<table>
<tr><th>Sl. No.</th><th>Clause No.</th><th>Existing Clause</th><th>New/Revised Clause</th></tr>
<tr><td>1.</td><td>Scope of the Transmission Scheme in RFP & TSA</td><td>
<table>
<tr><th>Sl. No.</th><th>Scope of the Transmission Scheme</th><th>Scheduled COD in months from Effective Date</th></tr>
<tr><td>1.</td><td>.....</td><td rowspan="6">36 months</td></tr>
<tr><td>2.</td><td>...</td></tr>
<tr><td>3.</td><td>...</td></tr>
<tr><td>4.</td><td>...</td></tr>
<tr><td>5.</td><td>Nasik – Pimpalgaon (MSETCL) 400kV D/c line (Quad ACSR/AAAC/AL59 moose equivalent) <u>(Line to be routed from near Sinner TPP / Raymond i.e. from eastern side of Nasik)</u>.</td></tr>
<tr><td>6.</td><td>2 Nos. 400 kV line bays at Pimpalgaon S/s for Nasik – Pimpalgaon (MSETCL) 400 kV D/C line (Quad ACSR/AAAC/AL59 moose equivalent)
• 400 kV line bays – 2 Nos.</td></tr>
</table>
Note:
a) Bay(s) required for completion of diameter (GIS) in one-and-half breaker scheme shall also be executed by the TSP.
b) TSP of South Olpad (GIS) to provide space for above scope of work (Free of cost)
c) MSETCL to provide space for above scope of work at Pimpalgaon S/s (Free of cost)
d) MSETCL to implement 220kV downstream system from Nasik S/s in matching time-frame.
</td><td>
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<tr><th>Sl. No.</th><th>Scope of the Transmission Scheme</th><th>Scheduled COD in months from Effective Date</th></tr>
<tr><td>1.</td><td>.....</td><td rowspan="6">36 months</td></tr>
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<tr><td>6.</td><td>2 Nos. 400 kV line bays at Pimpalgaon <u>(GIS)</u> S/s for Nasik – Pimpalgaon (MSETCL) 400 kV D/C line (Quad ACSR/AAAC/AL59 moose equivalent)
• 400 kV <u>GIS</u> line bays – 2 Nos.</td></tr>
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Note:
a) Bay(s) required for completion of diameter (GIS) in one-and-half breaker scheme shall also be executed by the TSP.
b) TSP of South Olpad (GIS) to provide space for above scope of work (Free of cost)
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d) MSETCL to implement 220kV downstream system from Nasik S/s in matching time-frame.
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</table>

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<tr><th>Sl. No.</th><th>Clause No.</th><th>Existing Clause</th><th>New/Revised Clause</th></tr>
<tr><td>2.</td><td>Clause 2.6 of RFP, Annexure-8 of RFP

Schedule 2 and Schedule: 5 of TSA</td><td>
<table>
<tr><th>Sl. No.</th><th>Name of the Transmission Element</th><th>Scheduled COD</th><th>% of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project</th><th>Element(s) which are prerequired for declaring the commercial operation (COD) of the respective Element</th></tr>
<tr><td>1.</td><td>.....</td><td rowspan="6">36 months</td><td rowspan="6">100%</td><td rowspan="6">All the elements are required simultaneously to ensure their utilization</td></tr>
<tr><td>2.</td><td>...</td></tr>
<tr><td>3.</td><td>...</td></tr>
<tr><td>4.</td><td>...</td></tr>
<tr><td>5.</td><td>Nasik – Pimpalgaon (MSETCL) 400kV D/c line (Quad ACSR/AAAC/AL59 moose equivalent) <u>(Line to be routed from near Sinner TPP / Raymond i.e. from eastern side of Nasik)</u>.</td></tr>
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<tr><th>Sl. No.</th><th>Clause No.</th><th>Existing Clause</th><th>New/Revised Clause</th></tr>
<tr><td>3.</td><td>B.1.1 Insulation Coordination

