dholera UMSP was discussed and the following system was broadly agreed and it was decided that evacuation system for Dholera UMSP would be further studied in another joint study meeting after SECI indicates the likely beneficiaries of Dholera UMSP.

- a) Power injection from the Solar Park may be at 400kV level.
- b) Establishment of 765/400kV Dholera Pooling station
- c) LILO of Lakadia – Vadodara 765 kV D/c line at Dholera UMSP
- d) Dholera UMSP – Ahmedabad 765kV D/c line

39. The transmission scheme for REZ Phase-II and Dholera UMSP was technically agreed in 38th WRPC meeting held on 27th–28th June, 2019. The Petitioner has further submitted that it has complied with all the regulatory requirements and the details of the scheme, along with other relevant documents, have been uploaded on its website for comments/suggestions of the stakeholders. The Petitioner has informed that it has published notice in newspapers in accordance with the Regulatory Approval Regulations. The Petitioner vide affidavit dated 29.8.2019 has submitted that no observations/comments have been received by the Petitioner regarding the REZ Phase-II scheme and transmission system for immediate connectivity to Dholera UMSP.

40. PGCIL vide affidavit dated 20.8.2019 has submitted that some modifications were approved in “Transmission System for Evacuation of Power from potential solar

and wind energy zones in WR – Phase I and II” vide corrigendum dated 5.8.2019 issued by CEA to the minutes of 2nd WRSCT meeting held on 21.5.2019 based on the request for corrigendum vide letters dated 3.7.2019, 4.7.2019 and 1.8.2019 from MPPTCL, GETCO and CTU respectively. However, this revised transmission scheme has not been approved at SCM/RPC level and has also not been published on website for stakeholders’ comments. GETCO vide letter dated 16.8.2019 has furnished comments on the corrigendum of the 2nd WRSCT issued by CEA on 5.8.2019. In the said letter, GETCO has requested CEA to review the issue of space constrains at 400kV Zerda substation to accommodate Banaskantha - Zerda 400kV D/c line. GETCO has further submitted that LILO of CGPL - Jetpur 400kV D/c (triple) at Rajkot & Banaskantha-Zerda 400 kV D/C line (planned under REZ Phase-II system) should be dropped and that alternative scheme should be planned in such a way to avoid any impact on STU elements on account of planned ISTS schemes.

41. CTU vide affidavit dated 1.10.2019 has further submitted as follows:

a) CEA vide letter dated 29.8.2019 has given detailed justifications for the transmission system mentioned in the corrigendum of the 2nd WRSCT based on load flow studies as well as Grid support (w.r.t. Short Circuit strength) requirement for REZs in Jam Khambhaliya & Jamnagar. With regard to the issue of space constraint at 400kV Zerda substation, it has been clarified that GIS bays may be planned at Zerda substation to reduce requirement of space.

b) In response to the above letter, GETCO vide letter dated 11.9.2019 has raised concerns regarding additional power flow from ISTS to intra-State network and that the proposed transmission schemes under Phase-II in WR should not cause any technical & commercial impact on Gujarat Grid.

42. We observe that the modification in “Transmission System for Evacuation of Power from potential solar and wind energy zones in WR – Phase I and II” vide corrigendum dated 5.8.2019 issued by CEA to the minutes of 2nd WRSCT held on 21.5.2019 needs to be deliberated in the WRPC meeting. The Petitioner is directed to approach WRPC for the approval of modified scheme before executing the scheme.

43. We observe that Transmission Planning regulations under regulation 9.1 (1) (e) requires the Petitioner to file “Status of consultation with the stakeholders along with Comments/suggestions of stakeholders and its treatment”. The petitioner has stated that it has not considered individual comments. The Petitioner should have considered the individual comments also while finalizing the Scheme since individuals are also stakeholders. Further POSOCO has raised concerns pertaining to Extra STATCOMs placed at both ends of HVDC Terminal with +/- 9999 VAR limits, Low RE scenario not undertaken in planning stage, some lines loaded beyond their thermal loading, some ICT and Branch parameters not entered etc. The Petitioner is directed to address the concerns of stakeholders including individuals before executing the scheme.

44. The submissions of Srijan Energy Systems Private Limited regarding revised LTA have already been dealt vide Order dated 6.8.2019 in Petition No. 7/MP/2019.

