

Amendment No. 13 dated 02.06.2022

to

Request for Proposal (RFP) documents for selection of Transmission Service Provider through tariff based competitive bidding process to establish transmission system for “Transmission System Strengthening Scheme for Evacuation of Power from Solar Energy Zones in Rajasthan (8.1 GW) under Phase-II Part-E”

S. No.	Existing Provision			Amended Provision					
1.	S. No. 1 of Amendment No. 6 issued on 03.09.2020 (Request for Proposal Notification S. No. 2 and Clause 1.2 of the RFP Document, S. No. 2 of Schedule-2 of TSA)			S. No. 1 of Amendment No. 6 issued on 03.09.2020 (Request for Proposal Notification S. No. 2 and Clause 1.2 of the RFP Document, S. No. 2 of Schedule-2 of TSA)					
	S. No	Name of the Transmission Element	Scheduled COD from Effective Date	Conductor Per Phase		S. No	Name of the Transmission Element	Scheduled COD from Effective Date	Column Deleted
	1.	Bhadla-II PS – Sikar-II 765kV D/c line (2nd)	18 Months	Hexa Zebra ACSR The transmission lines shall consist of either Hexa Zebra ACSR or equivalent to AAAC conductor or equivalent AL59 conductor as specified under specific technical requirements in RfP.		1.	Bhadla-II PS – Sikar-II 765kV D/c line (2nd)	18 Months	
	2.	2 no. of 765 kV line bays each at Bhadla- II and Sikar-II for Bhadla-II PS – Sikar-II 765kV D/c line				2.	2 no. of 765 kV line bays each at Bhadla-II and Sikar-II for Bhadla-II PS – Sikar-II 765kV D/c line		
	3.	1x330 MVA _r switchable line reactor for each circuit at Sikar-II end of Bhadla-II PS – Sikar-II 765kV D/c line 330 MVA _r , 765 kV reactor- 2 Switching equipment for 765 kV reactor - 2				3.	1x330 MVA _r switchable line reactor for each circuit at Sikar-II end of Bhadla-II PS – Sikar-II 765kV D/c line 330 MVA _r , 765 kV reactor- 2 Switching equipment for 765 kV reactor - 2		
4.	1x240MVA _r switchable line reactor for each circuit at Bhadla-II end of Bhadla-II PS – Sikar-II 765kV D/c line 240 MVA _r , 765 kV reactor- 2 Switching equipment for 765 kV reactor - 2	-	4.	1x240MVA _r switchable line reactor for each circuit at Bhadla-II end of Bhadla-II PS – Sikar-II 765kV D/c line 240 MVA _r , 765 kV reactor- 2 Switching equipment for 765 kV reactor - 2					
Note:									

S. No.	Existing Provision					Amended Provision				
2.	S. No. 2 of Amendment No. 6 issued on 03.09.2020 (Clause No. 2.6.1 and S. No. 8 in Annexure-8 of the RFP Document, Schedule - 3 of TSA)					S. No. 2 of Amendment No. 6 issued on 03.09.2020 (Clause No. 2.6.1 and S. No. 8 in Annexure-8 of the RFP Document, Schedule - 3 of TSA)				
	S. No	Name of the Transmission Element	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring the commercial operation (COD) of the respective Element	S. No	Name of the Transmission Element	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring the commercial operation (COD) of the respective Element
	1.	Bhadla-II PS – Sikar-II 765kV D/c line (2nd)	18 Months	100%	Elements marked at Sl. No. 1 to 3 are required to be commissioned simultaneously as their utilization is dependent on commissioning of each other.	1.	Bhadla-II PS – Sikar-II 765kV D/c line (2nd)	18 Months	100%	Elements marked at Sl. No. 1 to 4 are required to be commissioned simultaneously as their utilization is dependent on commissioning of each other.
	2.	2 no. of 765 kV line bays each at Bhadla- II and Sikar-II for Bhadla-II PS – Sikar-II 765kV D/c line				2.	2 no. of 765 kV line bays each at Bhadla- II and Sikar-II for Bhadla-II PS – Sikar-II 765kV D/c line			
	3.	1x330 MVAR switchable line reactor for each circuit at Sikar-II end of Bhadla-II PS – Sikar-II 765kV D/c line 330 MVAR, 765 kV reactor- 2 Switching equipment for 765 kV reactor - 2				3.	1x330 MVAR switchable line reactor for each circuit at Sikar-II end of Bhadla-II PS – Sikar-II 765kV D/c line 330 MVAR, 765 kV reactor- 2 Switching equipment for 765 kV reactor - 2			
	4.	1x240MVAR switchable line reactor for each circuit at Bhadla-II end of Bhadla-II PS – Sikar-II 765kV D/c line				4.	1x240MVAR switchable line reactor for each circuit at Bhadla-II end of Bhadla-II PS – Sikar-II 765kV D/c line			

