

## **SCOPE OF WORK & SLA FOR 33kV NETWORK AMC & 33/11kV PRIMARY SUB-STATION (PSS) OPERATION ASSISTANCE**

- **PART-1 - Scope of the work (33kV AMC)**  
Inspection, Monitoring, Maintenance of 33/11 kV Primary Sub-Stations and associated 33kV Feeders.
- **PART-2 - Scope of the work (Primary Sub-Station Operation)**  
Monitoring, Operation, Watch & Ward activities at 33/11 kV Primary Sub-Station

## **Team Structure**

### **\*Testing Team**

Team consists of minimum 1 Engineer + 1 Technician + 1 Helper. The team must have Testing Instruments, Tools-Tackles & a separate Testing Vehicle. The Testing Team will be a dedicated one, engaged in PSS Maintenance & Testing work.

**Engineer:** (Exp. in Substation Equipment Maintenance & Testing, Testing of Protection Relays etc.).

**Technician (skilled):** (Exp. in Maintenance & Testing work of Substation Equipment's).

### **\*Line Maintenance Team**

The team consists of minimum 7 persons which includes, 1 Supervisor + 4 Technician + 3 Helper. The Maintenance Team will be a dedicated one, engaged in Line Maintenance work and PSS Maintenance work. The tentative working hours for Maintenance Team will be 8 hrs. Team must have Tools-Tackles & separate Vehicle.

**Supervisor (Engineer):** (Exp. in 33kV Line Maintenance & Substation Equipment Maintenance work).

**Technician (skilled):** (Exp. in Line Maintenance & Substation Equipment Maintenance work).

### **\*Operation Team**

Team consists of minimum 7 persons (for each PSS) which includes 4 Technician (including shift reliever) + 3 Helpers. 2 persons (1 Technician + 1 Helper) per shift per PSS. Each electrical division must have one Supervisor.

**Supervisor:** (Exp. in 33kV Line Maintenance & Substation Equipment Maintenance work).

**Technician (skilled):** (Exp. in Substation O&M, Condition Monitoring of Substation equipment).

### **\*PSS Maintenance Team**

The team consists of a minimum of 3 persons which includes 1 Supervisor + 2 Technician. The tentative working hours for maintenance teams will be 8 hrs.

**Supervisor (Engineer):** (Exp. in 33kV Line Maintenance & Substation Equipment Maintenance work).

**Technician (skilled):** (Exp. in Line Maintenance work & Substation Equipment Maintenance work).

### **\*Tower Maintenance Team**

The team consists of minimum 7 persons which includes, 1 Supervisor + 4 Technician + 3 Helper. The Tower Maintenance Team will be dedicated one, engaged in Tower / Line Maintenance work. The tentative working hours for Tower maintenance teams will be 8 hrs.

**Supervisor (Engineer):** (Exp. in Tower Maintenance work up to 132kV voltage level. Must have exp in emergency restoration of Tower during breakdown, Line Maintenance & Substation Equipment Maintenance work).

**Technician (skilled):** (Exp. in Tower Maintenance work up to 132kV voltage level, Line Maintenance).

## **Communication Facility**

BA must provide proper telecommunication facility/device to its employees for better communication, coordination, reporting & guidance with TPWODL officials/authorities as & when required. BA must provide smart phones with SIM (having minimum 64 GB ROM and 4 GB RAM and camera facility) to its Supervisors, Engineers, 1no. per PSS(Grid) & 1no. per MOC for communication from site and reporting to TPWODL officials/authorities. Any defect/nonfunctioning of smart phone to be repaired/replaced with new one within 24hr. BA shall consider a minimum of 1GB data internet pack per SIM for using various operational applications like PTW, Suraksha kavach, Gird online Condition monitoring & Feeder online survey etc.

## **Tools & Testing Equipment for Testing Teams**

BA will provide **Basic Testing Equipment** and TPWODL will provide **Special Testing Equipment** for carrying out Maintenance & Testing activities as per requirement. **BA must provide Tool & Testing equipment as per mentioned list against each testing team.**

BA to provide **Basic Testing Equipment** for each & every Line & PSS Maintenance Team along with **Misc. Equipment.**

**Basic Testing Equipment's:** Multimeter, Tester/Voltage detector, Clamp on meter, IR Tester 5000V, Phase Sequence Meter,

**Misc. Equipment's:** Tree Trimming Machine (Battery or diesel operated), Manual tree pruner, Motorized Grass cutting Machine, Temporary Grounding spikes- 6 Nos etc.

**Major Testing Instruments** like IR Tester, Earth Tester, Tan Delta set, Current Injection set, CRM, TRM, Single phase Variac, three phase Variac, CT/ PT Tester, Hi-Pot Test set, Relay Test set, will be provided by TPWODL.

## **BA Safety Supervisors**

BA must depute one qualified Safety Supervisor for each Division. Safety Supervisor to monitor safety performance of the division and submit report to TPWODL authorities.

Selection of BA safety officers /Supervisors shall be done in coordination with TPWODL Safety department.

**Standard selection procedure to be followed by BA for selection of all Supervisors/Engineers as directed by TPWODL Corp STS & M&T Team. All Supervisors/Engineers must be selected as per TPWODL requirement and final clearance for Supervisor/Engineers to be given by TPWODL STS & M&T Corp Team after interviewing the candidate. Any transfer of BA employees (Supervisor/Lineman/Helper) must be done after consulting TPWODL STS & M&T Corp Team. TPWODL Corp Team to assess competency level of the BA employee for working in another Location/PSS/Team.**

**BA shall keep, TPWODL HR/IR team updated about any new person recruitment, transfer or termination.**

**Divisional PSS Operation Supervisor will be responsible for**

1. Competency development of BA workmen which includes PSS Operators, Helper & Maintenance Team members.
2. Organizing Technical & Safety training on periodical manner for BA workmen. Inside PSS Supervisor must be qualified enough to conduct Trainings as per requirement.
3. Audit of each PSS for T&P and PPEs of BA employees. All reports (Training, Audit, Compliances, and progress report) will be submitted to TPWODL in-charge and Corp. Team on monthly basis.
4. Preparing Operators & Helpers monthly duty chart & same to be shared with TPWODL PSS In-Charge every month. Monitoring activities of PSS Operators & Helpers.
5. Arrangement of License of BA Employees as per statutory requirement.

**Miscellaneous Works**

- i. Man Lifter & Oil Filtration m/c repair & service to be done by BA from OEM with additional cost (Estimated cost of total 2 lakh per annum). The payment to BA will be made as per the actual bill certified by TPWODL authority.
- ii. BA must do one pilot project related to new Technological intervention. 33kV Line Survey to be done by using Drone. Drones will be provided by TPWODL. BA must provide competent person for Drone based survey of Lines.
- iii. Civil related minor jobs for Towers/Lines & PSS to be done by BA with additional PO from TPWODL. Civil related repair jobs will be done by BA as per approved RC rate of TPWODL.
- iv. Fabrication related jobs for Towers. to be done by BA with additional PO from TPWODL. Fabrication related jobs will be done by BA as per approved RC rate of TPWODL.

**Part-1**  
**Scope of the work & SLA (33kV AMC)**  
**Inspection, Monitoring & Maintenance of 33/11kV Primary Sub-stations (PSS)**  
**and associated 33 kV Feeders.**

**A. Routine Inspection of 33kV Lines/Feeders**

**Below mentioned activities are in AMC BA Scope.**

Inspection of 33kV feeders shall be carried out by the trained patroller/s as per the frequency decided by engineer-in-charge (EIC)/corporate operation services team. Inspection of all industrial/dedicated/urban feeders shall be carried out once in a month and rural feeders once in two months. EIC/corporate operation services team shall release feeder inspection plan by 25<sup>th</sup> day of previous month. BA patroller shall inspect the feeder/s and submit defect list, material requirement and outage request to EIC maximum by 30<sup>th</sup> day of previous month. BA Line Supervisor must submit 33kV Line survey report to respective Circle Team as well as Corp. STS Team every month without fail. Thermography Report of 33kV Lines to be submitted by BA Line Supervisor to respective Circle Team as well as Corp. STS Team every month without fail. BA shall adhere to the inspection plan fully and no deviation shall be permitted. BA shall close all defects observed on 33KV feeders within the same month by prompting the SDO/SI/E&MR engineers. All inspection & survey shall be done as per schedule and recorded in registers and Digital Apps provided by TPWODL such as PDI App, Maintenance App & Feeder Survey Apps. Inspection shall be carried out to detect such as.

- Growth of trees and tree branches close to the line/feeder, above the line/feeder. Vegetation growth and other abnormalities near Tower foundation/Pole/ DP/3P/4P/6P/8P/gantry structures etc.
- Hotspots / poor joints / defective jumpers & defective LAs in the line/feeder.
- Abnormalities in condition of Towers, Poles, Gantry structures, cross arms, insulators, conductors, earthing systems, hardware, stay wires and guard wire.
- Missing Tower / pole accessories viz. tower members, bracings, Insulators, Name plate, Number plate, Danger board, Phase plate, Anti climbing device, stay wires, foundation, lightning arresters, proper power connectors etc.
- Unauthorized construction under/near the line (Right of Way area).
- Over sagged wires / Guard wire. Low ground clearance area in the line/feeder.
- Missing earth connection, stay wires, and cradle guard. Locations, where cradle guards are to be provided for Safety point of view (Road crossing/Highway/Railway crossings etc.).
- Abnormalities in power cable terminations, mounting frames, missing cable cleats etc.,
- Disconnected cable sheath earth connections. Checking healthiness of spare cables laid.
- Missing cable route / joint markers.
- Any other abnormality that will affect safety or smooth functioning of 33kV Network/Line/Feeders.

**B. Emergency Inspection**

**Below mentioned activities are in AMC BA Scope.**

Emergency inspection of 33KV line/feeder shall be carried out by the Line Team as per the directions of engineer-in-charge to identify the reason of line/feeder tripping/breakdown.

- When any line/feeder trips and trial reclosing is successful.
- When any line/feeder trips and tested faulty.

Exact reasons of breakdown shall be identified after thorough/closer inspection of the line/feeder and communication to engineer-in-charge. BA shall use high resolution binoculars to identify the exact reason of breakdown. BA should also carry out closer inspection of the line/feeder to identify the exact reason for the breakdown. However, all closer inspections shall be done under the guidance and supervision of TPWODL authorities.

### **C. Detailed Inspection**

#### **Below mentioned activities are in AMC BA Scope.**

Detailed inspection of 33kV lines/feeder shall be carried out by the Line Team as per directions of TPWODL engineer-in-charge or Corp. Team to detect abnormalities in 33kV lines/feeders.

1. Outage shall be availed, and line/feeder accessories will be closely inspected for any deterioration, which could lead to failure/breakdown/accident/incident in future.
2. Visual inspection will be carried out without availing outage of the feeder with the help of high precision binoculars or any other advanced technology. This activity, however, will be done under the guidance and supervision of TPWODL engineer-in-charge or Corp. Team.
3. Thermography of the lines/feeders to be done for identifying any abnormal temp. rise or any hot spot in line/feeders. Detailed Thermography reports to be submitted to TPWODL engineer-in-charge and Corp. Team without fail.
4. All Towers available in 33kV Lines/Feeders to be closely inspected & detailed inspection reports to be submitted to TPWODL engineer-in-charge and Corp. Team for each & every Towers without fail. Special focus to be given for critical river crossing Towers and old Tower. Lines/Feeders will be inspected as per frequency and in accordance with the documented check list provided by TPWODL. The inspection shall be done by patrollers specially trained for the 33kV line inspection job. BA will ensure compliance to the monthly inspection plan released by TPWODL by deploying adequate patrollers with motorcycles/cycles.

### **D. Line/Feeder Maintenance Activities**

#### **Below mentioned activities are in AMC BA Scope.**

- Trimming of trees under/near the feeders with mechanized tree pruners (to be provided by BA) on regular basis. BA shall maintain the most optimized RoW to reduce the tree trimming cycles. BA shall also shift the tree wastes to nearby local govt. body (NAC/Municipality etc.) designated area.
- Replacement of weak/damaged tower/poles and accessories. For the replacement of complete tower/s, separate order will be placed. Faulty feeder however will be restored by BA by installing rail/joist poles as per the direction of engineer-in-charge.
- Straightening of tilted poles/cross arms/insulators.
- Repairing of existing damaged/defective Pole/DP/3P/4P/6P/8P including installation of new poles and conductor stringing in order to restore the line back in service is in AMC BA scope.
- Replacement of corroded, cracked, flashed insulators (Disc/Pin/Shackle).
- Replacement / Repairing of Gang Operated switch / AB switch / Isolators etc.
- Replacement of damaged / weak cross arm.
- Replacement of Binding wire joints by bolted / compression type, loop / wedge connectors as per the instructions from EIC. Rectification of hotspots by replacing clamps / connectors or replacement of jumpers / other actions.
- Replacement of undersized / burnt / damaged conductors and jumpers. This includes the replacement of conductorspans with two or more joints.
- Repairing/replacement of broken or weak guard wire. Provision of guard wire beneath conductors at identified locations.
- Repairs and re-tensioning of conductors, G.I. Earth wire, providing of guard laces, stay wires.
- Repairs to tower footings/stub (only minor cases). Material will be provided by TPWODL.

- Installation of bird flappers/other measures for reducing/eliminating transient faults (bird guards, spikes, broom type).
- Fabrication and fixing of missing tower member including tag welding up-to bottom cross arm.
- Pressure test of overhead feeder and power cables
- Transportation of all OH and UG system materials required to attend preventive maintenance and breakdowns.
- Replacement of barbed wire / anti-climbing devices of structures/ towers.
- Painting of poles / towers as per the condition of the structures. Paint shall be supplied by TPWODL.
- Removal of cable / internet / telephone wire/s / hoardings from 33KV poles as per the specific instructions/directions of EIC.
- Installation of danger boards on poles, tower, and gantry structures
- Installation of cable route / joint markers (Markers will be supplied by TPWODL)
- Numbering / Sign writing on pole/towers (by using stencils) as per TPWODL standard.
- Replacement of burnt / weak CTVT unit.
- Replacement of missing / burnt / weak lightning arresters.
- Installation of insulating sleeves / MVLC / LVLC on bare conductors / installations to avoid transient faults.
- Fixing/replacement of spacers in HT and LT feeders,
- Repairing faulty cables. This includes soil digging, jointing, and refilling of soil/restoration of surface. BA will arrange certified cable jointer with accessories. Jointing kit & End Termination kit will be provided by TPWODL.
- Dismantling & shifting of old damaged or defunct lines along with line accessories to nearest designated area or store as per TPWODL EIC instructions.