45. The Petitioner has approached the Commission seeking Regulatory Approval for the instant transmission system under the provisions of Regulation 3(1)(i) of the Regulatory Approval Regulations for the transmission scheme of REZ Phase- I and REZ Phase-II and Dholera UMSP. The relevant provisions of Regulation 3 are extracted under:

“3. Scope and applicability

(1) These regulations shall apply to:

(i)an ISTS Scheme proposed by Central Transmission Utility, for which generators have sought long-term access as per the Central Electricity Regulatory Commission (Grant of Connectivity, Long-Term Access and Medium Term Open Access to the Inter-State Transmission and Related Matters) Regulations, 2009, and for which consultation with Central Electricity Authority and beneficiaries if already identified has been held for setting up the ISTS Scheme, but for which Power Purchase Agreements with all the beneficiaries have not been signed on the date of application.

(ii) an ISTS Scheme for system strengthening/up-gradation, identified by Central Transmission Utility to enable reliable, efficient, co-ordinated and economical flow of electricity within and across the region for which consultation with Central Electricity Authority and beneficiaries if identified has been held.

(iii) ISTS Scheme proposed by CTU, for which the Central Government authorised Solar Power Park Developer has sought long term access, and for which consultation with CEA and beneficiaries wherever identified has been held for setting up the ISTS scheme and the Solar Power Park Developer undertakes to bear all liabilities on behalf of the solar power generators to be set up in the Solar Park.

(2) These regulations shall not apply to ISTS Scheme, for which all the beneficiaries/ respective STUs have signed Bulk Power Transmission Agreement to share the transmission charges.”

46. Regulation 3(1)(i) provides that the Regulatory Approval Regulations shall apply to the ISTS scheme proposed by the Petitioner for which the generators have sought LTA. However, for the identified transmission system proposed to be constructed by the Petitioner, full quantum of LTA has not been sought by the generators. As submitted by the Petitioner, out of 28 GW solar and wind potential, LTA applications have been sought only for 5.2GW. The Petitioner has furnished the following details:

Sl. No.	Location	Stage-II Conn. Quantum (MW)	LTA applied/ granted (MW)	Firm LTA (with PPA)
1	Bhuj PS	4990	3839.5	2140
2	Jam Khambhaliya PS	600.6	0	0
3	Bhachau S/s	650	650	600
4	Solapur S/s	300	0	0
5	Bhuj - II PS	900	600*	0
	Total	7440.6	5089.5	2740

* Excluding 200 MW LTA granted to subsidiaries of M/s Inox Wind whose Stage-II Connectivity has been revoked.

47. Since LTA of full quantum of 28 GW has not been sought, the Petition is not covered under Regulation 3 (1) (i) of the Regulatory Approval Regulations. The representative of the Petitioner prayed that the Commission, in exercise of its power under Regulation 8 of the Regulatory Approval Regulations, relax the provisions of the said regulations and grant the reliefs prayed for. The Petitioner has also submitted that the proposed transmission system/line has been envisaged keeping in view the generation potential as assessed by MNRE/ agencies of MNRE.

48. In the meanwhile, the Ministry of Power, Gol on 11.7.2019 has issued directions under Section 107 of the 2003 Act with regard to the Regulatory approval of the transmission schemes envisaged for RE resources, as under:

“Subject: Direction to the Central Electricity Regulatory Commission under Section 107 of the Electricity Act, 2013 in regard to regulatory approval of the transmission schemes identified for 68.5.GW of RE projects-Regarding

Sir,

As a part of the steps necessary to fulfill the commitment made by India under the Nationally Determined Contribution pursuant to the Paris Agreement on Environment, Government of India have decided to set up 175 GW of RE capacities in the country by the year 2022. As of May 2019 about 80 GW of RE generation has already been commissioned and the balance 95 GW has to come up in the next 3 years. In order to achieve above targets, MNRE in consultation with CEA and CTU has identified transmission schemes for around 66.5 GW of RE generation, comprising around 28 GW under Phase-I and around 38.5 GW under Phase-II as part of National Renewable Energy Mission of setting up of 175 GW of RE capacity.