S. No.	Existing Provision					Amended Provision																								
		240 MVAR, 765 kV reactor- 2 Switching equipment for 765 kV reactor - 2					240 MVAR, 765 kV reactor- 2 Switching equipment for 765 kV reactor - 2																							
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3.	Amendment No. 12 issued on 23.02.2022 (Clause 2.1 of Specific Technical Requirements for Substation of RFP and TSA Document) Clause 2.1 (765/√3) Single Phase Shunt Reactor 765 kV Shunt Reactor shall be as per “Standard Specifications and Technical Parameters for Transformers and Reactors (66 kV and above)” available on CEA website shall be followed. The Technical Particulars / Parameters of 1-phase, 110 MVAR, 765/√3 kV Shunt Reactor are given below: <table><tr><th>Sl. No.</th><th>Description</th><th>Unit</th><th>Technical Parameters</th></tr><tr><td>1.</td><td>Rated capacity at 765/√3 kV</td><td>MVAR</td><td>110/80, 1-phase (as applicable)</td></tr><tr><td>2.</td><td>....</td><td>...</td><td>...</td></tr><tr><td>...</td><td>...</td><td>...</td><td>...</td></tr><tr><td>17.</td><td>...</td><td>...</td><td>...</td></tr></table>					Sl. No.	Description	Unit	Technical Parameters	1.	Rated capacity at 765/√3 kV	MVAR	110/80, 1-phase (as applicable)	2.	17.	Amendment No. 12 issued on 23.02.2022 (Clause 2.1 of Specific Technical Requirements for Substation of RFP and TSA Document) Clause 2.1 (765/√3) Single Phase Shunt Reactor Revised specification for (765/√3) Single Phase Shunt Reactor is enclosed at Annexure-A.				
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4.	Article 18: Miscellaneous Provisions, Clause 18.1.1 of TSA & Amendment No. 12 dated 23.02.2022 18.1.1 The Long Term Transmission Customers hereby appoint and authorise “Maharashtra State Electricity Distribution Company Limited” (hereinafter referred to as the “Lead Long Term Transmission Customer”) to represent all the Long Term Transmission Customers for discharging the rights and obligations of the Long Term Transmission Customers, which are required to be undertaken by all the Long Term Transmission Customers. All the Long Term Transmission Customers shall follow and be bound by the decisions of the Lead Long Term Transmission Customer on all matters specified in the Schedule 8 of this Agreement. Accordingly each Long Term Transmission Customer agrees that any decision, communication, notice, action or					Article 18: Miscellaneous Provisions, Clause 18.1.1 of TSA & Amendment No. 12 dated 23.02.2022 18.1.1 The Long Term Transmission Customers hereby appoint and authorise “ACME Solar Holdings Private Limited” (hereinafter referred to as the “Lead Long Term Transmission Customer”) to represent all the Long Term Transmission Customers for discharging the rights and obligations of the Long Term Transmission Customers, which are required to be undertaken by all the Long Term Transmission Customers. All the Long Term Transmission Customers shall follow and be bound by the decisions of the Lead Long Term Transmission Customer on all matters specified in the Schedule 8 of this Agreement. Accordingly each Long Term Transmission Customer agrees that any decision,																								