This is an indicative list. Maintenance of feeder shall be performed in such a way to ensure highest availability of each feeder (>99.5%, cumulative for urban, and >98.5% for rural). The present reliability status of each feeder will be informed to BA's who will ensure to maintain reducing trend of breakdowns and emergency shutdowns. BA shall submit feeder maintenance plan to EIC at the start of each month and work with SDO/EIC to avail all approved outages. All breakdowns shall be attended promptly within timelines as per the defined service level agreement. Business associates shall analyze all breakdowns and check the exact reason of breakdown and inform the same to TPWODL. Business associate shall provide highly trained lineman capable of working on all type of steel towers and poles for safe & reliable operation of 33KV feeders.

## **Special Focus Areas**

### **Tree Trimming**

Business associate shall identify the trees which need to be trimmed/pruned for safe and reliable operation of 33KV feeders and submit a detailed report to engineer-in-charge within the first week of every month.

Trimming/pruning shall be affected through motorized saw. Wider Row shall be maintained so as to reduce the trimming cycles.

### **Creepers Removal**

Business associate shall identify the creepers which need to be removed for safe and reliable operation of 33KV feeders and submit a detailed report to engineer-in-charge within the first week of every month. Creeper removal shall be done before they reach 2.5-meter height from ground level to avoid feeder outage to clear the same.

Business associate shall also keep the towers/poles clear of creepers.

### **Monitoring of Hot Spots / Replacement of bad joints**

Business associate shall identify hot spots at dead- end connections, clamps, binding wire joints, PG clamps, Loop

Connectors, repair sleeves, cable terminations and mid-span joints on the feeder and submit a detailed report to engineer-in-charge within the first week of every month.

#### **Identification and removal of bird nests**

Business associate shall identify and remove all bird nests from poles/towers. BA shall also install anti-bird perching devices to avoid formation of nests. BA shall also identify areas where repeated bird related faults are reported for needful action by engineer-in-charge.

#### **Identification / Replacement of weak insulators**

Business associate shall identify all weak/flushed insulator during patrolling and submit a detailed report to engineer-in-charge within the first week of every month.

#### **Identification and replacement of defective/missing lightning arresters/guard wires**

Business associates shall identify defective / missing lightning arresters / guard wires and submit a detailed report to engineer-in-charge within the first week of every month.

#### **Identification of low Vertical and Lateral Clearances of Line conductor**

Business associate shall identify low vertical / lateral clearance of line conductor and submit a detailed report to engineer-in-charge within the first week of every month.

### **Reporting:**

TPWODL engineer-in-charge shall provide the list of feeders to be inspected during each month. Business associates shall submit feeder inspection report to engineer-in-charge along with summary of defects, bill of material, and outage request to attend the defects within the first week of every month. BA shall maintain the history of inspection and maintenance of each feeder along with the details of materials used to maintain the feeder.

Besides, Business associate shall also submit occurrence report for 33kV feeder tripped due to operation of protection relay (even if the feeder is test charged successfully). The report will be submitted within 24 hours for urban feeders and 72 hours for rural feeders. BA shall maintain a history of feeder breakdowns and emergency shutdowns along with the reason of each breakdown and details of materials used to restore the feeder.

Business associate will ensure continuous reduction in feeder breakdowns / emergency shutdowns rates and submit suggestions / improvement plan for 33KV feeders and distribution substations to engineer-in-charge / Corporate Operation Services Group as and when required.

## **E. Maintenance and upkeep of 33/11kV Primary Substations:**

### **i. Primary Sub-Station Cleaning**

BA shall arrange to clean all operational 33/11KV substations. The work of cleaning would include.

- Cleaning of control room, and other rooms within the substation building including mopping of floor,
- Cleaning of washroom & wash basin attached to PSS control room
- Cleaning of open area and road, (Whenever JCB or any mechanized excavator required shall be paid separately as per approved additional optional item rate.)
- Cleaning of substation roof,

**BA may deploy additional manpower for cleaning activities as required.**

**BA shall ensure below mentioned activities in each & every PSS.**

- Cleaning of switchyard (under direct supervision of TPWODL authority)
- Cleaning of substation trenches (once in a year)



- Identify, Segregate, Removal & Shifting of Scrap materials from PSS to nearest store or assigned area by TPWODL authority.
- 5S implementation in each & every PSS and progress reports to be submitted to Corp. Team.

## ii. **Vegetation Management**

BA shall keep the substation switchyard and open area free of vegetation. The work of removing vegetation from the substation switchyard shall be done under direct supervision of TPWODL authority. However, the open area vegetation removal will be taken up by BA at his own supervision. All material/tools required for substation cleaning / vegetation clearance shall be arranged by BA. New Primary substations which will be commissioned during the contract period shall also be cleaned by BA without any extra payment.

As TPWODL is promoting the Green Zone initiative, all the PSS shall be maintained with a small garden surrounding the control room and inside PSS premises and the Garden will be maintained by the BA on a regular basis. Business Associates should do the necessary plantation, horticulture, flowering & watering etc. for beautification of the PSS. The Business Associate (BA) should carry out plantation at Primary Substation (PSS) on regular basis providing fertilizers, compost, plants, and general maintenance as required. Failure to maintain the required greenery initiatives at the PSS, as observed during the monthly evaluation, subsequent penalty will be imposed to concern AMC BA.

## iii. **Inspection and Maintenance of 33/11kV Primary Sub-Stations:**

Business associates shall always keep all substations neat and clean. Maintenance of substation equipment shall be carried out as per the schedule provided by engineer-in-charge. BA shall deploy competent & expert technicians for maintenance and upkeep of all equipment installed in the substation including power transformers. The technician deployed for maintenance of substation should be able to perform preventive maintenance, troubleshooting, and replacement of defective equipment/parts as per work requirement.

Maintenance of substation includes Inspection, Preventive Maintenance & Testing of all equipment installed in Primary Sub-Station as per the schedule provided by engineer-in-charge.

- Maintenance and restoration of switchyard equipments, control room equipments, and other building indoor/outdoor lights & fans. Minor wiring work related to Lighting/AC/Fan/Plug points etc. inside PSS control room.
- BA shall deploy at least one lineman trained for industrial wiring and dressing. BA shall also deploy at least two competent linemen capable of preventive maintenance / trouble shooting of equipment such as power transformer, VCB, circuit breaker, CT/VT, control panels, battery, and battery charger.
- Attending breakdowns and restoration of equipment by taking required action as per the directions of engineer-in-charge.
- Replacement of failed equipment (except Power Transformer) including modification of mounting structure/plinth as per instruction from engineer-in-charge.
- Replacement of faulty Power Transformer by using appropriate Crane or Farana & Shifting of faulty PTR to store or any recommended site through Trailer truck is in AMC BA Scope. All the replacement, installation & shifting of PTR to be paid as per the defined optional item price.
- Transportation of materials/equipment including loading /unloading for attending preventive or breakdown maintenance. Charges for cranes, if used, will be paid as per scheduled/agreed rates.
- Painting of equipment / mounting structures manually or with the help of air compressor (Service part). Paint will be provided by TPWODL. Rust removal, red oxide to be applied before painting.
- All fabrication work involves drilling, welding and gas cutting etc. preparation of frame for mounting of CT, PT, CRP, Isolator, AB switch & Breaker etc. and other miscellaneous fabrication work is under BA scope. First preference will be to use scrap material regarding the above work.
- Replacement of defective power and control cables as envisaged by engineer in-charge for smooth functioning of Primary Substation sub-station (service part only).

- j. Cleaning of solar panels, Removal of vegetation and tree trimming around solar panels to maintain desired PLF.
- k. Removal of vegetation from switchyard and open space. Removal of vegetation from the switchyard shall be done under the supervision of TPWODL staff. Vegetation removal from open space shall be done by BA on his own. Removal of dry vegetation from Primary Substation shall also be arranged by BA.
- l. Sign writing on equipment at all Primary Substation Sub-Station. for implementation of S+5S as per TPWODL standards (Paints shall be provided by TPWODL).
- m. Pre summer, Pre & post monsoon maintenance of Primary Substation sub-stations as per the check lists provided by TPWODL.
- n. Making arrangements for dewatering inside PSS premises & from cable trenches (power and control cable) in case of water logging / excess rainfall (Dewatering Pump (1-3hp) along with pipe & sufficient fuel will be provided by BA).
- o. Thermoscanning of all PSS equipment's and taking timely corrective actions.
- p. Transformer Oil Filtration shall be in AMC BA scope and oil filtration shall be done as and when required based on site requirement. Transportation of oil filtration machine to different site is in BA scope and to be paid as per TATA 709 approved rate. Oil Filtration Machine will be provided by TPWODL.

## **F. Survey, Maintenance of Towers (Tower Maintenance Team)**

Following are the requirements from TPWODL for Transmission Line Preventive and Breakdown Maintenance. The scope of the work of Tower Maintenance Teams are as follows.

### **1. Routine inspection of lines includes (Online)**

- a. Inspection of physical damage to tower structures, poles, gantry, insulators, conductors, hardware fittings, earthing system and guard wires. Visual inspection with help of high precision binocular
- b. Inspection of tower foundation, vegetation growth near tower foundations, trees in vicinity of lines and towers.
- c. Inspection of tower/pole accessories viz. Name plate, No plate, Danger board, Phase plate, Anti climbing device, Bird guard, Spacers, Vibration dampers etc.
- d. Inspection of missing/stolen tower bracings, nut bolts, conductors, earthing conductor/strips or parts thereof.
- e. Inspection of sagging of line conductors/guard wires, stay wires, cradle guard. Identification of locations where there are vertical / lateral clearance issues exists.
- f. Inspection of LA & TLAs.
- g. Tower footing resistance measurement.
- h. Thermoscanning of Transmission Lines bolted current carrying parts (bolted joints)
- i. Inspection of unauthorized construction under/near the line/tower (ROW area).
- j. Submission of detailed reports for above mentioned points.
- k. Reporting
  - 1. Line patrolling report (Weekly Basis)
  - 2. Action plan including material requirement for rectification of defects observed.
  - 3. Execute the above action plan in time and submit report (Fortnightly)

### **2. Closer inspection of lines includes (Offline)**

- a. Closer inspection for physical damage or deterioration to tower structures, poles, gantry, insulators, conductors, LA & TLAs hardware fittings, earthing system and guard wires which could lead to tripping/breakdown in future. Visual inspection with the help of high precision binoculars. These activities need to be completed within the minimum possible time.
- b. Closer inspection of missing/stolen tower bracings, nut bolts, conductors, earthing conductor/strips, guard wires or parts thereof within minimum possible time.
- c. Submission of detailed reports of above-mentioned point with action plan to avoid.
- d. Reporting
  - 1. Action plan including material requirement for rectification of defects observed.
  - 2. Execute the above action plan in time and submit report (Fortnightly)

**3. Routine Maintenance of Transmission Lines. (In minimum possible time)**

- a. Attending physical damage to tower structures, poles, gantry, insulators, conductors, hardware fittings, earthing system and guard wires. Replacement of defective parts.
- b. Attending tower foundation problems, vegetation growth removal near tower foundations, tree trimming in vicinity of lines and towers.
- c. Attending defects related to tower/pole accessories viz. Name plate, No plate, Danger board, Phase plate, Anti climbing device, Bird guard, Spacers, Vibration dampers etc. Replacement of defective parts.
- d. Replacement of missing/stolen tower bracings, nut bolts, conductors, earthing conductor/strips or parts thereof.
- e. Conductor stringing for attending sagging problems of line conductors.
- f. Replacement of defective LA & TLAs.
- g. Attending hot spots of Transmission Lines bolted current carrying parts (bolted joints)
- h. Submission of detailed reports for above mentioned points within 48hrs

**4. Attending Emergency/Breakdown of Transmission Lines (In minimum possible time)**

- a. Attending physical damage to tower structures, poles, gantry, insulators, conductors, joints, hardware fittings, earthing system and guard wires. Replacement of defective parts.
- b. Attending tower foundation problems, vegetation growth removal near tower foundations, tree trimming in vicinity of lines and towers.
- c. Attending defects related to tower/pole accessories viz. Name plate, No plate, Danger board, Phase plate, Anti climbing device, Bird guard, Spacers, Vibration dampers etc. Replacement of defective parts.
- d. Replacement of missing/stolen tower bracings, nut bolts, conductors, earthing conductor/strips or parts thereof.
- e. Conductor stringing for attending sagging problems of line conductors.
- f. Replacement of defective LA & TLAs.
- g. Attending hot spots of Transmission Lines bolted current carrying parts (bolted joints)
- h. Submission of detailed reports for above mentioned points.
- i. Submission of detailed reports related to Line Tripping within 48hrs.

**Primarily one Tower Team will be posted at RSED Rourkela Circle . However, the Team can be posted to other locations as per direction ofTPWODL during emergency.**

### **Minimum qualification of Manpower**

<b>Qualification Matrix for BA Employees</b>	
<b>Designation</b>	<b>Minimum Qualification</b>
Supervisor	Degree/Diploma in electrical engineering and a valid supervisory license. Computer literate with proficiency in MS office- Minimum 2 year of experience in the field.
Lineman	<p>Qualification shall be as per CEA regulation clause 7.2, along with valid HT workman license for (33 kV) from relevant Govt agencies such as ELBO (Govt. of Odisha) or from other state Govt./Central Govt approved authorities.</p> <p>All Business Associates must ensure that, in-case any lineman does not have a valid ELBO license then he can only be considered if he has already applied successfully for the same.</p>
Grid Operator	<p>Qualification shall be as per CEA regulation clause 8 along with valid HT workman license for (33 kV Jobs) from relevant Govt agencies such as ELBO (Govt. of Odisha) or from other state Govt./Central Govt approved authorities.</p> <p>All Business Associates must ensure that, in-case any lineman does not have a valid ELBO license then he can only be considered if he has already applied successfully for the same.</p>
Helper	Preferably 10th Pass & shall have suitable experience in O&M / construction in Power distribution Sector. The person must have basic knowledge of working in electrical power distribution, along with awareness on safety & ability to read, write & communicate.

## Annexure VII C-1

### Service Level Agreement (SLA) for Maintenance

1. In the event of any performance-based measurement criteria not reported/reported partially in the appropriate format, would lead to deduction of 100% marks specific to the criteria and no incentive (of any kind) would be paid.
2. TPWODL reserves the right to change/ add to the list of existing performance base measurements, at any point of time during the execution of the contract. This will be communicated in writing to the BA by Head (Operations and Safety) / personnel authorized by Head (Operations and Safety) on mutually agreed terms.
3. The performance system shall comprise measurement of BA's performance on the parameters listed below. The total marks for performance will be 100 in a month.

