

**Amendment -VI dated 27.10.2022 on the Request for Proposal Document and Transmission Service Agreement issued for selection of bidder as Transmission Service Provider to establish “Transmission scheme for evacuation of 4.5GW RE injection at Khavda PS under Phase II- Part C” through tariff based competitive bidding process**

Sl. No.	Clause No.	Existing Clause	New/Revised Clause
1	<b>Scope of the Transmission Scheme of RFP &amp; TSA</b>	<p>.....</p> <p><b>Note:</b></p> <p>(i) Transmission system for evacuation of 3 GW RE injection at Khavda is being taken up under Phase-I. Phase-II RE scheme for evacuation of 4.5 GW RE injection at Khavda needs to be taken up for evacuation requirement beyond 3 GW from Khavda RE park.</p> <p>(ii) .....</p> <p>(iii).....</p> <p>(iv).....</p>	<p>.....</p> <p><b>Note:</b></p> <p>(i) Transmission system for evacuation of 3 GW RE injection at Khavda is being taken up under Phase-I. Phase-II RE scheme for evacuation of 4.5 GW RE injection at Khavda needs to be taken up for evacuation requirement beyond 3 GW from Khavda RE park.</p> <p>(ii) .....</p> <p>(iii).....</p> <p>(iv).....</p> <p>(v) <u><b>2 no. of 765 kV line bays for termination of Lakadia-Ahmedabad 765 kV D/c line to be implemented along with space provision for installation of switchable Line Reactor at Ahmedabad end of Lakadia-Ahmedabad 765 kV D/c line.</b></u></p>

2	Clause No. B.1.1 of Specific Technical Requirements for Substation of RFP & TSA	<table border="1"> <thead> <tr> <th rowspan="2">Sl. No</th> <th rowspan="2">Description of Parameters</th> <th colspan="2">765/400kV Ahmedabad s/s</th> <th>Extn. of 765kV South Gujarat s/s</th> </tr> <tr> <th>765kV System</th> <th>400kV System</th> <th>765 kV System</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>System operating voltage</td> <td>765kV</td> <td>400kV</td> <td>765kV</td> </tr> <tr> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <td>9.</td> <td>Minimum Creepage distance for switchyard equipment</td> <td>20000mm (25mm/kV)</td> <td>10500mm (25mm/kV)</td> <td><b>20000mm (25mm/kV)</b></td> </tr> </tbody> </table>	Sl. No	Description of Parameters	765/400kV Ahmedabad s/s		Extn. of 765kV South Gujarat s/s	765kV System	400kV System	765 kV System	1.	System operating voltage	765kV	400kV	765kV	--	--	--	--	--	9.	Minimum Creepage distance for switchyard equipment	20000mm (25mm/kV)	10500mm (25mm/kV)	<b>20000mm (25mm/kV)</b>	<table border="1"> <thead> <tr> <th rowspan="2">Sl. No</th> <th rowspan="2">Description of Parameters</th> <th colspan="2">765/400kV Ahmedabad s/s</th> <th>Extn. of 765kV South Gujarat s/s</th> </tr> <tr> <th>765kV System</th> <th>400kV System</th> <th>765 kV System</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>System operating voltage</td> <td>765kV</td> <td>400kV</td> <td>765kV</td> </tr> <tr> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <td>9.</td> <td>Minimum Creepage distance for switchyard equipment</td> <td>20000mm (25mm/kV)</td> <td>10500mm (25mm/kV)</td> <td><b>24800mm (31mm/kV)</b></td> </tr> </tbody> </table>	Sl. No	Description of Parameters	765/400kV Ahmedabad s/s		Extn. of 765kV South Gujarat s/s	765kV System	400kV System	765 kV System	1.	System operating voltage	765kV	400kV	765kV	--	--	--	--	--	9.	Minimum Creepage distance for switchyard equipment	20000mm (25mm/kV)	10500mm (25mm/kV)	<b>24800mm (31mm/kV)</b>
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3	Clause No. B.2.2 of Specific Technical Requirements for Substation of RFP & TSA	<p><b>(765/√3) kV, Single Phase Shunt Reactor</b></p> <p>.....</p> <p>.....</p> <p><b>Neutral Grounding Reactor (NGR) and Surge Arrester for 765 kV Line Reactors (as applicable)</b></p> <p>.....</p> <p>The surge arresters shall be of <b>heavy duty station class</b> gapless Metal oxide (ZnO) type conforming in general to IEC-60099-4. Arresters .....</p>	<p><b>(765/√3) kV, Single Phase Shunt Reactor</b></p> <p>.....</p> <p>.....</p> <p><b>Neutral Grounding Reactor (NGR) and Surge Arrester for 765 kV Line Reactors (as applicable)</b></p> <p>.....</p> <p>The surge arresters shall be of <b>Station Medium (SM) class duty</b> gapless Metal oxide (ZnO) type conforming in general to IEC-60099-4. Arresters .....</p>																																														
4	Clause No. B.2.7 of Specific Technical Requirements	<p><b>Substation Automation System</b></p> <p>.....</p> <p>.....</p>	<p><b>Substation Automation System</b></p> <p>.....</p> <p>.....</p>																																														