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	inaction of the Lead Long Term Transmission Customer on such matters shall be deemed to have been on its/his behalf and shall be binding on each of the Long Term Transmission Customer. The TSP shall be entitled to rely upon any such action, decision or communication or notice from the Lead Long Term Transmission Customer. It is clarified that provisions under this Article 18.1 are not intended to and shall not render the Lead Long Term Transmission Customer liable to discharge Transmission Charges payments due to TSP from the other Long Term Transmission Customers.	communication, notice, action or inaction of the Lead Long Term Transmission Customer on such matters shall be deemed to have been on its/his behalf and shall be binding on each of the Long Term Transmission Customer. The TSP shall be entitled to rely upon any such action, decision or communication or notice from the Lead Long Term Transmission Customer. It is clarified that provisions under this Article 18.1 are not intended to and shall not render the Lead Long Term Transmission Customer liable to discharge Transmission Charges payments due to TSP from the other Long Term Transmission Customers.																				
5.	<p>Annexure-19: LIST OF LONG TERM TRANSMISSION CUSTOMERS of RfP document & Amendment No. 12 dated 23.02.2022</p> <table><tr><th>Sl. No</th><th>Name of Long Term Transmission Customers</th><th>Address of Registered Office</th><th>Law under which incorporated</th><th>Allocated Project Capacity (in MW)*</th></tr><tr><td>1.</td><td>Maharashtra State Electricity Distribution Company Limited (MSEDCL)</td><td>Prakashgad, Plot No. G-9, Bandra East, Mumbai – 400051</td><td>Companies Act</td><td>As per PoC Mechanism prescribed by CERC</td></tr></table>	Sl. No	Name of Long Term Transmission Customers	Address of Registered Office	Law under which incorporated	Allocated Project Capacity (in MW)*	1.	Maharashtra State Electricity Distribution Company Limited (MSEDCL)	Prakashgad, Plot No. G-9, Bandra East, Mumbai – 400051	Companies Act	As per PoC Mechanism prescribed by CERC	<p>Annexure-19: LIST OF LONG TERM TRANSMISSION CUSTOMERS of RfP document & Amendment No. 12 dated 23.02.2022</p> <table><tr><th>Sl. No</th><th>Name of Long Term Transmission Customers</th><th>Address of Registered Office</th><th>Law under which incorporated</th><th>Allocated Project Capacity (in MW)*</th></tr><tr><td>1.</td><td>ACME Solar Holdings Private Limited (ASHPL)</td><td>Plot No. 152, Sector-44, Gurugram-122002, Haryana</td><td>Companies Act</td><td>As per PoC Mechanism prescribed by CERC</td></tr></table>	Sl. No	Name of Long Term Transmission Customers	Address of Registered Office	Law under which incorporated	Allocated Project Capacity (in MW)*	1.	ACME Solar Holdings Private Limited (ASHPL)	Plot No. 152, Sector-44, Gurugram-122002, Haryana	Companies Act	As per PoC Mechanism prescribed by CERC
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6.	<p>Article 18: Miscellaneous Provisions, Clause 18.1.3 of TSA & Amendment No. 12 dated 23.02.2022</p> <p>18.1.3 In the event of “.....” becoming the Lead Long Term Transmission Customer as per Article 18.1.2, all the Long Term Transmission Customers shall also appoint any of Long Term Transmission Customers, other than “Maharashtra State Electricity Distribution Company Limited”, appointed under Article 18.1.1, as an Alternate Lead Long Term Transmission Customer and thereafter the provisions of Article 18.1.2 shall be applicable.</p>	<p>Article 18: Miscellaneous Provisions, Clause 18.1.3 of TSA & Amendment No. 12 dated 23.02.2022</p> <p>18.1.3 In the event of “.....” becoming the Lead Long Term Transmission Customer as per Article 18.1.2, all the Long Term Transmission Customers shall also appoint any of Long Term Transmission Customers, other than “ACME Solar Holdings Private Limited”, appointed under Article 18.1.1, as an Alternate Lead Long Term Transmission Customer and thereafter the provisions of Article 18.1.2 shall be applicable.</p>																				
7.	Schedule 1 of TSA & Amendment No. 12 dated 23.02.2022	Schedule 1 of TSA & Amendment No. 12 dated 23.02.2022																				

S. No.	Existing Provision				Amended Provision			
	Sl. No	Name of the Long Term Transmission Customer	Address of Registered Office	Allocated Project Capacity (in MW) (As per PoC Mechanism)	Sl. No	Name of the Long Term Transmission Customer	Address of Registered Office	Allocated Project Capacity (in MW) (As per PoC Mechanism)
	1.	Maharashtra State Electricity Distribution Company Limited (MSEDCL)	Prakashgad, Plot No. G-9, Bandra East, Mumbai – 400051	As per PoC Mechanism Prescribed by CERC	1.	ACME Solar Holdings Private Limited (ASHPL)	Plot No. 152, Sector-44, Gurugram-122002, Haryana	As per PoC Mechanism Prescribed by CERC
8.	Annexure-23 Tariff Illustration Sheet				Annexure-23 Tariff Illustration Sheet The MS Excel sheet shall be shared separately.			
9.	Name of the SPV				Name of the SPV Name of the SPV may be corrected as “Bhadla Sikar Transmission Limited”			

2.1 765/√3 kV Single Phase Shunt Reactor

765 kV Shunt Reactor shall be as per “Standard Specifications and Technical Parameters for Transformers and Reactors (66 kV and above)” available on CEA website shall be followed.