**During Kalabaisakhi and Monsoon seasons, to maintain power reliability and attending breakdown, BA's have to allocate additional manpower from April to September of each year as per TPWODL STS guideline. Additional manpower for these six months will be paid by TPWODL as per approved additional optional line items rates. TPWODL will not be liable to pay for these additional manpower cost after these critical six months.**

**In each cluster BA must ensure the availability of sufficient quantity of Mechanized tree pruner and Manual tree pruner (as per T&P list). Each and every tree pruner must be in working condition throughout the year. Delay in 33kV line restoration, attending 33kV breakdown & 33kV feeder maintenance due to non-availability of tree pruner will be considers as non-compliance & penalty will be imposed.**

#### **a. Safety aspects, Statutory Compliances and Asset Upkeep**

1. All jobs shall be carried out after taking necessary 'Permit to work and following PTW and tagging system of TPWODL. PSCC shall issue corresponding PTW numbers to the BA As per the PTW guidelines of TPWODL.
2. List of PPEs as per the specifications mentioned in CSM to be allocated to all the BA personnel. List of PPEs must be as per the approved TPWODL PPEs standard & quantity.  
BA has to replace any defective/deteriorated/expired (As per IS) Safety PPE with new one immediately.
3. All statutory compliances as mentioned in attached GCC and applicable laws to be complied to.
4. Locking of unmanned substations shall be ensured by BA staff. BA staff will also notify EIC regarding missing/damaged covers (Earth pit, Chequered plates & trench covers) / doors & windows (Entire PSS premises & Control Room Building) of PSS and other Electrical equipment (Breaker cubicle doors/CRP Panel doors/Indoor Switchgear Panel door/all marshalling boxes & JB's inside switchyard) and work with TPWODL staff to refit the same at the earliest.
5. Upkeep of feeder towers / poles from Posters, loose hanging wires. Vegetation and Garbage removal from in and around Substations, and RMUs).
6. All reports (Technical and Safety) mentioned in the tender document to be prepared and shared with Corp. Team within specified timeline.
7. All jobs shall be carried out as per the SOP / PTW guidelines issued by PSCC. SOP / PTW guidelines.
8. List of PPEs, Safety Equipment, and Tools as per the specifications mentioned in the contract to be provided to all BA personnel.
9. All statutory compliances as mentioned in attached GCC, CSMS, and applicable laws to be complied by BA.
10. Locking of assets (Automated Substations) shall be ensured by BA staff.

11. BA staff will also notify EIC on substation deficiencies / missing materials / missing covers / damaged doors of substation and work with TPWODL staff to rectify the same at the earliest.
12. Upkeep of substation (Vegetation Management) and Garbage removal to avoid chances on incidents/accidents.

## **b. Timely Preventive Maintenance, Maintenance Quality, Supply and Usage of T&P**

The following T and P must be available with BA for carrying out the jobs. At any given point of time regular replenishment is the responsibility of BA. One set of below mentioned list of T&P is to be provided to each Maintenance Team considered as minimum requirement for each Line/PSS Maintenance Team, Testing Team, Tower Maintenance Team & Inside PSS Maintenance Team.

### **G. Tools List for Line Maintenance Team**

Sl. No	Tools for Line Maintenance Team	Min. Qty. (No's)
1	Hacksaw Frame with blades	1
2	Hammer 2kg & 5kg with fibre handle	1 each
3	D-Spanner set - 6 -32 mm (Taparia)Double insulated	1
4	Ring spanner set - 6 -32 mm (Taparia)Double insulated	1
5	Box spanner set - 6-32 (Taparia)Double insulated	1
6	Flat File 12" & 8 "	1
7	Round File 3/6 x 12"	1
8	Electrical certified safety shoes with double density PU sole with composite toe cap. (EN +ISI Mark on shoes). IS 15298 Part 2. Acme/Bata/Tata International/HighLife, Liberty	For all employees
9	HDPE Safety helmet with chin strap and ratchet type for adjustment. (E class- Electrical grade Safety Helmet). IS2925, EN397. Udyogi, Joseph & Lesli,PERF,MSA	For all employees
10	Full body harness non padded (Safety belt with Double Lanyard with Shock-Absorber & Pole Grab Arrestor) and adjustable Work positioning belt. IS3531-2021, EN358, EN361,Class-P . Udyogi, Karam, Abrigo, MSA	1 for line man except PSS operator
11	33kV Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual. (EN +ISI Mark on gloves)Class-04 with swet absorbing cotton gloves. IS13774-2021, Make-Jayco, Raychem, Abrigo,MN rubber	3
12	Cut resistance / abrasion /PU coated Cotton hand gloves is required everytime while working for every one.	1 Per Lineman & Helper
<del>13</del>	<del>Safety Googles (Black safety goggles for all while working under direct sun light)</del>	<del>1 Per Lineman &amp; Helper</del>
14	Screw driver Set - Stanley/Taparia Make, Double insulated	1
15	Insulated plier - Stanley/Taparia Make, Double insulated	1
16	Cold Chisel, flat	1
17	Discharge rod up to 9metre long with minumum 16 SQMM cable with length of 15 Mtr Insulated copper wire.	9

18	Earth spike rod	9
19	Helmet mounted torch light	1 per lineman
20	Tommy bar (1 meter length)	2
21	Long Nose plier (125mm) - Stanley/Taparia Make,Double insulated	1
22	Adjustable Wrench - Stanley/Taparia Make,Double insulated	1
23	Lock (clips) plier 6" - Stanley/Taparia Make,Double insulated	1
24	Measuring tape (30 meter)	1
25	Allen key set (4 to 12 mm) - Stanley/Taparia Make,Double insulated	1
26	Binocular - Maximum Magnification : 8 times, Optical Zoom : 10X, Lens Type : Objective, Special Feature : Anti Reflective - <b>Nikon 8246.</b>	1
27	Bolt Cutter (for conductors upto 232 sq. mm.)	1
28	Torch/Emergency lights-Re-Chargeable Torch (Philips Blaze Multi-functional Long Range Rechargeable Emergency Light),500watt	2
29	Neon Tester for 11-33 KV - with FRP Rod up to 9m long. Make -Taurus, HVTI, Motwani	1
30	Manual Telescopic Tree pruner - <b>Stihl Make or Equivalent</b> - reach 25 ft.	2
31	Telescopic Chainsaw tree pruner(Petrol Powered/ battery powerd) - <b>Stihl Make or Equivalent</b>	1
32	Manual cutter katuri with insulated handle.	2
33	Monkey Plier,Double insulated	1
34	RCCB/ELCB Mounted Extension Board (Capacity - 63 A, Industrial Plug Type) with 30 mA mandatory. MCCB & 25 mts of extension flexible wire	1
35	Road safety Traffic Cone with reflective sticker. (760mm height)	6
36	Insulated Screwdriver Set - Stanley/Taparia Make (Diff. sizes)	1
37	Pipe Wrench (TAPARIA),Double insulated	1
38	FRP ladder with Temporary set up with life (14MTR) ,3 fold	1
39	Baricading Tape 40m	1
40	First Aid Kit (Along with Medicine) FA box as per factories/BOCW act for 25 person. Make Thadani or equivalent.	1
41	IBELL HL8245S Super Bright Headlamp Torch with Headband, Long Range Rechargeable LED Flashlight	4
42	Angle Grinder Machine (Bosch GWS 26-180 H Professional Angle Grinder 180 mm, 2600 W)	1 Per Divison
43	Drill machine battery powered with Bit for both Metal and brick wall (BOSCH),Magnetic base with battery operated	1 Per Divison
44	Come Along Clamp for Dog, Coyote & Panther Conductor	1 Per Divison
45	Rodometer (Stanley 1-77-174 12" 1000M measuring wheel)	1 Per Divison
46	Poly propylene rope 24 MM	50 Mtr per vehicle
47	Poly propylene rope 16 MM	20 Mtr Per vehicle
48	Trifor 5 Ton	1 Per Divison

49	Come Along Clamp for Dog, Coyote & Panther Conductor	1 Per Division
50	Hydraulic Crimping machine with all dies suitable for jointing Dog, Coyote & Panther Conductor.	1 Per Division
51	Chain Pully Block for Dog, Coyote & Panther conductor Stringing (5 TON) with TPI certified	1 Per Division
52	Chain Pully Block for Dog, Coyote & Panther conductor Stringing (3 TON) with TPI certified	1 Per Division
53	IR tester 10 KV	1 Per Division
54	VRD Welding Machine with all accessories and electrodes "as per requirement" - Certified 4G welder. Welding PPE's (FR Apron, Neck Hood, Hand Sleeve, Shoe Guard, Nose Mask & leather 14" hand Gloves, wlding helmet Dark glass with Face Shiled, etc.)	1 Per Division
55	Gas Cutting Set (Oxygen with DA, Cylinder, Gas Cutting trolley, Fire Extinguisher, Hose 7 Mtr. With color coding, flashback arrestor with both hand, Dual Pipe Torch) with With flash back arrestor at regulator and torch side.	1 Per Division
56	Portable DG Set 2KVA	1 Per Division
57	Battery Operated Ratchet Set	1 Per Division
58	Spade	One nos Per division
59	Gaitti insulated handle	One nos Per division
60	Cotton waste for cleaning	Lot in Cluster
61	Spray Painting Machine with Compressor	1 Per Cluster
62	Multimeter (Digital)	1 Per Division
63	Portable battery charger (Unit) One per division	1 Per Division
64	Mechanised or Telescopic Electrical tree pruner	1 No./ Division
65	Manual Telescopic Tree pruner - reach 25 ft.	1 No./ Vehicle
66	Twin Leg Tool Lanyard - 25 lbs.	2
67	wearable induction voltage detector (at wrist or helmet). Make Honeywell model HHVSB11 , JARSH model smartvolt, HVTI	1 Per lineman
68	Insulated Crow Bar	3
69	Tool bag suitable for carrying tools during height work	1 Per lineman
70	<i>Pulley for arrangement of stringing activities of lifting of tools ( spanner, sling, pulley, ropes etc.) - SWL 1T (with TPI certified)</i>	2
71	<i>SWL of swivel joint – 3 T</i>	One Per Each Division
72	<i>Sock single end SWL- 3T as per DOG, Rabbit, Panther conductor</i>	One Per Each



		Division
73	<i>Automatic clamp with arrangement of remove from ground level by rope</i>	One Per Each Division
74	<i>Hydraulic conductor cutter</i>	One Per Each Division
75	<i>Single roller SWL 3T or Twin roller (with TPI certified)</i>	05 Per Each Division
76	<i>Open pulley SWL- 3T (with TPI certified)</i>	02 Per Each Division
77	<i>D-shackle SWL-3T, 5T (with TPI certified)</i>	04 Per Each Item Per Division
78	<i>Dynamometer 0 to 5T minimum</i>	One Per Each Division
79	<i>Sling lenth 2 Mtr SWL- 3T and more SWL for</i>	06 Per Each Division
80	<i>Turn table SWL 10T max.</i>	One Per Each Division
81	Portable fire extinguisher	1 per vehicle

Besides the above-mentioned tools, following special tools for Tower Maintenance shall also be provided by BA:

#### **H. Special Tools List for Tower Team**

<b>Sl No</b>	<b>Tools for Each Tower Team</b>	<b>Unit</b>	<b>Quantity</b>
1	Jointing compressor m/c 150T with all dies suitable for Dog, Wolf, Goat, and Panther	No	1
2	Come-along for ACSR conductor Dog, Wolf, Goat, and Panther	No	6
3	Self-Locking Clamp	No	4
4	Patta Clamp	No	4
5	Steel Wire Rope (14mm or 16 mm)	mt	300
6	Poly Propylene Rope (16mm, 18mm, 20mm, 22mm)	mt	300
7	Poly Propylene Rope (16mm, 18mm, 20mm, 22mm) Single pully 1 Ton	No	5
8	Poly Propylene Rope (16mm, 18mm, 20mm, 22mm) Double pully 2 Ton	No	4
9	Poly Propylene Rope (16mm, 18mm, 20mm, 22mm) Three pully 2 Ton	No	4
10	Steel Wire Rope (Single pully 5 Ton)	No	4
11	Steel Wire Rope (Single pully 10 Ton)	No	4
12	Steel Wire Rope (Four sheave pully 10 Ton )	No	2
13	Open type single pully	No	2
14	Turnbuckle (16mm, 18mm, 20mm, 22 mm- 3 Ton)	No	6
15	Turntable drum rotator	No	1
16	Toolbox	Set	2
17	Derrick pole	No	1
18	Chain Pulley Block - 5 Ton	No	5
19	Messenger Block	No	8
20	Insulated Crowbar	No	3

#### **I. Tools List for PSS Maintenance & Testing Team**

<b>Sl. No</b>	<b>Tools for PSS Maintenance &amp; Testing Team</b>	<b>Min. Qty. (No's)</b>
1	Hacksaw Frame with blades	1
2	Hammer with fibre handle	1
3	D-Spanner set - 6 -32 mm (Taparia)Double insulated	1
4	Ring spanner set - 6 -32 mm (Taparia)Double insulated	1
5	Box spanner set - 6-32 (Taparia)Double insulated	1
6	Flat File 12" & 8 "	1
7	Round File 3/6 x 12"	1
8	Electrical certified safety shoes with double density PU sole with composite toe cap. (EN +ISI Mark on shoes). IS 15298 Part 2. Acme/Bata/Tata International/HighLife, Liberty	For all employees
9	HDPE Safety helmet with chin strap and ratchet type for adjustment. (E class- Electrical grade Safety Helmet). IS2925, EN397. Udyogi, Joseph & Lesli,PERF,MSA	For all employees