RFP & TSA</td><td>The system design parameters for substations/switchyards shall be as given below:
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<table>
<tr><th>Sl. No.</th><th>Description of parameters</th><th>765 kV South Olpad S/s (GIS)</th><th><u>400 kV Pimpalgaon S/s (AIS)</u></th></tr>
<tr><td></td><td></td><td>765 kV System</td><td>400 kV System</td></tr>
<tr><td>1.</td><td>System Operating Voltage</td><td>765 kV</td><td>400 kV</td></tr>
<tr><td>2.</td><td>Maximum voltage of the system (rms)</td><td>800 kV</td><td>420 kV</td></tr>
<tr><td>3.</td><td>Rated Frequency</td><td>50 Hz</td><td>50 Hz</td></tr>
<tr><td>4.</td><td>No. of Phases</td><td>3</td><td>3</td></tr>
<tr><td>5.</td><td>Rated Insulation Levels</td><td></td><td></td></tr>
<tr><td>i)</td><td>Lightning Impulse withstand voltage for (1.2/50 micro sec.)
- for Equipment other than Transformer and Reactor
- for Insulator String</td><td>
2100 kVp

2100 kVp</td><td>
1425 kVp

1550 kVp</td></tr>
<tr><td>ii)</td><td>Switching Impulse withstand voltage (250/2500 micro sec.) dry and wet</td><td>1425 kVp (for GIS)
1550 kVp (for AIS)</td><td>1050 kVp</td></tr>
<tr><td>iii)</td><td>One minute power frequency dry withstand voltage (rms)</td><td>960 kV (for GIS)
830 kV (for AIS)</td><td><u>630 kV</u></td></tr>
<tr><td><u>iv)</u></td><td><u>One minute power frequency dry and wet withstand voltage (rms)</u></td><td>--</td><td>--</td></tr>
<tr><td>6.</td><td>Corona Extinction Voltage</td><td>508 kV</td><td>320 kV</td></tr>
</table></td><td>The system design parameters for substations/switchyards shall be as given below:
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<tr><th>Sl. No.</th><th>Description of parameters</th><th>765 kV South Olpad S/s (GIS)</th><th><u>400 kV Pimpalgaon S/s (GIS)</u></th></tr>
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<tr><td>1.</td><td>System Operating Voltage</td><td>765 kV</td><td>400 kV</td></tr>
<tr><td>2.</td><td>Maximum voltage of the system (rms)</td><td>800 kV</td><td>420 kV</td></tr>
<tr><td>3.</td><td>Rated Frequency</td><td>50 Hz</td><td>50 Hz</td></tr>
<tr><td>4.</td><td>No. of Phases</td><td>3</td><td>3</td></tr>
<tr><td>5.</td><td>Rated Insulation Levels</td><td></td><td></td></tr>
<tr><td>i)</td><td>Lightning Impulse withstand voltage for (1.2/50 micro sec.)
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830 kV (for AIS)</td><td><u>650 kV (for GIS)
630 kV (for AIS)</u></td></tr>
<tr><td>6.</td><td>Corona Extinction Voltage</td><td>508 kV</td><td>320 kV</td></tr>
<tr><td>7.</td><td>Max. radio interference voltage for frequency between 0.5 MHz and 2 MHz</td><td>2500 micro-volts at 508 kV rms</td><td>1000 micro-volts at 266 kV rms</td></tr>
</table></td></tr>
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<tr><th>Sl. No.</th><th>Clause No.</th><th>Existing Clause</th><th>New/Revised Clause</th></tr>
<tr><td></td><td></td><td>
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<tr><td>7.</td><td>Max. radio interference voltage for frequency between 0.5 MHz and 2 MHz</td><td>2500 micro-volts at 508 kV rms</td><td>1000 micro-volts at 266 kV rms</td></tr>
<tr><td>8.</td><td>Minimum creepage distance for insulator string/ longrod insulators/ outdoor bushings</td><td>24800 mm (31mm/kV)</td><td>13020 mm (31 mm/kV)</td></tr>
<tr><td>9.</td><td>Minimum creepage distance for switchyard equipment</td><td>24800 mm (31mm/kV)</td><td>10500 mm (25 mm/kV)</td></tr>
<tr><td>10.</td><td>Max. Fault Current</td><td>50 kA</td><td>63 kA</td></tr>
<tr><td>11.</td><td>Duration of Fault</td><td>1 sec</td><td>1 sec</td></tr>
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<tr><td>4.</td><td>B.1.2 Switching Scheme

