3	Carrying out Preventive and Breakdown maintenance as per O&M schedule / OEM guidelines / maintenance manual such as a) Cleaning, tightness checks, lubrication and other maintenance of equipment -PCUs, HT panels, Inverter transformers, Auxiliary transformers, ACDB, FCBC, UPS, Battery banks, SMBs, SCADA, WMS, CCTV, Fire Alarm, ESE Lightning arresters, earthing, light fitting -indoor and outdoor etc. b) Replacement of Silica gel, gaskets, Rectification of Oil leakages in all transformers. c) Repair/ replacement of failed 33KV cable inside plant, replacement of failed 33 kV termination/ jointing kits. d) Trouble-shooting of solar array problems as DC earth fault, OFC/ communication cable faults, replacement of damaged PV modules, SMB components etc. e) Checking tightness of MMS and PV Modules (f) Monthly earth resistance measurement and recording value on the Earth chambers (g) Watering of earth pits	Months	123	32,246.66	3,966,339.46	(i) Minimum 1 technicians (Diploma/ITI) and required helpers to be allocated for this activity. (ii) List of equipment mentioned is indicative. Maintenace of all the equipments installed in pllant is in vendor's scope. (iii) Periodic maintenance shall be preferably carried out during evening to avoid generation loss. (iv) Whenever a fault has occurred, the contractor has to attend to rectify the fault & the fault must be rectified within 48 hours from the time of occurrence of fault. (v) Major spares such as complete equipment failures of CT, PT, LA, Breaker, Isolator, SMB, PCU, transformer, cables, HT termination and jointing kits etc. if any will be supplied by BHEL. (vi) Minor spares and consumables such as MCBs, Fuses, peripheral and builging Lights, fans, indication lamps, gaskets, silica gel, acid for battery, hardwares,cable lugs and glands of all required sizes, MC4 connectors, PCU dust filter, PEB room louver air filter, sanitary fittings etc. if required shall be supplied by vendor. vii) In case of Maintenance activity / failure / damage / accident / replacement / repair required for any of the plant equipment such as Solar modules, HT panels, all transformers etc. or for any other site related activities, unloading, erection, installation, charging, co-ordination with agencies involved, etc., shall be in O&M vendor's scope. Arrangement of Crane / hydra / JCB/ additional labour hiring / Ladder, etc., for arranging replacement of failed equipment shall also be in the scope of O&M vendor. (viii) All tools and tackles, measuring instruments, testing equipment required for maintenance activities shall be arranged by O&M vendor. Measurement of above avtivities shall be done as per O&M Log book records maintained. Deductions shall be passed in O&M Contractor Bills for any activities not completed.
4	Water cleaning of solar modules of approximately 33,360 nos. **(Two cycles per month, each cycle shall consist of cleaning of entire 33360 Nos modules)**.	Months	123	18,565.47	2,283,552.81	(i) Required labourers (in discussion with BHEL) to be allocated to complete this activity withing the schedules time period. (ii) **Water shall be pumped from borewells and will be stored in underground/overhead water tanks at site. Water from tanks shall be pumped through already installed pipeline network and pumps to facilitate water flow for modules cleaning.** **(iii) In case water is not available in borewells, vendor shall arrange water using tankers and payment for supply of water through tankers shall be made by BHEL.** (iv) All the consumables for cleaning of modules such as cleaning brushes, mopping sticks etc. shall be arranged by vendor. (v) **In case of natural cleaning of solar modules by rains and cleaning not carried out, no payment will be done for that cycle within the month.** (vi) Three cycles of cleaning of entire solar modules has to be completed in a month by the vendor. In case, lesser quantity of solar modules are cleaned, proportionate payment will be made for quantity of solar modules cleaned up to last day of each month. (vii) Each solar module is of 2m x 1m size and 40 solar modules aremounted on each structure. Measurement of above avtivity shall be done as per table basis and as per cycle basis. Deductions shall be passed in O&M Contractor Bills for any incomplete work.
5	Supply of water using tankers	Kilo Litres	2000	250.42	500,840.00	Water shall be supplied using tankers from external source in case water is not available in borewells.