10	Full body harness non padded (Safety belt with Double Lanyard with Shock-Absorber & Pole Grab Arrestor) and adjustable Work positioning belt. IS3531-2021, EN358, EN361,Class-P . Udyogi, Karam, Abrigo, MSA	1 for line man except PSS operator
11	33kV Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual. (EN +ISI Mark on gloves)Class-04 with swet absorbing cotton gloves. IS13774-2021, Make-Jayco, Raychem, Abrigo,MN rubber	2
12	Cut resistance / abrasion /PU coated Cotton hand gloves is required everytime while working for every one.	1 Per Lineman & Helper
13	Safety Googles (Black safety goggles for all while working under direct sun-light)	1 Per Lineman & Helper
14	Screw driver Set - Stanley/Taparia Make, Double insulated	2
15	Insulated plier - Stanley/Taparia Make, Double insulated	2
16	Cold Chisel, flat	1
17	Double Test Lamp with Guard. Standard bulb casing with probe.	1
18	Discharge rod up to 9metre long with mininum 16 SQMM cable with length of 15 Mtr Insulated copper wire.	9
19	Tommy bar (1 meter length)	1
20	Long Nose plier (125mm) - Stanley/Taparia Make,Double insulated	1
21	Adjustable Wrench - Stanley/Taparia Make,Double insulated	1
22	Lock (clips) plier 6" - Stanley/Taparia Make,Double insulated	1
23	Measuring tape (30 meter)	1
24	Allen key set (4 to 12 mm) - Stanley/Taparia Make,Double insulated	1
25	Hot blower - Bosch - Working temperature: 60 – 550°C °C ; Airflow: 350 – 550 l/min, 1800w input power.	1
26	Pressure torque wrench (manual)-Taparia	1
27	Vacuum Cleaner	1
28	Bolt Cutter (for conductors upto 232 sq. mm.)	1
29	Torch/Emergency lights-Re-Chargeable Torch (Philips Blaze Multi-functional Long Range Rechargeable Emergency Light),500watt	1
30	Neon Tester for 11-33 KV - with FRP Rod up to 9m long. Make -Taurus, HVTI, Motwani	1
31	Manual Crimping Tool - for small lugs	1
32	Air Blower	1
33	Portable Discharge Rod (set)	1
34	Monkey Plier,Double insulated	1
35	Wire Stripper,Double insulated	1
36	RCCB/ELCB Mounted Extension Board (Capacity - 63 A, Industrial Plug Type) with 30 mA mandatory. MCCB & 25 mts of extension flexible wire	2
37	Road safety Traffic Cone with reflective sticker. (760mm height)	4
38	Insulated Screwdriver Set - Stanley/Taparia Make (Diff. sizes)	1
39	Oil Gun / Can	1
40	Pipe Wrench (TAPARIA),Double insulated	1
41	Liquid Level Indicator (0.5 mtr.)	1

42	FRP ladder with Temporary set up with life (14MTR) ,3 fold	1
43	Baricading Tape 40m	1
44	First Aid Kit (Along with Medicine) FA box as per factories/BOCW act for 25 person. Make Thadani or equivalent.	1
45	IBELL HL8245S Super Bright Headlamp Torch with Headband, Long Range Rechargeable LED Flashlight	1
46	Angle Grinder Machine (Bosch GWS 26-180 H Professional Angle Grinder 180 mm, 2600 W)	1 Per Divison
47	Drill machine battery powered with Bit for both Metal and brick wall (BOSCH),Magnetic base with battery operated	1 Per Divison
48	IR tester 2.5 kV, Crank Operated	1
49	Motorised oil pump	1
50	Hand operated oil pump	1
51	wearable induction voltage detector (at wrist or helmet). Make Honeywell model HHVSB11 , JARSH model smartvolt, HVTI	Per line man
52	Non contact type LT line tester. Make Fluke, Silicon waves.	Per line man
53	Panel cutter	1
54	Tool bag suitable for carrying tools during height work	2
55	Hygrometer for battery for specific gravity measurement	1
56	Portable fire extinguisher	1 per vehicle

The above list of testing equipment's and tools is not exhaustive in nature. AMC service provider should be able to provide all those instruments and tools which may be needed to carry out any job in the scope of work. BA shall also manage buffer stock of minimum 5% to replace any damaged/lost tool within 24 hours failing which marks/payment would be deducted.

**BA shall submit their division wise all asset list (T&P, safety PPEs, Testing tools etc.) Quarterly to corporate STS team duly signed by concern EIC or STS representative as per prescribed for format. Non submission of quarterly report will be treated as Non-compliance and penalty will be imposed accordingly.**

BA shall finalize the Maintenance schedule along with EIC based on the schedule prepared by Maintenance Planning Group. Please refer to penalty clause in case of any deviation

### c. Adherence to Service Level Agreement

The SLA for each of the cause of power supply failure is as mentioned below:

S. No.	Type of Service	Turnaround Time Urban	Turnaround Time Rural
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1	Restoration following Interruption / breakdown of TPWODL 33kV feeder and PSS Equipment	4 hours	8 hours
2	Duration of scheduled shutdown hours/day	4 hours	6 hours

#### **d. Industrial / Urban Feeders Tripping**

BA shall submit an action plan for ensuring zero tripping (or 15% reduction MoM/YoY basis) on identified feeders (list of which shall be provided by corporate operation services team) to TPWODL within 2 month of contract execution. TPWODL shall analyze the action plan and based upon the feasibility shall execute the same.

## **ANNEXURE VII D**

### **1. Safety Aspects,**

Any Safety violation like non-usage of PPE, tools, etc. as per matrix given in clause 6 of CSM document or any SOP violation, PPE violation, fatal and nonfatal accident involving humans attributable to the BA will warrant deduction of payment, issuance of memo and/ or termination of Contract as per the conditions mentioned in the clause 6 of the Contractor Safety Management document.

#### **A) Working without PTW (20 marks)**

S. No.	Parameter	Marks Deducted
1	1 violation	5
2	>1 violation	20

#### **B) Manpower / Vehicles Compliances: (20 Marks). The measurement parameters along with sub measures and penalties thereof are explained in the table mentioned herein.**

S. No.	Parameter	Penalty
1	Vehicle compliance	1 mark deduction for each vehicle related non-compliance (Max 10 marks)
2	Manpower compliance	1 marks deduction for each employee related non-compliance (Max 10 marks)

### **2. Non-availability of required T&P during maintenance leading to delay in execution of job: (Total Weightage: 10 Marks):** EIC will deduct marks for each instance as mentioned below.

S. No.	Violation Frequency	Marks Deducted
1	1 violation during the month	1
2	2 violations during the month	3
3	3 violations during the month	4
4	4 violations during the month	6
5	5 or more violations during the month	10

### **3. High Revenue & Critical Feeder Tripping: (Total Weightage: 20 Marks):** The marks shall be awarded and deducted on the basis of the following (For Urban/Industrial/HRF Feeder)

S. No.	Violation Frequency	Marks Deducted
1	Conductor snapping – each case	4
2	Jumper parting – each case	2
3	HRF Tripping increase up to 10% w.r.t same month of LFY	8
4	HRF Tripping increase up to 20% w.r.t same month of LFY	10
5	HRF Tripping increased >20% w.r.t same month of LFY	20

**4. The quality of the maintenance (Weightage: 10 Marks):**

The marks will be determined by EIC and STS Coordinator on the basis of inspection, equipment failure inside PSS & No. of 33kV feeder trippings due to poor quality of maintenance.

S. No.	Violation Frequency	Marks Deducted
1	Creeper reached up to 1 meter below conductor – each case	1
2	Feeder inspection as per plan non-adherence – each case	2
3	Repeat fault due to poor workmanship – each case.	2
4	Unwanted vegetation growth inside PSS-each case	1

S. No.	Violation Frequency	Marks Deducted
1	Non-compliance of PM for 33kV Line. (<90% of planned PM)	2
2	Non-compliance of PM for PSS Equipment's (PTR). (<90% of planned PM)	2

**5. Submission of MIS (Total Weightage: 5 Marks):**

In case the BA does not submit the monthly MIS and Performance Report by 7<sup>th</sup> of every month (for previous month), the BA will be liable for deduction of up to 5 marks.

BA is expected to implement and maintain S+5S at each PSS in coordination with STS/EIC/M&T Engineer. Filled S+5S compliance report will be submitted by BA to EIC and Corporate STS along with monthly invoice.

**6. Incentive for Upkeeping of 33kV lines.**

S. No.	Measure	Bonus Marks
1	Ensuring zero tripping of 33kV lines	2

**MIS to be submitted by BA:**

**i. PPEs issued to staff.**

S. No.	Name of Employee	Name of Safety Equipment/PPE Received	Signature of Employee

**ii. T&Ps issued to staff.**

S. No.	Name of Team	Name of T&P Received	Signature of Team Supervisor

**iii. Attendance of staff**

S. No.	Name of division	Name of staff	No of days in the month	No of days present

**Note:** BA shall maintain attendance register at each division and BA staff will mark attendance on daily basis for all three shifts. The attendance register will be available for inspection to SDO/ESO/M&T engineer or any other

TPWODL officer on demand. BA shall submit the monthly attendance report to TPWODL along with monthly invoice. BA staff while on duty shall be properly dressed and maintain decorum.

**iv. Feeder inspection reports**

BA shall submit the feeder inspection report against the monthly inspection schedule provided by TPWODL to EIC (SDO/STS Circle Coordinator) & to Corporate Team (HOD/HOG-STS/MPG)

**v. Maintenance reports**

BA shall submit the maintenance report on maintenance activities performed during the month to TPWODL to EIC (SDO/M&T/STS Circle Coordinator) & to Corporate Team (HOD/HOG-STS/MPG)

**vi. Interruption Report**

BA shall submit the analysis of feeder interruption occurred during the month to designated officers in the prescribed format to TPWODL EIC & Corporate Team.

### **Payment to BA**

- BA shall raise invoices verified from concern TPWODL circle staff along with supporting documents on monthly basis with soft copy to HOG STS for Monthly AMC Charges
- Upon receipt of invoice soft copy, HOG STS will create SES in SAP and send for approval.
- Upon receipt of hard copy of invoice HOG STS shall check with safety department for any penalty on account of CSMS violations.
- HOG STS to forward the monthly invoice to finance along with recommendations for penalty / incentives and for release of 90% payment within 7 days of submission of monthly invoice.
- Finance to release the balance 10% payment after receiving the IR Compliances from vendor verified by concern TPWODL IR Authority.



In addition to the Annual Maintenance Contract for Extra Jobs, TPWODL will also enter into an Annual Rate Contract with the respective Business Associates for the following optional items.

Annual Optional item for Extra Job Per Cluster		
Item Details	UoM	Approx Annual Qty
Hydra Per Day	Day	60
Tractor Per Day	Day	40
Mid-pole installation using pole master Per Day	Day	40
DG Set Three Phase 5KVA Per Day	Day	10
Water Pump Three Phase 5HP	Day	12
Additional Supervisor Per Day	Day	400
Additional Lineman Per Day	Day	1200
Additional Helper Per Day	Day	900
Pole Cooping using concrete	EA	100
4 wheeler (Tata 709 or equivalent) with 4 manpower	Day	130
Troller Per Day , Upto 70KM	Day	40
Troller Beyond 70KM Per KM	KM	2000
Crane having lifting capacity 15 to 30 Ton Per Day	Day	10
Dismantling or Installation & shifting (inside PSS) 8 MVA PTR	EA	6
Dismantling or Installation & shifting (inside PSS) 5 MVA PTR	EA	10
Dismantling or Installation & shifting (inside PSS) 3.15 to 1.6 MVA PTR	EA	8
Fabrication of steel structure Per KG (steel provided by TPWODL)	KG	1500
Laying of Power Cable 33KV & 11KV (35 to 400 SqMM) Per Mtr	MTR	500
Cable Trenching width 0.8 Mtr & Depth 1.2 Mtr with backfilling Per Mtr	MTR	500
Repair & Maintenance charges of Man-lifter & Oil filtration machines, payment will be done as per actual bill submission upon prior approval from TPWODL.	Lot	1
Repairing of Air Condition in side PSS. Payment will be done as per actual bill submission and approved Rate upon prior approval from TPWODL.	Lot	1
Providing MIS item for Urgent Maintenance work.Payment will be done as per actual bill submission upon approved rate as per tender document.	Lot	1
Hiring charges of Pole Master 4 hrs Day	Day	30
Hiring charges of Pole Master 8 hrs Day	Day	40
Hiring charges of Tempo per Day	EA	10

Minor Civil Works		
a. Concreting (1:1.5:3) M20 Grade	CUM	3
b. Reinforcement required for RCC	KG	50
c. Brick Masonry work	CUM	5
d. Plastering work (upto 20mm)	SQM	100
Mis Repair charges for PSS minor works such as door, windows & etc. payment will be done as per actual bill submission upon prior approval from TPWODL.	Lot	1
30-50 Ton Carne with required manpower	SFT	4
50-80 Ton Carne with required manpower	SFT	4
Provide Water tanker 5000 ltr capacity	EA	8
Provide Water tanker 3000 ltr capacity	EA	10
Submersible Pump repairing up to 1.5KW	EA	5
Water Pump Rewinding & Repairing up to 1.5KW	EA	5
Earth pit repairing & brickwork	EA	10
Supply of JCB on call basis	Hrs	100
Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes 20mm	Mtr	200
PSS Cooler motor repairing & rewinding	EA	30
Earth chamber-Inst. of earthing pipe	EA	40

## **PART-2 - Scope of the work (Sub-Station Operator)**

### **Monitoring, Operation, and watch & ward activities at 33/11 kV PSS.**

#### **1. Scope of the work:**

The Service Provider shall provide manpower for 24x7 monitoring, operation, and watch & ward works of 33/11 KV primary sub-station, by deploying employees at the specified premises / place to execute the contract. The Service Provider must ensure that specified numbers of personnel are placed for uninterrupted service. BA project manager and PSS supervisor has to ensure all operations carried out inside PSS are as per TPWODL SOP. In case of failure in providing service or unsatisfactory performance by the Service Provider, penalty will be imposed as per agreement.

TPWODL intend to automate all PSS gradually for unmanned operations and manpower spared from automated PSS shall be redeployed at other PSS or shall be redeployed for maintenance activities (within same cluster/other cluster) at the discretion of TPWODL.

#### **Recordkeeping**

1. Maintain list of all working / spare equipment available in the substation. BA staff shall update the asset register quarterly & to be submitted to EIC.
2. Enter tripping / interruption details in Suraksha Kwach/log sheet/daily diary register.
3. Record hourly load parameters, voltage, current, Energy Meter Readings, oil and winding temperature, oil level, and enter the same in log sheet / book.
4. Record oil levels, oil, and winding temperatures, tap position, cooling fans, bushings, dehydrating breather, condition of silica gel and power connections on PTRs.
5. Record status of indication lamps, annunciation etc. and report the failure of lamps to the EIC.
6. Record hot spot at joints/ jumpers. Switchyard lights
7. Record gas pressure in SF6 Circuit Breakers.
8. Record peak load in the peak load register
9. Record energy meter reading of all 33KV feeders, Power Transformers, 33/11KV I/C's, 33/11KV O/G feeders,
10. Record defects observed in the substation/equipment in the defect register and communicate the same to EIC and follow up till these are attended.
11. It's mandatory to enter all information, and events in log sheet / general diary register. Failing to do so will attract a penalty.
12. For recordkeeping, registers / stationery shall be provided by TPWODL. TPWODL reserves the right to replace the registers / stationery as per business requirement and BA staff shall use the latest registers / stationary to maintain data and information.

#### **B. Activities**

- Ensure cleaning of entire substation / control room / equipment / and switchyard through housekeeping staff. Ensure that S+5S system and red tag areas are maintained,
- Shall take a round of the substation during start of each shift and note down the abnormalities if any, log such abnormalities in defect register and report to the EIC.
- Check condition of all equipment such as power transformers, circuit breakers, lightning arresters, isolators, current and voltage transformers, battery banks, battery charger, station transformers, ACDB, control and relay panels and record defects in the defect log.
- Monitor the incoming feeder / substation equipment / system closely all the time and remain alert.