RFP & TSA</td><td>The switching schemes, as mentioned below, shall be adopted at various voltage levels of substation/switchyard.
<table>
<tr><th>Substation</th><th>765 kV side</th><th>400 kV side</th><th>220 kV side</th></tr>
<tr><td>765/400/220 kV Nasik (AIS)</td><td>One and Half breaker</td><td>One and Half breaker</td><td>Double Main and Transfer</td></tr>
<tr><td>765 kV South Olpad S/s (GIS)</td><td>One and Half breaker</td><td>------</td><td>-----</td></tr>
<tr><td><u>400 kV Pimpalgaon S/s (AIS)</u></td><td>------</td><td><u>As per existing</u></td><td>-----</td></tr>
</table></td><td>The switching schemes, as mentioned below, shall be adopted at various voltage levels of substation/switchyard.
<table>
<tr><th>Substation</th><th>765 kV side</th><th>400 kV side</th><th>220 kV side</th></tr>
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<tr><td>400 kV Pimpalgaon S/s (GIS)</td><td>------</td><td><u>Double Bus Scheme</u></td><td>-----</td></tr>
</table></td></tr>
<tr><td>5.</td><td>B.2.5 765 kV GIS equipment

RFP & TSA</td><td>B.2.5 765 kV GIS equipment

GIS (Gas Insulated Switchgear) shall be Indoor type in accordance to IEC: 62271-203. The switchgear shall be designed and specified to withstand operating conditions and duty requirements. All the switchgear such as Circuit Breaker, isolator, earth switch including CT, PT etc. shall be GIS type. The Surge Arrestor and Voltage Transformer shall be either GIS or outdoor AIS type.
.....</td><td>B.2.5 765 kV and <u>400 kV</u> GIS equipment

GIS (Gas Insulated Switchgear) shall be Indoor type in accordance to IEC: 62271-203. The switchgear shall be designed and specified to withstand operating conditions and duty requirements. All the switchgear such as Circuit Breaker, isolator, earth switch including CT, PT etc. shall be GIS type. The Surge Arrestor and Voltage Transformer shall be either GIS or outdoor AIS type.
.....</td></tr>
</table>

Sl. No.	Clause No.	Existing Clause	New/Revised Clause
6.	B.2.5.1 Circuit Breakers (GIS) RFP & TSA	**B.2.5.1 Circuit Breakers (GIS)** GIS Circuit breakers shall in general be of C2-M2 class and comply to IEC-62271-100. The rated break time shall not exceed 40 ms (milli second) for 765 kV. Circuit breakers shall be suitable for single phase and three phase auto reclosing. Each breaker would have two sets of trip circuits which would be connected to separate DC supplies for greater reliability. The Circuit breakers controlling 765 kV lines shall be provided with pre-insertion closing resistor of about 450 ohms with 9 ms insertion time or Controlled Switching Device (CSD). The short line fault capacity shall be the same as the rated capacity and this is proposed to be achieved without use of opening resistors. Controlled switching device shall be provided in the Circuit Breaker of the switchable line reactor bay and in Main and Tie bay circuit breakers of line with non-switchable line reactors, Bus reactors and Transformers for 400 kV and above voltage class.	**B.2.5.1 Circuit Breakers (GIS)** GIS Circuit breakers shall in general be of C2-M2 class and comply to IEC-62271-100. The rated break time shall not exceed 40 ms (milli second) for 765 kV **and 400 kV**. Circuit breakers shall be suitable for single phase and three phase auto reclosing. Each breaker would have two sets of trip circuits which would be connected to separate DC supplies for greater reliability. The Circuit breakers controlling 765 kV lines shall be provided with pre-insertion closing resistor of about 450 ohms with 9 ms insertion time or Controlled Switching Device (CSD). **The Circuit breakers controlling 400 kV lines wherever required shall be provided with pre-insertion closing resistor of about 400 ohms with 8 ms insertion time or Controlled Switching Device (CSD) for lines longer than 200 km**. The short line fault capacity shall be the same as the rated capacity and this is proposed to be achieved without use of opening resistors. Controlled Switching Device shall be provided in the Circuit Breaker of the switchable line reactor bay and in Main and Tie bay circuit breakers of line with non-switchable line reactors, Bus reactors and Transformers for 400 kV and above voltage class.
7.	B.2.5.3 Current Transformers (GIS) RFP & TSA	**B.2.5.3 Current Transformers (GIS)** ..... The instrument security factor shall be less than 10 for CTs of 765 kV voltage class.	**B.2.5.3 Current Transformers (GIS)** ..... The instrument security factor shall be **less than Five (5) for CTs up to 400 kV voltage class and** less than 10 for CTs of 765 kV voltage class.