The Technical Particulars / Parameters of single phase, 765/√3 kV, 80 MVar & 110 MVar Shunt Reactor are given below:

S. No.	Description	Unit	Technical Parameters	
1.	Rated capacity at 765/√3 kV	MVar	80	110
2.	Rated Voltage (Ur)	kV	765/√3	
3.	Maximum continuous operating voltage (Um) (1 p.u.)	kV	800/√3	
4.	Winding connection		Star with neutral (in 3 Phase Bank)	
5.	Cooling type		ONAN	
6.	Frequency	Hz	50	
7.	No of Phases		1 (Single)	
8.	Reference standard		IEC 60076-6	
9.	Service		Outdoor	
10.	Duty		Continuous at 800/√3kV	
11.	Permissible unbalance current among phases		±1%	
12.	Crest value of third harmonic content in phase current at rated voltage with sinusoidal wave form		≤ 3% of the crest value of fundamental	
13.	Range of constant impedance		Up to 1.25 p.u. (However, complete saturation characteristics of the Reactors upto 1.5 p.u. Voltage shall be furnished)	
14.	Tolerance on current		(i) 0 to +5% for a single-phase unit (ii) ±1% for between units	
15.	Ratio of zero sequence reactance to positive reactance (X0/X1)		Between 0.9 & 1.0.	
16.	Temperature rise over 50 °C Ambient Temp. and at 800/√3 kV			

i)	Top oil measured by thermometer	°C	40
ii)	Average winding measured by resistance method	°C	45
17.	Winding hot spot temperature rise over yearly weighted average temperature of 32 °C	°C	61
18.	Max. tank surface temperature	°C	110
19.	Max design ambient temperature	°C	50
20.	Windings		
i)	Lightning Impulse withstand Voltage		
	Line end	kV _p	1950
	Neutral	kV _p	550
ii)	Chopped Wave Lightning Impulse Withstand Voltage		
	Line end	kV _p	2145
iii)	Switching Impulse withstand Voltage at Line end	kV _p	1550
iv)	Power Frequency withstand Voltage		
	Line end	kV rms	830kV rms (Ph to Earth) for 5 min (to be tested)
	Neutral	kV rms	230 (for one minute)
21.	Neutral earthing		Solidly Earthed
22.	Whether neutral is to be brought out		Yes (through 145kV class bushing)
23.	Tan-delta of windings at ambient Temperature		< 0.005
24.	Bushing		
i)	Rated voltage		
	Line bushing	kV	800
	Neutral bushing	kV	145
ii)	Rated current		
	Line bushing	A	2500

	Neutral bushing	A	1250	
iii)	Lightning Impulse withstand Voltage			
	Line bushing	kV _p	2100	
	Neutral bushing	kV _p	650	
iv)	Switching Impulse withstand Voltage of Line bushing	kV _p	1550	
v)	One minute power frequency withstand of bushings (dry)			
	Line bushing	kV rms	970	
	Neutral bushing	kV rms	305	
vi)	Minimum creepage distance		(Specific Creepage Distance: of 25mm/kV corresponding to highest line to line voltage)	
	Line bushing	mm	20000	
	Neutral bushing	mm	3625	
vii)	Partial discharge of bushings at Um (line end and neutral)	pC	< 10	
25.	Vibration and tank stress at Um		Max ≤200microns peak to peak Average ≤ 60microns peak to peak Tank stress: ≤2.0kg/sq.mm at any point of tank	
26.	Maximum noise pressure level at rated voltage & frequency	dB	80	
27.	Maximum Permissible Losses of Reactor		80 MVar	110 MVar
i)	Max. Total loss at rated current and frequency and at 75 °C	kW	98	120
ii)	Max. I ² R Loss at rated current and frequency and at 75 °C	kW	52	60
28.	Insulating oil		Unused inhibited or uninhibited transformer oil conforming to IEC-60296:2012	

The neutral of shunt reactor shall be insulated to 550 kVp for lightning impulse. The neutral of the line reactors (wherever provided) shall be grounded through adequately rated Neutral Grounding Reactors (NGR) to facilitate single phase auto-reclosure, provided that the NGR shall be provided with bypass arrangement through a breaker so that the line reactor can be used as Bus Reactor as and when required. The neutral of Bus Reactor shall be solidly grounded.

Neutral Grounding Reactor (NGR) and Surge Arrester for 765kV line reactors

TSP shall provide NGR of suitable value (Ohm) as per actual line length. NGR shall be oil filled or dry type air core for outdoor application. Line and ground side of NGR shall be rated for 145kV and 36kV class of insulation respectively. Oil filled NGR shall be rated for continuous current of 10A and short time current of 60A r.m.s for 10 seconds while air core NGR shall be rated for continuous current of 20A and short time current of 240A r.m.s for 1 minute. However, the air core NGR shall be designed for a short time current of 600 Amp r.m.s to ensure mechanical robustness. The air core NGR shall be mounted on support structure (non-magnetic material) high above ground level (2.55 meter) to allow free and safe access at ground level for personnel.

The surge arresters (rated voltage 120kV) shall be provided & physically located between the neutral of shunt reactor (brought out at 145kV class bushing) and neutral grounding reactor. The surge arresters shall be of heavy duty station class gapless Metal oxide (ZnO) type conforming in general to IEC-60099-4. Arresters shall be hermetically sealed units, of self-supporting construction, suitable for mounting on structures