- Shall take hourly load / energy meter, temperature and oil level readings and enter the same in log sheet / general diary register.
- Carry out switching / isolation / grounding operations as per system requirement / SOPs / correctly and accurately and, record the same in the logbook/Suraksha Kwach application.
- Carry out emergency operations to protect the equipment and substation. Inform such operations to PSCC / EIC,
- Enter all breakdowns/tripping's with date, time, name of equipment, load affected, relay action etc. in Suraksha Kwach.
- Issue PTW to working party after carrying out switching operations / isolation / grounding as per the SOPs / directions from PSCC / EIC. Shall issue permit to work only to the persons approved by PSCC / EIC.
- Escalate the defects to EIC / DM / SDO / SI / E&MR engineer till such time the same are attended / rectified.
- Prepare monthly reports in the prescribed format and submit the same to EIC as specified from time to time. TPWODL shall provide the reporting formats.
- Continuous up-dating of log sheet, daily diary register, tripping registers, battery register, and defect register etc.
- Follow SOPs/operating instructions given by EIC to carry out the operations like charging / isolation / grounding of equipment, issue of LCs to authorized person etc. and follow the SOP (Standard Operating Procedure) during line clearance,
- Attend to all emergencies that may arise during the contract period such as equipment failures, fire accidents etc., shall get acquainted with all the operations such as isolating transformers and other equipment etc.
- Attend to all telephone calls and issue receipt message promptly.
- Observe all safety precautions as envisaged in the CEA (Measures relating to safety & electricity supply) Regulations, 2011 & observe all applicable regulations regarding safety at site and ensure safety to man and material and the equipment during the contract period.
- Monitoring and upkeep of mobile phone, equipment and other materials kept / installed the substation. BA shall bear the loss on account of theft of mobile phone / repair of mobile phone, any other equipment, etc.
- Cleaning of solar panels installed in the substation. BA staff shall be trained for this activity. Cleaning of panels will be done as per the frequency decided by respective E&MR engineer.
- BA shall be held responsible for any damages occurred due to defective/ improper operation of equipment as well as non-implementation of right operation of the equipments and shall be made responsible for the loss occurred by TPWODL.
- BA shall carryout the activities strictly as per CEA Regulations & Safety Rules and use PPEs as per safety guidelines for carrying out O&M activities.

## **C. Monitoring of equipment**

### **i. Power Transformers:**

- Check the physical condition of the power transformer.
- Recording load, oil level, oil leakages, oil, and winding temperature.
- Report un-usual condition to PSCC/EIC immediately.
- Recharge silica gel / oil in SG breather.
- Report low oil / buchholz alarm / hot spots to PSCC / EIC immediately
- Switch off transformers in case of operation of buchholz alarm to PSCC/EIC immediately
- Assist maintenance staff for execution of maintenance activities
- In case of tripping, Power transformer shall be energised only after clearance by PSCC/E&MR manager.

**ii. Circuit Breakers/CT/VT/LA:**

- Check physical condition of each equipment and report abnormal condition to PSCC/E&MR engineers/Section in-charge,
- Check healthiness of trip circuits,
- Check SF-6 Gas pressure in circuit breaker/panels,
- Check for any abnormal sound,
- Check for hot spot, if any,
- Report un-usual condition to PSCC/EIC immediately.
- Assist maintenance staff for execution of maintenance activities

**iii. Switchyard:**

- Check switchyard at regular intervals.
- Check boundary walls, switchyard fence, gate, lights, condition of gravels, earth pits, and report abnormalities to PSCC/EIC
- Check physical condition of lightening arresters, Isolators, AB Switches, Current Transformers, Voltage Transformers, Cable Terminations, Conductors and Jumpers, and report any abnormality to PSCC/EIC.
- Ensure that all terminal kiosks, junction boxes, equipment doors are kept closed.
- Don't allow to keep any new / old / scrap materials in the switchyard. All such materials to be kept away from switchyard at designated place.

**iv. DC Battery and Battery Chargers:**

- Check physical condition of battery bank and battery charger,
- Check voltage of pilot cells during morning shift and for all cells once in a week. Observation shall be recorded in the logbook.
- Check DC voltage at regular interval and inform over voltage / under voltage to PSCC/E&MR engineer and take action as per their advise/direction
- Check DC Earth leakage and report to PSCC/EIC.
- To ensure that battery chargers and battery banks are maintained by BA once in 2 months.
- To ensure vermin proofing of battery chargers
- Assist maintenance staff for execution of maintenance activities

**v. Earth Pits:**

- Check physical condition of all earth pits
- Ensure that all earth pits are covered with CC covers.
- Water each earth pits as per the advice/direction of E&MR engineer. (AMC BA has to provide water hose pipe, in case of non-availability of PSS earth pits inbuilt water piping system)

**vi. Station Transformer and ACDB**

- Check the transformer for physical condition, oil leakage, hot spot, silica gel colour, correctness of fuses, jumpers, connectors etc.
- Check vermin proofing of ACDB.
- Check the LT voltages and inform E&MR engineer regarding over voltage / under voltage.

- Assist maintenance staff for execution of maintenance activities

**vii. Control Room**

- To ensure cleaning of control room.
- Ensure that all trenches are clean and trench covers are intact.
- To clean the secondary equipment through air blower (from a distance – training shall be provided by TPWODL)
- To ensure that all equipment front / back doors are kept closed/locked.
- To ensure that heaters are kept ON in the CRP / Indoor breaker panels at all times.
- To ensure that all indication lamps / meters are in working condition.
- To ensure that no unwanted material is kept inside control room.
- To ensure that there is no rodent entry in any of the indoor panels.
- Assist maintenance staff for execution of maintenance activities

Substation operators shall ensure that substation premises and all equipment are kept neat and clean / working condition at all times. Substation operators will assist DM/SDO/SI/E&MR engineer to maintain S+5S at respective substations. Substation operators shall be trained by TPWODL to carry out operation and maintenance of equipment installed in the substation. However, the maintenance activities shall be performed under guidance and physical presence of SDO/E&MR engineer/Section-in-charge only.

For execution of works of sub-stations, BA shall provide manpower as per annexure-x, BA shall also engage supervisor as per annexure-x. Supervisor will ensure smooth functioning of the contact on day-to-day basis and co-ordinate the activities with DM/SDO/SI/E&MR engineer/HoG STS/MPG. He will have to provide required help to substation operators on urgent basis.

**D. Mobile Operation Crew (MOC):**

Based on organization requirement, Mobile operation crew shall be formed for a cluster of 2-4 automated primary substations located in close proximity and trained for carrying out operation and watch and ward of these substations. The Manpower relocated from automated substations shall be used to form Mobile operation crew. TPWODL reserves right to redeploy the manpower released from automated PSSs either in other PSS or in “Mobile Operation Crew” in same cluster or in other circle/cluster or to redeploy for maintenance activities (within same cluster/same circle/other Circle) after due training. The Mobile operation crew will carry out the required switching operations, isolations, and grounding of equipment on the direction of PSCC / EIC. The mobile operation crew shall also visit the substations during idle time and fill daily check list for onward submission to PSCC. In few of MOC case Operator will be in one cluster but may work in other cluster area depending upon the requirement.

**The BA shall provide one motorcycle (Bike) for each MOC on 24X7 basis along with fuel and vehicle maintenance.**

- BA must ensure that the bikes are not older than 5 years and have all valid statutory documents. BA must ensure Bikes are in good working conditions.
- BA needs to maintain logbook for usage of each MOC bike.
- These Bikes will have provision for monthly average running of 1700 km (Average of all running MOC Vehicles for the cluster). After 1700 km, vendor may claim per km charges.
- MOC shall maintain log of all travels with date and time which need to be vetted by BA supervisor. The same shall be submitted to EIC/HoG STS/MPG with monthly invoice. The log should contain name of PSCC engineer who directed the crew for movement.
- BA shall ensure that bikes are replaced within 1 hour in case of bike breakdown. During such event BA shall arrange an alternate vehicle to ensure that the operation crew moves without wasting time. In case of non-availability of vehicle, penalty of Rs. 1000/- per hour shall be levied on BA.
- In case of accidents, TPWODL has no responsibility whatsoever towards police/ RTA authorities, Law, Courts, injured parties, damages to the vehicle or property etc. All these shall be entirely contractor’s sole responsibility.

## E. Manpower Requirement:

Cluster-wise Manpower Requirement for Monitoring, Operation, and watch & ward activities at 33/11KV  
Primary PSS:

GRID OPERATION TEAM								
Lots (Cluster)	Division	No of Division	No of PSS	PSS OPERATION				
				Total No of PSS	PSS Supervisor, Highly Skilled	PSS Operator, Skilled	Helper, Unskilled	Total Manpower
1	BNED,SAMBALPUR	3	8	46	3	184	138	323
	DED,SAMBALPUR		9					
	JED,SAMBALPUR		29					
2	SED,SAMBALPUR	2	11	32	2	128	96	225
	SEED,SAMBALPUR		21					
3	RED,ROURKELA	2	10	27	2	108	81	190
	RSED,ROURKELA		18					
4	RGP,ROURKELA	2	20	38	2	152	114	267
	SED,ROURKELA		18					
5	BED,BARGARH	2	23	44	2	176	132	309
	BWED,BARGARH		21					
6	BED,BOLANGIR	2	21	41	2	164	123	288
	SED,BOLANGIR		20					
7	TED,BOLANGIR	2	26	42	2	168	126	295
	NED,KALAHANDI		16					
8	KEED,KALAHANDI	2	21	41	2	164	123	288
	KWED,KALAHANDI		19					
TOTAL		17	311	311	17	1244	933	2194

## **F. Standard Operating Procedures:**

Substation operators shall carry out all switching, isolation, and grounding operations as per the standard operation procedures provided by TPWODL. The existing SSO's have been trained on these SOPs. All new SSO's shall be trained adequately by BA's (supervisor) on safety and SOPs before they are deployed at PSS. TPWODL shall revise the SOPs based on business requirement and BA's shall train all SSO's on new SOPs on as and when basis.

### **1. Requisition / issue / Return of Line Clearance (L/C) & execution of the work**

#### **a. Requisition of Line Clearance (L/C): –**

- I. For any type of breakdown or maintenance work in PSS or associated 33KV feeder, the authorized engineer executing the work must apply in person for L/C requisition in the prescribed form of TPWODL to the shift in-charge of the 33/11KV Primary Substation.
- II. Alternatively, L/C can be requisitioned through telephone.
- III. The concerned SDO/E&MR engineer in case of a 33 KV line and concerned SI in case of a 11 KV line can apply to the shift in-charge of the concerned 33/11KV Substation for L/C requisition, in the prescribed L/C Requisition form of TPWODL.
- IV. In case of exigencies of work, in absence of the officer in charge of HT line, other officiating officer as per the order of the concerned Division Manager/E&MR Manager will be authorized to apply L/C in the prescribed form to the concerned shift-in-charge. Authorized engineer requisitioning for a L/C, must fill up the following in the prescribed format for L/C requisition.
  - a) The exact Panel/Bay/Line for which L/C is required.
  - b) The exact work to be carried out.
  - c) Time of requisition & expected time for completion of work.
  - d) The list of persons to be involved in the work.
  - e) Undertaking for adherence to all safety rules by the working gang.
  - f) Undertaking to use PPEs and non-use of mobile phones during execution of work.
- V. During any adverse weather condition like storm / disaster / heavy rain / any other emergency, or in case of accident, the PSCC / concerned SDO / E&MR engineer / SI may request for hand tripping over phone (land or mobile) from the shift in-charge of the concerned substation as per the following procedure.
  - He / She has to intimate his/her full name & designation over phone, and he/she has to give a CODE WORD for the purpose.
  - It must be recorded in the prescribed operation logbook along with the time by the concerned shift in-charge of the Sub-station.
  - The Feeder can be charged only after getting a call from the same engineer who requested for hand tripping, mentioning his/her designation, full name and the previously communicated CODE WORD for the purpose. Above process with time must be recorded.
  - Entire process must be recorded by the shift in-charge in the log sheet / general diary register.

#### **b. Issue of Line Clearance: -**

1. The shift-in-charge of the primary substation after receipt of duly filled in L/C requisition and go ahead from PSCC, examine the exact panel / equipment / Bay / Line for which L/C is required.
2. He should analyze the effect of the issue of L/C on the existing supply system (all incoming / outgoing or 33 KV load).
3. If the L/C can be issued without affecting any important load or system, he / she to inform PSCC and act as per their direction. Besides, if any important load / system is affected with interruption of load, he may discuss with the officer in-charge of the respective feeder. Entire process should be completed as early as possible.



4. After being certain for issue of L/C, related breaker/s to be hand tripped from the control room.
5. Both AC & DC fuses of the related panels must be taken off and kept safely.
6. In switch yard, physical opening of the breaker/s are to be checked.
7. Both bus and line side isolators must be opened and then earth-switch to be closed to ensure complete isolation from the system.
8. The equipment / feeder under outage must be isolated and grounded.
9. The MAN ONLINE / DANGER tag should be hanged on the related breaker / breaker panel / isolators / ground switch and control panel.
10. L/C issue form is to be filled up properly mentioning all operations done & the equipment / bay / line on which L/C is issued & name of the person in whose favor it is issued.
11. L/C should be issued to an authorized engineer in person, in his name and designation.
12. In case of exigency, the substation operator can open the circuit breaker. He however will inform the action to PSCC and issue the L/C to concerned SDO/SI/E&MR engineer.

**L/C's will only be issued after consultation / under guidance of PSCC for all manned primary substations. The SOP issued by PSCC shall be made available to BA for adherence and compliance.**

**c. Return of Line Clearance: -**

1. Line clearance must be returned in person in the prescribed format mentioning the actual time of return of L/C work carried out and certifying that "All men and Materials are removed".
2. The shift in-charge must follow the following procedure before charging of equipment / line.
  - I. The return of L/C in the format is in order.
  - II. Men and materials have been removed. All the temporary grounds have been removed. All "Danger Board" / "Man on line" hanged inside the switch yard and control room are removed.
  - III. Inform PSCC and take instructions for cancelation of PTW and supply restoration.
  - IV. The earth switch is opened & then associated isolators are closed.
  - V. The related fuses in the respective control panels are to be closed.
  - VI. All flags of relays in the internal panel must be in order.
  - VII. Respective breaker is closed, and load has appeared on equipment / line on all three phases.
  - VIII. Records of operations must be updated in the log sheet / general diary register.