Sl. No.	Clause No.	Existing Clause	New/Revised Clause
8.	B.2.5.5 Surge Arresters (GIS) (if applicable) RFP & TSA	**B.2.5.5 Surge Arresters (GIS) (if applicable)** 624 kV Station High (SH) duty gapless type Surge arresters with thermal energy (Wth) of minimum 13 kJ/kV shall be provided for 800 kV system conforming to IEC 60099-4 in general. Other characteristics of Surge arrester shall be chosen in accordance with system requirements. Surge arrest¬ers shall be provided at line entrances, near Transformers and reactors so as to achieve proper insulation coordination. A leakage current monitor with surge counter shall be provided with each surge arrester.	**B.2.5.5 Surge Arresters (GIS) (if applicable)** 624 kV Station High (SH) duty **and 336 kV Station High (SH) duty** gapless type Surge arresters with thermal energy (Wth) of minimum 13 kJ/kV **and 12 kJ/kV respectively** shall be provided for 800 kV **and 420 kV** system **respectively** conforming to IEC 60099-4 in general. Other characteristics of Surge arrester shall be chosen in accordance with system requirements. Surge arresters shall be provided at line entrances, near Transformers and Reactors so as to achieve proper insulation coordination. A leakage current monitor with surge counter shall be provided with each surge arrester.
9.	B.2.5.6 SF6 to Air Bushing RFP & TSA	**B.2.5.6 SF_6 to Air Bushing** Outdoor bushings, for the connection of conventional external conductors to the SF_6 metal enclosed switchgear, shall be provided. Bushings shall generally be in accordance with the requirements of IEC-60137. The creepage distance over the external surface of outdoor bushings shall not be less than 31 mm/ kV. SF_6 to air Bushing shall be of Polymer/ composite type and shall be robust and designed for adequate cantilever strength to meet the requirement of seismic conditions. The electrical and mechanical characteristics of bushings shall be in accordance with IEC-60137. Polymer/composite insulator shall be seamless sheath of silicon rubber compound. The housing and weather sheds should have silicon content of minimum **30%** by weight. It should protect the bushing against environmental influences, external pollution and humidity. The hollow silicon composite insulators shall comply with the requirements of IEC 61462 and the relevant parts of IEC-62217.	**B.2.5.6 SF_6 to Air Bushing** Outdoor bushings, for the connection of conventional external conductors to the SF_6 metal enclosed switchgear, shall be provided. Bushings shall generally be in accordance with the requirements of IEC-60137. The creepage distance over the external surface of outdoor bushings shall not be less than 31 mm/ kV. SF_6 to air Bushing shall be of Polymer/ composite type and shall be robust and designed for adequate cantilever strength to meet the requirement of seismic conditions. The electrical and mechanical characteristics of bushings shall be in accordance with IEC-60137. Polymer/composite insulator shall be seamless sheath of silicon rubber compound. The housing and weather sheds should have silicon content of minimum **32%** by weight. It should protect the bushing against environmental influences, external pollution and humidity. The hollow silicon composite insulators shall comply with the requirements of IEC 61462 and the relevant parts of IEC-62217.