2. As the gestation period of RE projects in much shorter in comparison to the implementation period of the transmission facilities, and significant quantum of RE capacity targeted to be tendered out in the current financial year, it is necessary that the present system of transmission planning and implantation of RE projects need to be carried out in Mission Mode. The transmission activities need to be started much ahead of the generation so that both of them are completed in matching time-frame to achieve the target set up Govt. of India. Thus, in the said background, it has been decided by the Government to accord the identified schemes for aforementioned 66.5 GW of RE generation, comprising around 28 GW under Phase-I AND 38.5 GW under Phase-II as —Projects of National Importancell. Accordingly, the Central Government, in exercise of the powers conferred under Section 107 of the Electricity Act, 2003 hereby issues following directions to the Central Electricity Regulatory Commission in respect of these projects of national importance:

(i) To accord Regulatory approval for the transmission system associated with 12.5 GW of RE capacity in Phase-I for which CTU has already applied to CERC for

regulatory approval;

(ii) To give regulatory approval expeditiously, for balance 15.5 GW under phase-I and 38.5 GW under phase-II on submission of the application by CTU for the regulatory approval.

(iii) Prior requirement of LTA applications and associated Bank Guarantees, to be deferred for the interim period till the RE project is awarded to successful bidder, for taking up the implementation of associated transmission systems for balance RE capacity under 66.5 GW of RE. It is however, clarified that the due regulatory procedure of LTA and Connectivity will be followed by the successful bidder.

49. Section 107 of the 2003 Act is extracted under:

“Section 107. (Directions by Central Government): ---(1) In the discharge of its functions, the Central Commission shall be guided by such directions in matters of policy involving public interest as the Central Government may give to it in writing.

(2) If any question arises as to whether any such direction relates to a matter of policy involving public interest, the decision of the Central Government thereon shall be final.”

50. Therefore, in matters of policy involving public interest, the Commission is guided by the directions issued by the Central Government under the said section. Similar provisions are contained in Section 108 of the 2003 Act. With regard to the directions of the State Government under Section 108 of the 2003 Act, we take note of the observations of the Appellate Tribunal in its judgment dated 4.10.2012 in Appeal No. 200 of 2011 (M/s Maruti Suzuki India Ltd. vs Haryana Electricity Regulatory Commission & Ors.) as under:

“28. Section 78A of Electricity (Supply) Act 1948 and Section 12 of DERA 2000 were similar to Section 108 of the 2003 Act. These sections are set out as under:

Section 108 of the Electricity Act, 2003: Directions by State Government. —

(1) In the discharge of its functions, the State Commission shall be guided by such directions in matters of policy involving public interest as the State Government may give to it in writing.

(2) If any question arises as to whether any such direction relates to a matter of policy involving public interest, the decision of the State Government thereon shall be final.

29. The Hon'ble Supreme Court in the case of APTRANSCO vs Sai Renewable Energy Pvt. Ltd. [(2011)11SCC 34] has held that State Commission is not bound by any policy directions issued by the Government under the Act if such directions hamper the statutory functions of the Commission. The relevant extracts of the Hon'ble Supreme Court's judgment dated 8.7.2010 is quoted below:

“27. The Reform Act, 1998 was enacted, primarily, with the object of constituting two separate corporations; one for generation and other for transmission and distribution of electrical energy. The essence was restructuring, so as to achieve the balance required to be maintained in regard to competitiveness and efficiency on the one part and the social objective of ensuring a fair deal to the consumer on the other. This Act is also intended for creation of a statutory regulatory authority. Section 3 of the Act requires the State Govt. to establish by notification a Commission to be known as Andhra Pradesh Electricity Regulatory Commission. This was done by notification dated 3rd April, 1999. As already noticed, Section 11 detailed the functions of the Regulatory Commission and primarily it had advisory as well as regulatory functions. In terms of Section 11(1)(c) it was required to issue licenses in accordance with the provisions of the Act and determine the conditions to be included in the license. However, 11(1)(e) gave it much wider power and duty to regulate the purchase, distribution, supply and utilization of electricity, the quality of service, the tariff and charges payable keeping in view both the interest of the consumer as well as the consideration that the supply and distribution cannot be maintained unless the charges for the electricity supplied are adequately levied and duly collected. In terms of Section 11(1)(l) it was to undertake all incidental or ancillary things to the functions assigned to it under the provisions of the Act. Section 12 of the Act vests the State Govt. with the power to issue policy directions on matters concerning electricity in the State including the overall planning and co-ordination. All policy directions shall be issued by the State Govt. consistent with the objects sought to be achieved by this Act and, accordingly, shall not adversely affect or interfere with the functions and powers of the Regulatory Commission including, but not limited to, determination of the structure of tariffs for supply of electricity to various classes of consumers. The State Govt. is further expected to consult the Regulatory Commission in regard to the proposed legislation or rules concerning any policy direction and shall duly take into account the recommendation by the Regulatory Commission on all such matters. Thus the scheme of these provisions is to grant supremacy to the Regulatory Commission and the State is not expected to take any policy decision or planning which would adversely affect the functioning of the Regulatory Commission or interfere with its functions. This provision also clearly implies that fixation of tariff is the function of the Regulatory Commission and the State Govt. has a minimum role in that regard. Chapter VII of this Act deals with tariff. In terms of Section 26(2), the Regulatory Commission, in addition to its power of issuing licence, is entitled to fix terms and conditions for determination of the licensee's revenue and tariffs by regulations which are to be duly published. The expression 'tariff' has not been defined in any of the Acts, with which we are concerned in the present appeals, despite the fact that the expression 'tariff' has been used repeatedly in both the Acts. Under the Electricity Act, 2003 'tariff' has neither been defined nor explained in any of the provisions of the Act. Explanation (b) to Section 26 of the Reform Act, 1998 states what is meant by 'tariff'. This provision states that 'tariff' means a schedule of standard price or charges or specified services which are applicable to all such specified services provided to the type or types of customers specified in the 'tariff' notification. This is an explanation to Section 26 which deals with licenses, revenues and tariffs. In other words, this explanation may not be of greater help to the Court in dealing with the case of generating companies. Similarly, the expression 'purchase price' has neither been defined nor explained in any of the afore-stated Acts.¶ {Emphasis added}.

30. Thus, the judgments cited by the Appellant as above have been overruled by the Hon'ble Supreme Court in APTRANSCO vs Sai Renewable Energy Pvt. Ltd. [(2011)11SCC 34].

31. Further, this Tribunal in Polyplex Corporation vs Utrakhand Electricity Regulatory Commission in Appeal no. 41, 42 and 43 of 2010 has held that —

“The State Commission is independent statutory body. Therefore the policy directions issued by the State Government are not binding on the State Commission, as those directions cannot curtail the power of the State Government (sic Commission) in the matter of determination of tariff. The State Government may have given any such policy direction in order to cater to the popular demand made by the public but while determining tariff the State Commission may take those directions or suggestions for consideration but it is for the State Commission which has statutory duty to perform either to accept the suggestion or reject those directions taking note of the various circumstances. It is purely discretionary on the part of the State Commission on acceptability of the directions issued by the State Government in the matter of determination of tariff.”

51. Thus, the directions issued under section 107 or 108, as the case may be, shall be in matters of policy involving public interest and for the implementation of the provisions of the 2003 Act.

52. The Commission while specifying the terms and conditions of tariff, shall be guided by provisions of Section 61 of the 2003 Act which is extracted below:

“Section 61. (Tariff Regulations):

The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided by the following, namely:-

- (a) the principles and methodologies specified by the Central Commission for determination of the tariff applicable to generating companies and transmission licensees;*
 - (b) the generation, transmission, distribution and supply of electricity are conducted on commercial principles;*
 - (c) the factors which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments;*
 - (d) safeguarding of consumers' interest and at the same time, recovery of the cost of electricity in a reasonable manner;*
 - (e) the principles rewarding efficiency in performance;*
 - (f) multi year tariff principles;*
 - (g) that the tariff progressively reflects the cost of supply of electricity and also, reduces cross-subsidies in the manner specified by the Appropriate Commission;*
 - (h) the promotion of co-generation and generation of electricity from renewable sources of energy;*
 - (i) the National Electricity Policy and tariff policy:*
- Xxxx”*

53. Section 178 of the 2003 Act provides with the powers of the Commission to make regulations, Section 79 of the said Act provides for the following functions of the Commission:

“79. (1) The Central Commission shall discharge the following functions, namely:-

- (a) to regulate the tariff of generating companies owned or controlled by the Central*

Government;

(b) to regulate the tariff of generating companies other than those owned or controlled by the Central Government specified in clause

(a), if such generating companies enter into or otherwise have a composite scheme for generation and sale of electricity in more than one State;

(c) to regulate the inter-State transmission of electricity;

(d) to determine tariff for inter-State transmission of electricity;

(e) to issue licenses to persons to function as transmission licensee and electricity trader with respect to their inter-State operations.