**L/C's will be cancelled by substation operator, and he will inform PSCC before normalization of line/equipment. In case of exigency also, line/equipment normalization will be affected only under guidance/instruction of PSCC.**

**All switching operation will be done only under guidance/instruction of PSCC and as per PSCC approved SOPs. TPWODL will provide the soft copy of SOPs to BA after award of contract.**

TPWODL has developed Suraksha Kwach mobile application for capturing operational data, recording interruptions, and issuing of permit to work. Substation operator shall also fill log sheet / registers / forms to capture operational data. All substation operators have been trained to fill the records / use mobile application. All new SSO's shall also be trained for IMS documentation and mobile application by BA supervisors upon induction. Suraksha Kwach application / detailed PTW guidelines / Standard Operating Procedures as issued / amended by TPWODL from time to time shall be followed for providing outages and capturing operational data. TPWODL shall provide the latest SOP / PTW guidelines to business associate immediately after award of contract.

## Annexure VII C-2

### Service Level Agreement (SLA) for PSS Operation

- In the event of any performance-based measurement criteria not reported / under reported / performance deviation, would lead to deduction of marks specific to the criteria.
- TPWODL reserves the right to change / add to the list of existing performance base measurements, at any point of time during the execution of the contract. This will be communicated in writing to the BA by TPWODL Chief (Operations) / Chief (Procurement and Stores) on mutually agreed terms.
- The performance system shall comprise measurement of BA's performance on the parameters listed below.

#### **Performance Standards for Monitoring, Operation and watch & ward activities at 33/11kV PSS:**

##### **a. Safety aspects, Statutory Compliances and Asset Upkeep**

- All jobs shall be carried out as per the SOP / PTW guidelines issued by PSCC/. SOP / PTW guidelines are attached as Annexure-A.
- BA shall provide PPEs, Safety Equipment and Tools to all SSO as per the specifications mentioned in this contract as safety guidelines/instructions.
- BA shall comply with all statutory compliances as mentioned in attached GCC, CSMS, and applicable laws.
- SSO shall ensure Locking of unmanned automated PSSs.
- BA supervisor shall notify EIC on PSS deficiencies / missing materials / missing covers / damaged doors of PSS and work with TPWODL staff to rectify the same at the earliest.
- Upkeep of PSS (Vegetation removal) and Garbage removal so as to avoid incidents/accidents.

##### **b. Supply and Usage of T&P**

The following T and P must be available with BA at each substation for carrying out the jobs. At any given point of time regular replenishment is the responsibility of BA. The below mentioned list may be considered as requirement for each PSS.

All the PPEs, tools tackles shall be as per the TPWODL approved specifications and quantity

#### **PPEs and T&P – 01 set per substation**

##### **PPEs and Tools List for PSS**

SI. NO.	PPEs & Tools Description for each PSS	Minimum Qty
1	33kV Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual. (EN +ISI Mark on gloves)Class-04 with swet absorbing cotton gloves. IS13774-2021, ,Jayco, Raychem, Abrigo,MN rubber	2 Sets
2	<del>11000V Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual. (EN +ISI Mark on gloves)Class-02with swet . ,Jayco, Raychem, Abrigo,MN rubber.absorbing.IS13774-2021, cotton gloves.–</del>	<del>2-Sets-</del>
3	500V Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual. (EN +ISI Mark on gloves)Class-02with swet . ,Jayco, Raychem, Abrigo,MN rubber.absorbing.IS13774-2021, cotton gloves.	2 Sets
4	<del>Safety Goggles (Black safety goggles for all while working under direct sun light)</del>	<del>1 Per- Lineman &amp; Helper</del>
5	Cut resistance / abrasion /PU coated Cotton hand gloves is required everytime while working for every one. IS-6694. Make Action, Udyogi, Frontier, Leslico, abrigo	Each Person of line & PSS maintenance

6	Torch/Emergency lights-Re-Chargeable Torch (Philips Blaze Multi-functional Long Range Rechargeable Emergency Light) <b>500WATT</b>	<b>1 No.</b>
7	Full face visor with safety helmet ((1 No's Per PSS)	<b>1 No.</b>
8	One set of Screw driver( Taparia 840 combination screw driver set(pack of 6) in each PSS	1 Set
9	Insulated combination plier- 1 no each PSS,Double Insulated	1 Set
10	Adjustable Spanners 6" and 10" – 01 No,Double Insulated	1 Set
11	Painting Brush 4" and 2" – 01 No,	1 Set
12	Old dhoti full size – 24 No, (2 per month)	1 Set
13	Discharge Rod	<b>12 Nos</b>
14	Neon Tester for 11-33 KV - with FRP Rod	1 No.
15	One first aid box per PSS	1 No.

**c. Timely & Correct Operation of Substation Equipment**

PSS operators need to acknowledge PSCC calls for operation of PSS equipment and timely operate the equipment as per requirements. In case of Unmanned PSS operator should reach in scheduled time and operate the equipment as per instruction of PSCC / Designated officer.

**d. Upkeep of PSS equipment**

- BA shall Ensure cleaning of control room, switchyard and peripheral areas.
- BA shall Ensure cleaning of power and control cable trenches.
- BA shall Ensure cleaning of external surface of secondary equipment through air blower. BA shall Ensure that front / back door of all equipment are kept closed/locked
- BA shall Ensure that space heaters are kept ON in the CRP / Indoor breaker panels at all times. BA shall Ensure that no unwanted material is kept inside control room / on panels / inside panels
- BA shall Ensure that there is no rodent entry in any of the indoor panels
- BA shall Ensure that 5S is maintained at all times
- Note: BA shall ensure regular and proper cleaning of the control room floor, washroom, switchyard, and peripheral areas at all PSS locations. All required consumables, such as toilet cleaner, soap, phenyl, brooms, herbicide, battery/ petrol/ diesel operated portable grass cutter etc. shall be provided by BA.
- In case of inadequate or unsatisfactory cleaning, TPWODL reserves the right to engage additional manpower to carry out the required cleaning activities. The expenditure incurred for such engagement shall be back-charged to BA at 1.5 times the actual cost.

**a. Statutory Compliances**

Vendor must comply all statutory clearances such as ELBO issued certificate, Vehicle compliance, IR compliances

**b. Attendance of SSO at PSS**

BA shall maintain attendance register at each PSS and SSO shall mark his attendance on daily basis. The attendance register will be available for inspection to DM / SDO / SI / E&MR engineer or any other TPWODL officer on demand.

**c. Discipline**

BA staff while on duty shall be properly dressed and shall maintain decorum.

## 2. MIS to be submitted by BA:

### i. **IMS documents**

BA will maintain the required registers / records at each substation as per the quality management procedure (Operations Management). Details of such registers / records shall be provided by TPWODL. It will be the responsibility of BA supervisors to ensure that all records are maintained in the prescribed formats and all required fields are populated. BA shall submit compliance report to TPWODL every month along with the monthly invoice.

### ii. **PPEs to PSS operator**

S. No.	Name of Employee	Name of Safety Equipment/PPE Received	Signature of Employee

### iii. **T&Ps issued to PSS**

S. No.	Name of PSS	Name of T&P Received	Signature of PSS Supervisor

### iv. **Attendance**

S. No.	Name of PSS	Name of staff	No of days in the month	No of days present

- Note: BA shall maintain the attendance register at each PSS and BA staff will mark attendance on daily basis for all three shifts. The attendance register will be available for inspection to DM / SDO / ESO / M&T engineer or any other TPWODL officer on demand.
- BA shall submit the monthly attendance report to TPWODL along with monthly invoice.
- BA staff while on duty shall be properly dressed & maintain decorum.
- BA Shall provide ID card to all the staff as per TPWODL IR guidelines.

### v. **MOC Vehicle utilization Report**

Daily vehicle movement details for MOC verified by PSCC to HOG-MPG on every 2nd day of oncoming month.

### vi. **Peak Load**

BA shall submit the peak load report of each 33 and 11KV equipment for each day of the month to EIC/HoG(Maintenance Planning Group)

### vii. **Submission of Consolidated Equipment defect report & Unsafe conditions in PSS**

BA shall submit daily consolidated summary report of Defective Equipment & Unsafe conditions in PSS in the prescribed format by TPWODL to PSCC/HOG (Maintenance Planning Group)

### viii. **Submission of PSS Cleaning status**

BA shall submit monthly Summary for PSS where cleaning not conducted in the prescribed format by TPWODL to EIC/STS HOG/MPG

### ix. **Interruption Report**

BA shall submit the daily / monthly report of interruptions to designated officers in the prescribed format.

## **ANNEXURE VII E**

### **Performance Measurement system: (Grid Operation)**

#### **Incentives and Penalty for good performance / non-compliances:**

Any Safety violation will be governed as per Contractor Safety Management (CSM) of TPWODL. Refer Annexure ---for CSM.

**In addition to deduction made for CSM violation, the following marks will be deducted for non-compliances:**

**a. Upkeeping of TPWODL supplied safety equipment (5 Marks)**

S. No.	Parameter	Sub-Measure	Marks Deduction
1	Reporting availability of Neon-Tester & Discharge rods (supplied by TPWODL) & reporting of damaged / missing Neon-Tester & discharge rods immediately.	Non-Reporting (to SDO/DM/HOG-MPG/E&MR Engr) and not keeping of Neon-Tester & discharge rod in systematic condition at 10% of total PSS	3
		Non-Reporting (to SDO/DM/HOG-MPG/E&MR Engr) and not keeping of Neon-Tester & discharge rod in systematic condition at 20% of total PSS or more	5
2	Reporting availability of Ladders (supplied by TPWODL) & reporting of damaged / missing ladders immediately	Non-Reporting (to SDO/DM/HOG-MPG/E&MR Engr) and not keeping ladders in systematic condition at 10% of total PSS	3
		Non-Reporting (to SDO/DM/HOG-MPG/E&MR Engr) and not keeping ladders in systematic condition at 20% of total PSS or more	5

Note: In case if the BA has informed EIC about non-availability of discharge rod/ Ladders for the given PSS before inspection/observation is made, BA shall not be held responsible for non-compliance.

**b. Supply of T&Ps (Weightage 5 marks )**

S. No.	Parameter	Sub-Measure	Marks Deduction
1	Supply of T&Ps	Availability of T&Ps in good condition in all PSS	0
		Unavailability of T&Ps in good condition in more than 10% of PSS	1
		Unavailability of T&Ps in good condition in more than 20% of PSS	3
		Unavailability of T&Ps in good condition in more than 50% of PSS	5

**c. Correct Operation of PSS Equipment per Cluster (5 marks):**

S. No.	Measure	Marks Deducted
1	1 incorrect operation during the month	2
2	2 incorrect operations during the month	3
3	>2 incorrect operation during the month	5

**d. Adherence to Operating Process (10 marks):**

S. No.	Measure	Marks Deduction
1	Allowing maintenance work without presence of "Permit to work" holder or issue "Permit to work" without proper isolation / grounding - 2 instances during the month	5
2	Allowing maintenance work without presence of "Permit to work" holder or issue "Permit to work" without proper isolation / grounding >2 instances during the month	10

**e. MOC Non-Compliance:**

S. No.	Measure	Deduction Amount
1	2 no. of instance of delayed reporting of MOC at concerned PSS upon the instruction of PSCC/EIC. (per MOC per Month)	2000
2	More than 2 no. of instance of delayed reporting of MOC at concerned PSS upon the instruction of PSCC/EIC. (per MOC per Month)	5000

**f. Maintaining records & condition monitoring: (5 marks):**

S. No.	Measure	Marks Deduction
1	Each instance of non-adherence to Daily condition monitoring of equipment and entry of condition monitoring parameters in Register or TPWODL authorized mobile application	2
2	Each non reporting of tripping to EIC/PSCC (immediately) & entry in PSS register and SK app	1
3	Not Maintaining documents / Registers as per IMS process	1
4	Each instance of Equipment failure/Unwanted tripping due to lack of condition monitoring	5

**g. Incentive for Upkeep of PSS equipment:**

S. No.	Measure	Bonus Marks
1	Ensuring cleanliness and implementation of 5S at PSS as per monthly schedule	1
2	Ensuring zero tripping of 33kV Transformer	2

**Note:**

1. TPWODL reserves the right to change to the list of existing performance base measurements, at any point of time, for performance improvement on mutually agreed terms.
2. EIC at his discretion will deduct marks for each instance as mentioned above.
3. The incentive for 5 marks will be equal to 1% of the 20% bill payment.
4. Failure to maintain greenery initiatives in each PSS penalty of Rs 1000 will be imposed per month for each PSS.

**Note:**

1. BA shall deploy the above manpower in discussion with TPWODL STS and HR department. Any changes in the manpower deployment shall be made only after written approval of TPWODL STS and HR department.
2. BA shall provide Laptop to each Divisional Supervisor, Divisional Coordinators & Data entry operators for maintaining day to day workrelated activities.
3. BA must arrange bike for each Divisional Supervisor and must give fuel charges considering 3500 km on monthly basis. This cost must be loaded to Main contract charges.

All Workmen of Associate will be trained in TPWODL's Skill Development/Training Centre for 3 to 4 days in a year. During training days, food will be provided to trainees by TPWODL and food cost @ Rs. 200 per head will be recovered from bill of Associates. Conveyance for workmen for travelling to Training Centre will be in scope of BA. Appropriate reliever should be deployed at site by BA during absence of regular worker for training.

BA must arrange Reward & Recognition (R&R) for their employees in every quarter to motivate employees regarding Safety & O&M activities. R&R will be a minimum of 10% of the total workforce in the cluster.

All workmen must undergo Medical Test once in a year and report to be submitted to TPWODL. Cost of Medical test will be borne by respective BA. Tests to be conducted are as follows:

Applicable for		For Employee Working at heights	For All Employee
Frequency		Once in every 12 months	Once in every 12 months
1	Hemoglobin	√	√
2	Random Blood Sugar	√	√
3	Urine - R/M	√	√
4	Audiometry (Tuning Fork Test)	√	√
5	Colour Vision	√	√
6	Vertigo Test	√	×

The sample format of Medical Fitness Certificate is enclosed in Annexure-(Medical Fitness Certificate)

- AMC BA shall ensure for HT License (ELBO) for all lineman. In case of HT license not available for lineman, they shall submit an undertaking for submission of the same within 3 months from the date of award of Contract/ date of Training program organized by Electrical Dept (Govt of Odisha), whichever is earlier.
- BA staff will be relocated to different work locations for performing various tasks as per SLA and TPWODL directive within the Electrical Circle.
- BA will arrange preliminary training for all resources deployed for TPWODL.

**Consumables:**

BA shall provide all necessary materials for cleaning of substations. BA shall provide all the necessary consumables required for carrying out maintenance / operational activities. Minimum consumable items like CRC, Contact Cleaner, Putty, M-seal, Teflon Tape, Grease, White Petroleum Jelly (1kg) ,Yellow paint (1 Ltr),Zinc paint(1 Ltr) ,Angle Grinder Wheel , Cutting Wheel, small lugs, cleaning clothes, brushes, cable tie, LT insulation tape,cotton gloves thinner and etc . No extra charges shall be paid for the same.