6	Cutting & removal of grass from site - maintenance of entire plant without grass including non modular area and near boundary wall. **(One cycle two month)**	Months	123	10,035.90	1,234,415.70	(i) Required labourers (in discussion with BHEL) to be allocated to complete this activity withing the schedules time period (ii) Vendor to supply **2 nos** of Motorized Grass cutting machines. Repair and maintenance of grass cutting machines shall be in vendor's scope. (iii) Petrol/Diesel/electricity expenses shall be in vendor's scope for operation of the grass cutting machine. **(iv) In case if grass is not grown and cutting is not carried out, no payment will be done for the month.** Payment for this activity shall be as a percentage of workdone as certified by the BHEL Site Incharge.
7	*Deployment of Security persons for the entire plant in 3 shifts per day with minimum 3 security persons in each shift (1 with arm and 2 without arm)	Months	123	141,598.87	17,416,661.22	(i) Securing entire plant area. (ii) In case of theft, FIR to be lodged by O&M vendor. (iii) If theft incidents are due to negligence of O&M vendor such as shortage of security, the loss recovery shall be done from vendor. Measurement of Services of Security guards shall be as per attendance records maintained and deductions will be passed in O&M Contractor Bills in case of non-availability at site.
8	Tilting of Solar PV Module mounting structures. **(One cycle per 6 months) Each cycle to be completed within 15 days period**	Cycles	20	206,270.00	4,125,400.00	All the PV Modules shall be tilted once in 6 months to change the angle of inclination. O&M Contractor shall engage separate labour (without cost implication) as required for completing this activity within the time schedule specified. Cost incurred due to damage to the modules, structure and fasteners during tilting will be recovered from O&M Contractor.
9	General maintenance works such as Daily housekeeping activity for Inverter rooms and Control room including toilets, Garbage removal from solar array area, repair of plumbing works, underground water tanks, Sintex tanks, cleaning of sewerage lines, septic tanks, soak pits if required, minor civil repair works such as leakages, doors, windows, rolling shutters, ventilators, floor/ tiles/ wall cracks, cleanning of drains etc.	Months	123	4,281.98	526,684.03	(i) Required labourers (in discussion with BHEL) labourers to be allocated for this activity. (ii) All the buildings - Main Control room and Inverer rooms to be mopped daily and surroundings to be kept clean. (iii) All toilets to be cleaned daily. (iv) All consumables required for this activity shall be in vendor's scope. Measurement of above avtivities shall be done as per O&M Log book records maintained. Deductions shall be passed in O&M Contractor Bills for any activities not completed.
10	Annual maintenance of all transformers with respect to BDV measurement, Oil filtering as required, DGA test, tightness of cables, earthing and hardwares, replacement of gasket, silica gel breather, paint touchup, arresting oil leakages and oil topup work of all transformers (33KV and aux transformers) and other related electrical works.	Years	10	66,906.00	669,060.00	Through OEM / competent testing agencies as approved by BHEL. All required tools, tackles, testing and measuring instruments, Oil filtration kit, DG set etc. to be arranged by vendor. The Annual Maintenance activities shall be carried out between November to January and will be measured only when all activities listed are completed. Payment for any Maintenance not carried out shall be deducted from O&M Contractor Bills.
11	Annual testing and calibration of 33 kV HT panel equipment as VCBs, CTs, PTs, Numerical relays, electromechanical relays, MFMs, Energy meters etc.	Years	10	43,489.20	434,892.00	Through OEM / competent testing agencies as approved by BHEL. All required tools, tackles, testing and measuring instruments, DG set etc. to be arranged by vendor.
12	Calibration of Weather Monitoring Station equipment	Years	10	50,085.00	500,850.00	Weather monitoring station equipment to be calibrated at IMD or OEM recommended labs as per calibration period of individual equipment as recommended by OEM.
13	Checking and re-filling of Fire extinguishers and sand buckets as required.	Months	123	6,690.60	822,943.80	All the fire extinguishers to be checked for healthiness and re-filling to be carried out as and when required.
14	Maintenance and Servicing of Airconditioners, Refrigirator, Furniture, Water purifier, fans, grass cutting machines etc. Daily Tea/ Coffee and drinking water to be provided for customers and BHEL Staff.	Months	123	5,017.95	617,207.85	Complete maintenance and servicing of equipment as and when required to be carried out by vendor.
15	Painting of all metal structures (non-galvanized), rolling shutters, switchyard and transformer yards fencing and gates, all rusted components etc.	Years	10	10,036.00	100,360.00	Painting of all metal structures shall be carried out once in every year.
16	Painting of Main Control room building and inverter room buildings using weather proof cement based acrylic emulsion paint (Exterior grade) for outside and oil bound distemper paint for inside the building	AU	2	78,078.30	156,156.60	Painting of Control room and inverter room building shall be carried out once in 5 years.