(f) to adjudicate upon disputes involving generating companies or transmission licensee in regard to matters connected with clauses (a) to (d) above and to refer any dispute for arbitration;

(g) to levy fees for the purposes of this Act;

(h) to specify Grid Code having regard to Grid Standards;

(i) to specify and enforce the standards with respect to quality, continuity and reliability of service by licensees;

(j) to fix the trading margin in the inter-State trading of electricity, if considered, necessary;

(k) to discharge such other functions as maybe assigned under this Act.”

54. Accordingly, the Commission, in exercise of its powers under Section 79(1)(c) read with subsection (1) and clause (ze) of subsection (2) of Section 178 of the 2003 Act has notified the Regulatory Approval Regulations. In terms of Section 61(h) of the 2003 Act, the Commission has taken a number of regulatory initiatives for the development of RE sources and for the smooth integration of RE in the grid. In order to facilitate effective integration of variable and uncertain RE generation, the Commission has specified Roadmap for Reserves, framework for Ancillary Services Operation besides amending the IEGC, which provides for technical minimum of 55% in case of thermal generating units aimed at providing flexibility to respond to the needs of variation in demand, RE generation etc. Besides the above, the Commission has also brought in several regulatory interventions for promoting renewable energy generation, which inter alia include, notification of Renewable Energy Certificate Mechanism, Framework for Scheduling, Forecasting & Deviation Settlement of RE generation, specifying Relaxation in Deviation Settlement Mechanism for RE generation etc.

55. The Central Government has, as a part of 175 GW, set a target for addition of 66.5 GW of RE and there is an immediate need to construct transmission lines for

evacuation of RE power. In terms of this, the CTU/ CEA have accordingly prepared a plan for immediate development of transmission lines that should precede the RE generation projects. These have been placed before the respective Standing Committees and Regional Power Committees for consideration and approval. Out of projected 66.5 GW RE generation, the development of transmission system associated with 28 GW is involved in the Western Region (Gujarat, Maharashtra and Madhya Pradesh).

56. On a cogent reading of the submissions of the CTU and the direction of GOI in para 2(iii) of letter dated 11.7.2019, it can be inferred that the requirements of LTA applications are required to be deferred for the interim period till the RE project is awarded to the successful bidder and that due regulatory procedure of LTA and connectivity will be followed by the successful bidder.

57. We take note of the submissions of Petitioner for grant of regulatory approval with deferred requirement of LTA applications and associated BGs and the issues raised by the various stakeholders. The Petitioner vide the instant Petition dated 16.7.2019 had submitted that the tentative annual transmission charges for REZ Phase-I at an estimated cost of ₹ 5,664 crore is ₹ 963 crore, which works out to approximately ₹ 0.49/ unit considering Solar CUF as 20% and Wind CUF as 25%. It has also submitted that the tentative annual transmission charges for REZ Phase-II and Dholera UMSP at an estimated cost of ₹ 10,450 crore is ₹ 1776.50 crore, which works out to approximately ₹ 0.47/ unit considering Solar CUF as 20% and Wind CUF as 25%.

58. The Petitioner vide Affidavit dated 1.10.2019 has submitted phasing out of the scheme under three timelines as Dec'20/March 21, Dec'21 and beyond Dec'21 and separately for Dholera as Dec'21. The tentative annual transmission charges for

transmission system upto Dec'20/ March 21 for a renewable capacity of 3.5 GW at an estimated cost of ₹ 3,939 crore is ₹ 670 crore, which works out to approximately ₹ 0.62/ unit considering Wind CUF as 35%.The tentative annual transmission charges for transmission system upto Dec'21 for a renewable capacity of 4.5 GW at an estimated cost of ₹ 1,918 crore is ₹ 326 crore, which works out to approximately ₹ 0.28/ unit considering Solar CUF as 25% and Wind CUF as 35%.The tentative annual transmission charges for transmission system beyond Dec'21for a renewable capacity of 20 GW at an estimated cost of ₹ 8207crore is ₹ 1395 crore, which works out to approximately ₹ 0.30/ unit considering Solar CUF as 25% and Wind CUF as 35%.The tentative annual transmission charges for transmission system for Dholera Solar Park upto Dec'21 at an estimated cost of ₹ 1416crore is ₹ 240.7 crore, which works out to approximately ₹ 0.27/ unit considering Solar CUF as 25%.