**List of Spares & Urgent Repair Materials**

Providing Miscellaneous items for Urgent Maintenance work only (If material not available at TPWODL Stores). Spares & urgent materials supply and utilization to be certified by concern EIC/STS representative. Payment will be made as per actual bill submission and below approved rate.

SI No.	Consumable Items	Unit	Approx Annual Qty	Unit Price	Total
1	MCB 2P,3P VOLTAGE:110-240VAC, 32A	EA	12	447	5364
2	MCB 3P,4P VOLTAGE:110-240VAC, 16A	EA	10	368	3680
3	MCB 63AMP 240/415V 3P,4P INDO KOPP C SERIES	EA	5	1384	6920
4	ELCB MCB 230V 2P 32A,30mAmp DATAR F&G	EA	12	1972	23664
5	ELCB-MCB 415V 4P(3P&N) 63A MDS MAKE	EA	5	3121	15605
6	STRIP HEATERS 216W 230V	EA	25	525	13125
7	EXHAUST FAN 9" 230V AC CROMPTON MAKE	EA	12	1307	15684
8	FAN EXHAUST 12"	EA	12	2646	31752
9	1 X 13WATT SURFACE MOUNTED CFL DOWN LIGHTER (PHILIPS-FBH 150/113)	EA	40	525	21000
10	1 X 43-WATT SURFACE MOUNTED HIGH EFFICINCY LIGHTS (PHILIPS CIRRUS LUMIEO 1 X 1 LED)	EA	25	683	17075
11	18WATT SURFACE (SUSPENSION TYPE) LED	EA	36	420	15120
12	18WATT SURFACE (SUSPENSION TYPE) LED DOWN LIGHTER	EA	25	446	11150
13	BOX JUNCTION	EA	25	1260	31500
14	BOX JUNCTION 450X300X170" HENSEL	EA	20	1575	31500
15	WIRE PANEL - 2.5SQMM BLACK	mt	250	29	7250
16	WIRE PANEL-1.5SQMM BLACK UAM PVC 650V	mt	250	17	4250
17	BATTERY CELL 9V	EA	25	184	4600
18	BATTERY ALKALINE, DURACELL,1.5V, AAA	EA	25	30	750
19	BATTERY, AA, DURACELL	EA	25	30	750
20	SWITCH SOCKET 250V 3P SM 5&15A	EA	50	121	6050
21	SEALANT, SILICON, SILASTIC RTV-732	EA	50	272	13600
22	LIGHT, LED FIXTURE TUBE LIGHT	EA	40	184	7360
23	LIGHT,LED, LIGHT,MOUNTING LED,2X2LE,	EA	20	1357	27140
24	BATTERY 12V 100AH MAINT FREE	EA	5	10000	50000
25	HYDROMETER SP GR 1.100-1.300	EA	10	267	2670
26	LED FIXTURE STREET LIGHT 90W	EA	10	3029	30290
27	MCB 10A SINGLE POLE	EA	20	146	2920



28	MPCB 3P 415V 16A SIEMENS 3VU1340-MG00	EA	5	2678	13390
29	FAN CEILING 230V AC 36"	EA	20	1418	28360
30	THINNER GEN PURPOSE	lt	12	221	2652
31	Distilled Water	Ltr	100	26	2600
32	Yellow/Black or Grey Paint	Ltr	50	420	21000
33	Nut, Bolt & Washers (As & when required)	EA	250	126	31500
<b>Total</b>					<b>5,00,000.00</b>

## Air Conditions Maintenance

The maintenance of air conditioners installed in PSS control rooms and PSS offices falls within the scope of the vendor. All repair and maintenance activities must be carried out strictly under the supervision and as per the instructions of the designated TPWODL Engineer In-Charge. These services shall be billed in accordance with the approved Rate Contract (RC) rates of TPWODL, based on actual work performed and supported by monthly bill submissions.

The AMC Business Associate (BA) is required to maintain comprehensive records of all units serviced or repaired, to enable effective tracking of the performance and longevity of the maintenance work undertaken.

Sl No.	Service Code	Description	UOM	Approx Annual Qty	Unit Price	Total Price
1	1060822	Servicing of AC units GAS FILLING OF AC	AU	30	2400	72000
2	1040057	Replacement & installation of damaged compressor	EA	12	10000	120000
3	1040054	Dismantling of Old AC in all over TPWOD	EA	15	430	6450
4	1040055	Maintenance of split/Window AC as part o	EA	50	530	26500
5	1040059	Installation of Split AC in Different of	EA	20	1000	20000
6	1040058	Replacement of Cupper Pipe ,Size : 1/2 i	M	150	350	52500
7	1060875	SITC OF PCB FOR ACs	AU	10	10000	100000
8	1060874	SITC OF CU. WIRE FOR ACs	AU	20	130	2600
9	1050858	SITC OF CAPACITOR FOR ACs	AU	20	500	10000
10	1050948	SITC OF SENSOR FOR ACs	AU	20	400	8000
11	1050949	SITC OF BUSH FOR ACs	AU	20	300	6000
12	1050950	SITC OF SWING-MOTOR FOR ACs	AU	20	450	9000
13	1050951	SITC OF THERMOSTAT FOR ACs	AU	20	400	8000
14	1050952	SITC OF MCB FOR ACs	AU	20	300	6000
15	1050953	SITC OF MS-STAND FOR ACs	AU	20	750	15000
16	1050954	SITC OF CAPILLARY TUBE FOR ACs	AU	15	150	2250
17	1050955	SITC OF DRYER FILTER FOR ACs	AU	25	100	2500
18	1050956	SITC OF BLOWER MOTOR FOR ACs	AU	15	2,200.00	33000
<b>TOTAL</b>						<b>5,00,000</b>

### Vehicle requirement for AMC is as follows:

This tentative plan for vehicle and the vehicles shall be operated as per Engineer in charge direction on time to time based on site conditions & requirements.

Circle	Lots	Division	24 Hr Vehicle (4-Wheeler)	12 Hr Vehicle (4-Wheeler)	Total Cluster (4-Wheeler)
Sambalpur	1	BED-BRAJRAJNAGAR	4	3	7
Sambalpur		DED-Deogarh			
Sambalpur		JED-Jharsuguda			
Sambalpur	2	SED-Sambalpur	5	2	7
Sambalpur		SEED-SAMBALPUR(E)			
Rourkela	3	RED-ROURKELA	5	4	9
Rourkela		RSED-ROURKELA SADAR			
Rourkela	4	RGP-RAJGANGPUR	5	3	8
Rourkela		SED-SUNDERGARH			
Bargarh	5	BED-BARGARH	6	4	10
Bargarh		BWED-BARGARH			
Kalahandi	6	BED-BOLANGIR	4	4	8
Kalahandi		SED-SONEPUR			
Bolangir	7	TED-TITILAGARH	4	4	8
Kalahandi		NED-NUAPADA			
Kalahandi	8	KEED-KALAHANDI	5	3	8
Kalahandi		KWED-KALAHANDI			
Total			38	27	65

### Condition & Type of Vehicles

1. 4-Wheeler back side Covered (for maintenance purpose) shall be capable of carrying/sitting of 8 persons + 1 driver and requisite material.
2. 4-Wheeler back side Covered (for Tower maintenance purpose) shall be capable of carrying/sitting of 8 persons + 1 driver and requisite material.
3. 4-Wheeler for testing purpose will be required to carry 3 persons + 1 driver + testing instrument.

- A. The avg. running of vehicles shall be considered as 4000 KM/Month and shall be calculated on cumulative basis of all vehicles of that BA on monthly basis.
- B. Anything above the average summated value of kilometer run on yearly basis will be paid at Rs. 12/KM at actual for that BA (of all 4 wheeler vehicles ) after closure of the year.
- C. The vehicles shall be commercial registered (TR) & should not be more than Ten (10) years old. The vehicles provided by the BA shall be in good condition interior and exteriors. The vehicles shall comply with all statutory laws/motor vehicle ACT/Rules. The vehicle provided under this work should be covered under comprehensive policy and all taxes and duties including road tax, etc. duly paid. In case of accidents TPWODL has no liability towards Police/RTA authorities, Law Courts, injured parties, damage to the vehicle or property etc. The vehicles provided shall be GPS enabled and BA shall be able to get tracking and monitor the vehicle as and when required by TPWODL.
- D. The vehicles should be run on authorized fuel like CNG/Petrol/Diesel as endorsed on the vehicle registration certificate. The copies of Registration, Insurance and other statutory documents should be submitted to TPWODL before deployment of the vehicles. TPWODL will not pay/reimburse anything beyond contract consideration.
- E. Driver employed by BA shall be having valid license with TR required to operate the vehicle and shall be complying with all the statutory requirements. Driver should be medically fit. The information of change in driver/Vehicle to be informed to TPWODL, before making such changes.
- F. Each vehicle deployed will have limit of running average of 4000 km. Further, cumulative average of 4000 km per month of all running 4-Wheeler vehicles utilized per Cluster will be considered for every Quarterly for excess mileage of any vehicle. Beyond cumulative average of 4000 km, BA may claim per km charges as per schedule of rates.
- G. Logbook shall be maintained for every vehicle separately in the prescribed format provided by TPWODL. Daily running of Vehicle should be entered in this diary on daily basis. The total kilometers run by the vehicle will be calculated from this Logbook. Vehicles driver will ensure that each entry should be signed by the user.
- H. Vehicle should be equipped with one extra tyre as Spare in the vehicle with all the tools to replace the damaged tyre.
- I. Vehicle deputed in a cluster shall be run to any location within the cluster boundary. However, during exigency, the vehicles may be made available to another cluster as instructed by EIC.
- J. Vehicles are running on authorized fuel like Petrol/Diesel and the same are endorsed on the vehicles RC (Registration Certificate). If any vehicles found without endorsement of authorized fuel in RC payment for the particular month will not be made by TPWODL.
- K. In case of accidents, TPWODL has no responsibility whatsoever towards police/ RTA authorities, Law, Courts, injured parties, damages to the vehicle or property etc. All these shall be entirely contractor's sole responsibility.
- L. BA must ensure availability of Fire extinguisher & First Aid Box in each 4-wheeler.
- M. BA shall arrange defective drive training to all drivers.

**The contractor/agency will obtain comprehensive insurance policy for all the personnel deployed to cover any injury or death to any staff or other person in or around the work premises without extra cost to TPWODL. TPWODL will not pay and/or reimburse anything on this account over and above the contract considerations.**

### **Penalty condition:**

The penalty is calculated from 10% of the total invoice amount. For example if the BA has secured 96 marks in the performance measurement, as per the matrix 4% deduction will be done from the 10% of the total invoice amount. For say BA has claimed the total invoice amount of 1Crore then the amount of penalty will be calculated from 10% of 1 crore ie-10 Lakh and penalty amount will be 4% of 10 Lakh ie-Rs 40000.

The initial 2 months will be exempted from SLA penalty towards T&P Non compliances.

In case of BA scoring less than 80% for 3 consecutive months, DISCOM may take suitable actions, up to termination of contract.

Sr No.	Performance Parameter	Marks
1	Safety Aspects	40
2	Supply and use of T&P for execution of work	20
3	Feeder Tripping	20
4	The quality of the maintenance & PSS Operation	15
5	Submission of Monthly MIS	5
	<b>Total</b>	<b>100</b>

The details of the above matrix is given below:

Sr. No	Criteria	Total Marks	Clause	Max. Marks Deducted
1	Safety Aspects	40	I	
	BA is expected to score full marks. In case of non-compliance of above, 1 mark will be deducted for each non-compliance subject to maximum 40 marks after which the contract may be terminated by TPWODL.		<b>ANNEXURE VII D</b> 2- Safety Aspect /PTW compliance 3- Manpower & Vehicle compliance as per CSM matrix clause-6	40
			<b>ANNEXURE VII E</b> d. Adherence to PSS Operating Process	
2	Supply and use of T&P for execution of work	20		
	For non-availability/ inappropriate usage of tools 1 mark will be deducted up to a maximum of 20 marks		<b>ANNEXURE VII D</b> 2-T&P Compliance	10
	Non-availability of T&P at PSS		<b>ANNEXURE VII E</b> b. Supply of T&P	5
	Upkeeping of TPWODL supplied safety equipment at PSS		<b>ANNEXURE VII E</b> a. Upkeeping of safety equipment	5
3	Feeder Tripping	20	<b>ANNEXURE VII D</b> 3-Feeder Tripping	
	The marks shall be awarded and deducted on the basis of the following (For Urban/Industrial/HRB Feeder)		Conductor snapping – each case	4
			Jumper parting – each case	2
			Same (reason and location) tripping wrt same month of LFY	4
			Increase up to 10% wrt same month of LFY	8
			Increase up to 20% wrt same month of LFY	10
			Increase of >20% wrt same month of LFY	20
4	The quality of the maintenance & PSS Operation	15	<b>ANNEXURE VII D</b> 4-Quality of Maintenance	10
	The marks will be determined by EIC and COS based on quality sheets which would be provided to the successful BA.			
	Correct Operation of PSS Equipment		<b>ANNEXURE VII E</b> c. Correct Operation of PSS Equipment	5
5	Submission of Monthly MIS	5	<b>ANNEXURE VII D</b> 5-Submission of Monthly MIS	5
	BA to submit monthly MIS before 7 <sup>th</sup> of every month as per standard Reporting format assigned by TPWODL			
	PSS condition monitoring & Record keeping		<b>ANNEXURE VII E</b> f.PSS condition monitoring & Record keeping	
<b>Total</b>		<b>100</b>		<b>100</b>

CSMS is applicable from Sept-21. For improving the safety culture at TPWODL, strict adherence to the CSM shall be observed across all divisions. The Punitive measures towards any safety violations shall be as per tender clauses. The penalty matrix shall be as follows:

Consequence of Safety Violation Observed (Not related to Incident / Accident)		Violation				
S. No.	Safety Violation	1st	2nd	3rd	4th	Subsequent Violations
1	Working without PPE (Helmet/Gloves/Safety Harness/ Safety Shoes etc.)	B	C	D	D	Will attract the same penalty as applicable in the 4th violation.
2	Improper Working at Height	B	C	D	D	
3	Working without proper tools and tackles	A	B	C	D	
4	Poor condition of Crane/Hydra/ Vehicle/Incompetent driver/ Helper	B	C	D		
5	Violation of SOP/ WI	B	C			
6	Working without adherence to PTW process or authorization/ Safety Zone	B	C			
Legend	Action to be taken	Responsibility		Marks Deduction		The number of violations are calculated cumulatively on monthly basis.
A	Levy of Penalty	Engineer In-charge		3		
B	Memo to BA & Levy of Penalty	Engineer In-charge		5		
C	Memo to BA & Levy of Penalty	Head of Group		10		
D	Memo to BA & Levy of Penalty	Head of Department		15		