<p><b>for Substation of RFP &amp; TSA</b></p>	<p>At new substations, the Substation Automation System (SAS) shall be suitable for operation and monitoring of the complete substation including proposed future bays/elements.</p> <p><b><u>In existing substations with Substation automation system (SAS), augmentation of existing SAS shall be done for bays under present scope.</u></b></p> <p>In existing Substations where Substation automation is not provided, control functions shall be done through control panels.</p> <p>.....</p> <p>.....</p>	<p>At new substations, the Substation Automation System (SAS) shall be suitable for operation and monitoring of the complete substation including proposed future bays/elements.</p> <p><b><u>For extension of 765kV South Gujarat S/S, augmentation of existing SAS shall be done for bays under present scope.</u></b></p> <p><b><u>765/400/220KV South Gujarat (Navsari-New) GIS substation is being equipped with Substation Automation System (SAS) based on IEC-61850 based process bus by POWERGRID under separate scheme. The Substation is being executed with Process bus automation based on IEC 61850 using sampled values. Merging units (MU), Switchgear control unit (SGC), Digital interface for transformer (DIT) and Digital interface for reactor (DIR) are envisaged to interface with primary equipment. Station bus and process bus are proposed with PRP based redundant network. A tentative architecture showing automation philosophy is attached for reference as Appendix-1. Centralised type bus bar protection is envisaged which subscribes to Sampled Values from the Process Bus. The proposed Process bus shall be time synchronized with PTP profiles: IEEE C37.238-2017 and IEC/IEEE 61850-9-3 2016.</u></b></p> <p><b><u>Following points shall be required for extension works under present scope:</u></b></p> <p><b><u>1. Redundant SGC/MU shall be provided for each bay</u></b></p> <p><b><u>2. Augmentation of following standard forms available in the HMI:</u></b></p> <ul style="list-style-type: none"> <li>• <b><u>GOOSE Alarms Dashboard</u></b></li> <li>• <b><u>Sampled Values Alarms dashboard</u></b></li> </ul>
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5	<p><b>Clause No.</b> <b>B.3.0 of Specific Technical Requirements for Substation of RFP &amp; TSA</b></p>	<p><b>B.3.0 Substation Support facilities</b> ...</p> <p><b>B.3.1 AC &amp; DC power supplies</b> ...</p> <p>(i) For LT Supply at each new Substation, two (2) nos. of LT Transformers (minimum 800kVA for substations with highest voltage rating as 765kV and minimum 630kVA for substations with highest voltage rating as 400kV) shall be provided <u>out of which one shall be connected with SEB/DISCOM supply and other one shall be connected to tertiary of Transformer.</u></p> <p>.....</p> <p>(ii) 2 sets of 220V battery banks for control &amp; protection and 2 sets of 48V battery banks for PLCC/ communication equipment shall be provided at each new Substation. Each battery bank shall have a float-cum-boost charger. <u>Battery shall be of VRLA type.</u> At new substation, sizing of 220 V battery and battery charger shall be done based on the number of bays specified (including future bays) as per CEA Regulations and relevant IS. 2 sets of 48 V battery banks for PLCC and communication equipment shall be provided at each new Substation with at least 10-hour battery backup and extended backup, if required.</p>	<p><b>B.3.0 Substation Support facilities</b> ...</p> <p><b>B.3.1 AC &amp; DC power supplies</b> ...</p> <p>(i) For LT Supply at each new Substation, two (2) nos. of LT Transformers (minimum 800kVA for substations with highest voltage rating as 765kV and minimum 630kVA for substations with highest voltage rating as 400kV) shall be provided <u>from independent sources as per the CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007.</u></p> <p>.....</p> <p>(ii) 2 sets of 220V battery banks for control &amp; protection and 2 sets of 48V battery banks for PLCC/ communication equipment shall be provided at each new Substation. Each battery bank shall have a float-cum-boost charger. At new substation, sizing of 220 V battery and battery charger shall be done based on the number of bays specified (including future bays) as per CEA Regulations and relevant IS. 2 sets of 48 V battery banks for PLCC and communication equipment shall be provided at each new Substation with at least 10-hour battery backup and extended backup, if required.</p>