59. We observe that timeline for renewable capacity beyond 2021 has not been specified. The Petitioner vide Affidavit dated 1.10.2019 has submitted "Minutes of meeting regarding prioritization of transmission system associated with 66.5 GW potential RE capacity already planned, based on inputs from SECI/MNRE held on 30.08.2019 at CEA, New Delhi" whereby following is recorded:

"SECI informed that as per their bidding guidelines, generation capacity is to be commissioned within 24 months from the date of bidding. Accordingly, it was decided that transmission schemes for the Phase-III potential capacity at various locations may be kept ready for implementation. The necessary approvals for the transmission schemes from NCT, ECT, MoP needs to be in place so that bidding for the transmission schemes could be started as soon as State Government confirms land/reservoir availability for setting up of RE projects. Once SECI starts bidding process for the Phase-III potential REZ capacity, SECI will inform to MOP, CEA & CTU the commissioning schedule of generation projects so that activities for implementation/bidding of respective transmission schemes may be taken up.

In case land availability for any part of Phase-III projects is confirmed in near future, the scheme needs to be taken up on priority.”

In line with the above, it is directed that Petitioner shall ensure that transmission system is taken up for implementation matching with progress of generation projects as suggested above.

60. As stated earlier, the Petition for grant of Regulatory approval does not squarely fall under the provisions of Regulation 3(1) (i) of the Regulatory Approval Regulations. However, the Petitioner during hearing on 21.8.2019 prayed that the Commission may exercise the Power to relax under Regulation 8 of the Regulatory Approval Regulations. Therefore, considering the fact that the scheme is of national importance as mentioned by the Ministry of Power in its letter dated 11.7.2019 and with due regard to the guiding principle of promoting renewable energy as enshrined under Section 61(h) of the 2003 Act, we, in exercise of our Powers under Regulation 8 of the Regulatory Approval Regulations, relax the provisions of Regulation 3(1)(i) of the Regulatory Approval Regulations and grant Regulatory approval for execution of the proposed transmission system identified in this Petition. Having done so, the issues and concerns expressed by the discoms and other stakeholders are also required to be balanced while granting such relief, especially when the Ministry of Power, GOI has accorded the said transmission system the status of national importance. The Commission is also guided by the principles, as provided under Section 61(d) of the 2003 Act i.e. safeguarding of consumer's interest and at the same time, recovery of the cost of electricity in a reasonable manner. Thus, the Commission has a statutory responsibility to balance the interest of developers and consumers of electricity. Accordingly, the regulatory approval granted above is subject to the condition that the distribution companies and consumers shall be liable for payment of transmission charges after the renewable generating

stations achieve the COD. The transmission charges for transmission system approved herein shall be recovered as per CERC (Sharing of inter-state transmission charges and losses) Regulations, 2010 as amended from time to time after the associated generating stations achieves COD. In case of mismatch between the date of commercial operation of generating station and transmission system, the liability of transmission charges shall be governed by Regulation 6 of CERC (Terms and Conditions of Tariff) Regulations, 2019. The CTU, as far as possible, shall endeavor to match or phase out the construction of transmission systems according to the progress of the RE generating stations, in consultation with MOP and MNRE so as to minimise any financial impact on distribution companies in case the transmission assets remain unutilized due to delay or non-materialization of envisaged generation projects. In case the generating stations as envisaged do not materialize and transmission system is commissioned, CTU may seek appropriate remedies such as grants and/or subsidies from GOI/ State Governments till the associated generating stations achieve COD. CTU may also approach the Commission for appropriate relief and directions.

61. CTU shall submit quarterly progress report as regards execution of the approved Transmission Scheme to the Ministry of Power, GOI and CEA. The report shall contain pace of construction of transmission systems and the extent of LTAs granted & the PPAs signed.

62. Petition No. 197/MP/2019 is disposed of in terms of the above.

sd/-

**I. S. Jha
(Member)**

sd/-

**Dr. M. K. Iyer
(Member)**

sd/-

**P. K. Pujari
(Chairperson)**