Figure 6.3 (1b)-Penalty Matrix for Safety violation  
(Applicable for Major Contracts)

Consequence Of an Incident / Accident (In case of <b>MAJOR</b> contract)		Incident / Accident				Action Required
Sl. No	Type of the injury	1st	2nd	3rd	4th	
1	Slight injury (First Aid Case)	<b>F</b> (Strengthening of process through continuous improvement in the work procedure)				Take risk reduction measures
2	Minor injury (No or Hospitalization less than 48 Hrs)	<b>F</b>	<b>G</b>	<b>G</b>	<b>H</b>	
3	Major injury (Bone injury or burn or Hospitalization more than 48 Hrs)	<b>G</b>	<b>G</b>	<b>H</b>	<b>I</b>	
4	Single fatality	<b>J</b>	<b>K</b>			Intolerable
5	Multiple fatalities (Two or more fatalities during one event)	<b>K</b>				
Legend	Action to be taken	Responsibility		Penalty (in Rs.)	<i>Termination of contract and levy of penalty on the contractor</i>	
<b>F</b>	Memo to BA and levy of penalty	Engineer In-charge		5,000/-		
<b>G</b>	Memo to BA and levy of penalty	Head of Group		20,000/-		
<b>H</b>	Memo to BA and levy of penalty	Head of Group		50,000/-		
<b>I</b>	Memo to BA and levy of penalty	Head of Department		2,00,000/-		
<b>J</b>	Memo to BA and levy of penalty	Head of Department		5,00,000/-		
<b>K</b>	Memo to BA, levy of penalty, termination of contract and black listing of BA	Functional Head		10,00,000/-		
<b>Figure 6.3 (2) - Penalty Matrix for Incident / Accident in Major Contracts</b>						



**33kV Network AMC Manpower BOQ (Part-1)**

<b>Lots (Cluster)</b>	<b>Division</b>	<b>No of Division</b>	<b>High Skilled</b>	<b>Skilled</b>	<b>Unskilled</b>	<b>Cluster Total Manpower (AMC)</b>
<b>1</b>	<b>BNED,SAMBALPUR</b>	<b>3</b>	<b>10</b>	<b>21</b>	<b>16</b>	<b>47</b>
	<b>DED,SAMBALPUR</b>					
	<b>JED,SAMBALPUR</b>					
<b>2</b>	<b>SED,SAMBALPUR</b>	<b>2</b>	<b>9</b>	<b>24</b>	<b>19</b>	<b>52</b>
	<b>SEED,SAMBALPUR</b>					
<b>3</b>	<b>RED,ROURKELA</b>	<b>2</b>	<b>11</b>	<b>26</b>	<b>19</b>	<b>57</b>
	<b>RSED,ROURKELA</b>					
<b>4</b>	<b>RGP,ROURKELA</b>	<b>2</b>	<b>10</b>	<b>26</b>	<b>19</b>	<b>55</b>
	<b>SED,ROURKELA</b>					
<b>5</b>	<b>BED,BARGARH</b>	<b>2</b>	<b>12</b>	<b>30</b>	<b>22</b>	<b>64</b>
	<b>BWED,BARGARH</b>					
<b>6</b>	<b>BED,BOLANGIR</b>	<b>2</b>	<b>10</b>	<b>22</b>	<b>16</b>	<b>48</b>
	<b>SED,BOLANGIR</b>					
<b>7</b>	<b>TED,BOLANGIR</b>	<b>2</b>	<b>10</b>	<b>22</b>	<b>16</b>	<b>48</b>
	<b>NED,KALAHANDI</b>					
<b>8</b>	<b>KEED,KALAHANDI</b>	<b>2</b>	<b>10</b>	<b>26</b>	<b>19</b>	<b>55</b>
	<b>KWED,KALAHANDI</b>					
	<b>TOTAL</b>	<b>17</b>	<b>82</b>	<b>197</b>	<b>146</b>	<b>425</b>

### 33kV Network AMC Vehicle BOQ (Part-2)

Circle	Lots	Division	24 Hr Vehicle (4- Wheeler)	12 Hr Vehicle (4- Wheeler)	Total Cluster (4- Wheeler)
Sambalpur	1	BED-BRAJRAJNAGAR	4	3	7
Sambalpur		DED-Deogarh			
Sambalpur		JED-Jharsuguda			
Sambalpur	2	SED-Sambalpur	5	2	7
Sambalpur		SEED-SAMBALPUR(E)			
Rourkela	3	RED-ROURKELA	5	4	9
Rourkela		RSED-ROURKELA SADAR			
Rourkela	4	RGP-RAJGANGPUR	5	3	8
Rourkela		SED-SUNDERGARH			
Bargarh	5	BED-BARGARH	6	4	10
Bargarh		BWED-BARGARH			
Kalahandi	6	BED-BOLANGIR	4	4	8
Kalahandi		SED-SONEPUR			
Bolangir	7	TED-TITILAGARH	4	4	8
Kalahandi		NED-NUAPADA			
Kalahandi	8	KEED-KALAHANDI	5	3	8
Kalahandi		KWED-KALAHANDI			
Total			38	27	65

### 33/11 kV PSS Operation Assistance BOQ (Part-3)

GRID OPERATION TEAM								
Lots (Cluster)	Division	No of Division	No of PSS	PSS OPERATION				
				Total No of PSS	PSS Supervisor, Highly Skilled	PSS Operator, Skilled	Helper, Unskilled	Total Manpower
1	BNED,SAMBALPUR	3	8	46	3	184	138	323
	DED,SAMBALPUR		9					
	JED,SAMBALPUR		29					
2	SED,SAMBALPUR	2	11	32	2	128	96	225
	SEED,SAMBALPUR		21					
3	RED,ROURKELA	2	10	27	2	108	81	190
	RSED,ROURKELA		18					
4	RGP,ROURKELA	2	20	38	2	152	114	267
	SED,ROURKELA		18					
5	BED,BARGARH	2	23	44	2	176	132	309
	BWED,BARGARH		21					
6	BED,BOLANGIR	2	21	41	2	164	123	288
	SED,BOLANGIR		20					
7	TED,BOLANGIR	2	26	42	2	168	126	295
	NED,KALAHANDI		16					
8	KEED,KALAHANDI	2	21	41	2	164	123	288
	KWED,KALAHANDI		19					
TOTAL		17	311	311	17	1244	933	2194

### 33kV AMC Annual Optional items for Extra work BOQ (Part-4)

Annual Optional item for Extra Job Per Cluster		
Item Details	UoM	Approx Annual Qty
Pole Erection charges including pole concreting work		
a. H Pole	EA	20
b. RS Joist pole	EA	50
c. WPB Pole (11 mtr. & 13 Mtr)	EA	50
Pole cooping charges for existing erected poles	EA	100
<b>Minor Civil Works including supply &amp; services</b>		
a. Concreting (1:1.5:3) M20 Grade	CUM	10
b. Reinforcement required for RCC	KG	100
c. Brick Masonry work	CUM	10
d. Plastering work (upto 20mm)	SQM	200
Addl. one Supervisor to attend emergency/ day- 8 Hrs. Shift Duty	ManDay	800
Addl. One Lineman to attend emergency/day 8 Hrs. Shift Duty	ManDay	2400
Addl. one Helper to attend emergency/day- 8 Hrs. Shift Duty	ManDay	1800
Hiring charges of Crane/Ferana 4 Hrs	Day	100
Hiring charges of Crane/Ferana 8Hrs	Day	120
Hiring charges of Tractor per Day	Day	80
Hiring charges of Pole Master 4 hrs Day	Day	100
Hiring charges of Pole Master 8 hrs Day	Day	200
Additional Hiring charges of DG set 3 phase, 5KVA per Day	Day	30
Additional Hiring charges of Water Pump 1 phase (2 HP) per Day	Day	15
Additional Hiring charges of Water Pump 3 phase (5HP) per Day	Day	30
Additional Hiring charges of Diesel driven water pump (2HP) per day	Day	10
Additional Hiring charges of Diesel driven water pump (5HP) per day	Day	10
Additional Hiring charges of Tata 709 Truck with 4 labour per Day	Day	300
Hiring charges of 60T crane for PTR erection/unloading at site	Day	10
Hiring charges of trailer considering 80 km to and fro distance	Day	80
Per km Hiring charges of trailer after 80 km	KM	6000
Hiring charges of Tempo/ Pick Up Vehicle per Day	Day	50
30-50 Ton Carne with required manpower	SFT	10
50-80 Ton Carne with required manpower	SFT	4
Provide Water tanker 5000 ltr capacity	EA	24
Provide Water tanker 3000 ltr capacity	EA	12
Submersible Pump repairing upto 1.5KW	EA	10
Water Pump Rewinding & Reapiring upto 1.5KW	EA	10
Earth pit Chamber repairing & brickwork	EA	30
Supply of JCB on call basis	Hrs	100
Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes 20mm	Mtr	200
PSS Cooler motor repairing & rewinding	EA	10
SITC Treated Earthing Pit	EA	100
Crane having lifting capacity 15 to 30 Ton Per Day	Day	20
Dismantling or Installation & shifting (inside PSS) 10 to 12.5 MVA PTR	EA	6
Dismantling or Installation & shifting (inside PSS) 8 MVA PTR	EA	10
Dismantling or Installation & shifting (inside PSS) 5 MVA PTR	EA	12

Dismantling or Installation & shifting (inside PSS) 3.15 to 1.6 MVA PTR	EA	12
Suppply & Fabrication of steel structure (1050586)	Ton	2
Laying of Power Cable 33KV & 11KV (35 to 400 SqMM) Per Mtr	MTR	1000
Cable Trenching width 0.8 Mtr & Depth 1.2 Mtr with backfilling Per Mtr	MTR	1000
Repair & Maintenance charges of Man-lifter & Oil filtration machines, payment will be done as per actual bill submission upon prior approval from TPWODL. (4 lakh Rupees)	Lot	1
Repairing of Air Condition in side PSS. Payment will be done as per actual bill submission and approved Rate upon prior approval from TPWODL. (5 lakh Rupees)	Lot	2
Providing MIS item for Urgent Maintenance work. Payment will be done as per actual bill submission upon approved rate as per tender document. (5 lakh Rupees)	Lot	2
Mis Repair charges for PSS minor works such as door, windows etc payment will be done as per actual bill submission upon prior approval from TPWODL. (1 Lakh Rupees)	Lot	1

## Cluster wise 33kV AMC & Grid Operation Manpower & Vehicle allocation details

			33 kV AMC TEAM																				PSS OPERATION													
Lots (Cluster)	Division	No of Division	Line Maintenance Team (Reporting to)				Testing Team (Reporting to M&T)				Inside PSS Maintenance				Tower Maintenance Team(Reporting)				Man-Lifter		High Skilled	Skilled								Unskilled	Cluster Total	High Skilled	Skilled	Unskilled	Cluster Total Manpower	24 Hr Vehicle ( 4 Wheeler )
			Supervisor, High Skilled	LM/Technician	Helper, Unskilled	Vehicle, 24Hr	Engineer, High Skilled	LM/Technician	Helper, Unskilled	Vehicle, 12Hr	Supervisor, High Skilled	LM/Technician	Helper, Unskilled	Vehicle, 12Hr	Supervisor, High Skilled	LM/Technician	Helper, Unskilled	Vehicle, 24Hr	Operator/Driver	Helper, Unskilled																
1	BND,SAMBALPUR	3	1	4	3	1				1	2		1					1	1	3	6	4	13	10	21	16	47	1	1	8	1	32	24	57		
	DEO,SAMBALPUR		1	4	3	1				1	2		1					1	1	3	6	4	13					1	1	9	1	36	27	64		
	JED,SAMBALPUR		2	8	6	2	1	1	1	1								1	1	4	9	8	21					2	1	29	1	116	87	204		
2	SED,SAMBALPUR	2	2	8	6	2	1	1	1	1								1	1	4	9	8	21	9	24	19	52	2	1	11	1	44	33	78		
	SEED,SAMBALPUR		3	12	9	3	1	3	1	1								1	1	5	15	11	31					3	1	21	1	84	63	148		
3	RED,ROURKELA	2	2	8	6	2	1	1	1	1	2		1					1	1	5	11	8	24	11	26	19	56	2	2	10	1	40	30	71		
	RSED,ROURKELA		2	8	6	2	1	1	1	1	2		1	1	4	3	1	1	1	6	15	11	32					3	2	17	1	68	51	120		
4	RGP,ROURKELA	2	3	12	9	3	1	3	1	1								1	1	5	15	11	31	10	26	19	55	3	1	20	1	80	60	141		
	SEED,ROURKELA		2	8	6	2	1	1	1	1	2		1					1	1	5	11	8	24					2	2	18	1	72	54	127		
5	BED,BARGARH	2	3	12	9	3	1	1	1	1	2		1					1	1	6	15	11	32	12	30	22	64	3	2	23	1	92	69	162		
	BIWED,BARGARH		3	12	9	3	1	1	1	1	2		1					1	1	6	15	11	32					3	2	21	1	84	63	148		
6	BED,BOLANGIR	2	2	8	6	2	1	1	1	1	2		1					1	1	5	11	8	24	10	22	16	48	2	2	21	1	84	63	148		
	SEED,BOLANGIR		2	8	6	2	1	1	1	1	2		1					1	1	5	11	8	24					2	2	20	1	80	60	141		
7	TED,BOLANGIR	2	2	8	6	2	1	1	1	1	2		1					1	1	5	11	8	24	10	22	16	48	2	2	26	1	104	78	183		
	INED,KALAHANDI		2	8	6	2	1	1	1	1	2		1					1	1	5	11	8	24					2	2	16	1	64	48	113		
8	KED,KALAHANDI	2	3	12	9	3	1	3	1	1								1	1	5	15	11	31	10	26	19	55	3	1	22	1	88	66	155		
	BIWED,KALAHANDI		2	8	6	2	1	1	1	1	2		1					1	1	5	11	8	24					2	2	19	1	76	57	134		
TOTAL			17	37	148	111	37	15	21	15	15	12	24	0	12	1	4	3	1	17	17	82	197	146	425	82	197	146	425	38	27	311	17	1244	933	2194

Presently total 237 number of 33kV feeders having circuit km of 6118 are in service at TPWODL 33kV Network. In future, addition of any new 33kV lines into these respective divisions must be maintained by the respective AMC BA in that division.

BA shall provide operator for each PSS, considering total number of PSS as 311. Presently total 333 PSS are in service and balanced or upcoming PSS will be manned or operated by MOC progressively as and when it becomes operational.