17	Maintenance of Roads and drains such as: I. Crack repairing of the road surface. II. Pot-holes over the top road surface to be rectify. III. Maintenance of shoulders for the rain cuts or damage due to some external reasons. IV. Before and after the monsoon season the storm water drainage shall be maintained & cleaned for smoother flow of storm water.	Years	10	13,381.20	133,812.00	Maintenance of roads and drains shall be carried out once in every year.
18	Providing internet leased line connection of min. 1 MBPS speed including required hardware for 24 hours internet facility	Months	123	1,003.59	123,441.57	Internet connection to be taken in the name of TSTRANSCO
19	Providing Landline Telephone connection in Control Room	Months	123	502.00	61,746.00	Landline telephone connection to be taken in the name of TSTRANSCO
20	Coordination and liasoning with SLDC for interconnection of plant data with ALDC / SLDC	Years	10	5,018.00	50,180.00	Official charges to SLDC will be paid by BHEL in the form of DD / EFT as per invoice/ demand note raised by SLDC. Required coordination and liasoning in getting invoice/ demand note etc. shall be in vendor scope.
21	Coordination and liasoning with CEIG for renewal of CEIG approval and other statutory bodies as applicable.	Years	10	40,143.60	401,436.00	Vendor shall coordinate and liason with CEIG for renewal of complete plant approval including 33KV Trnsmission line/ cable and TSTRANSCO side substation bays. Official charges if any to CEIG will be paid by BHEL in the form of DD / EFT.
				Total amount excluding GST (Rs.)	**Rs. 41,683,122**	
				Total amount: Rupees Four Crore Sixteen Lakhs Eighty Three Thousand One Hundred and Twenty Two, Plus applicable GST		

IMPORTANT NOTE:

Monthly/Annual O&M payment to the contractor will be released on comparision of generation as per guaranteed paramenter vis-a-vis Actual generation. The shortfall (if any) w.r.t guaranteed generation shall be duly supported by documentary evidence. Incase of shortfall w.r.t guaranteed generation paramenter, BHEL Engineering department to certifiy that "the reasons submitted by contractor are beyond its reasonable control". The amount equivalent to shortfall in generation may be observed by BHEL on exceptional basis.

*Manpower indicated is only minimum requirement. However, vendor to deploy required manpower to complete each activity in specified time duration.

The value of the Contract will remain same throughout contract period and no escalation is allowed. Hence bidder has to quote the price, considering the revision of minimum wages by Government notifications from time to time.

Technical specification
for
Operation & Maintenance for 123 months
of
10MW (AC) Solar Photovoltaic Grid-connected Power plant including O&M for 33KV installations and Transmission line
at
STPP, Pegadapally, Mancherial Distt, Telangana

Revision details:	Prepared	Approved:	Date:
	Sheetal Prasad Sheetal Prasad	Prachi Prachi Rao V	03.01.2020

1.0 Introduction

1.1 Overall project outline of 10MW (AC) solar photovoltaic power plant

Bharat Heavy Electricals Limited (BHEL), Electronics Division, Bangalore is setting up 10MW (AC) solar photovoltaic (SPV) power plant for SCCL at STPP, Pegadapally, Mancherial Distt, Telangana.

Solar PV modules employed at the plant generates DC electricity that in turn shall be inverted to AC at 350V-380V range Output of each solar block (5MW) with independent Inverter/Control room (IR/CR) / transformer yards shall be stepped up to 33kV. Solar plant comprises of 1 no of Inverter room with associated 5 MW PV array and 1 no. of Main Control Room (MCR/ CR) with associated 5 MW PV array. Output of IR room is combined at CR at 33KV level.
MMS structures are seasonal tilt type.
The total land of solar plant is distributed into four areas Block A, Block B, Block C and Block D all separated by a distance of approx. 100m. IR is in Block A and CR is in Block C.

Power generated at the above SPV plant shall be transmitted to substation using part 33kV Transmission line and part underground cables. There shall be Highway and railway crossings en-route. Distance between SPV plant and substation is 15 km approximately.

The plant is envisaged to have several other infrastructural support systems such as module cleaning system for SPV modules, plant illumination system, fire alarm system, boundary fencing, approach roads, pathways, drainage system etc.

1.2 Enclosures to this tender specification (Tender purpose only)

1	Tentative AC single line diagram of overall Solar PV power plant
2	Tentative SPV plant layout with solar array, control/ inverter rooms, switchyards
3	Tentative layout of main control room
4	Tentative layout of inverter room
5	Tentative Transmission line route layout

2.0 Location/ address of power plant:

10MW (AC) Solar Photovoltaic Power Plant, STPP, Pegadapally, Mancherial Distt, Telangana.

3.0 Vendor scope of Work

The table below indicates the scope of work for the vendor, as briefly outlined-

#	Scope of work (as briefly outlined)	Qty
7	**Operation and Maintenance** This includes operation and maintenance of solar plant, transformer yards, metering yard, transmission line and substation bay for 123 months period	123 Months

4.0 Operations and Maintenance

4.1	Vendor scope includes operation and maintenance of all equipment and systems installed in solar plant, transformer yards metering yard, transmission line and substation bay for 123 months period from zero date of O&M. Subsequent to Commissioning of the plant, BHEL shall conduct a PG test for proving the Guaranteed generation. Unless there are Major Breakdowns in the plant, it will be the O&M Contractors responsibility to maintain the Power Generation from 10 MW Plant in line with the PG Test results, considered along with allowable degradation.
4.2	Date of commencement of operations and maintenance: Zero date for O&M shall be the after commissioning of the project and shall be as declared by BHEL.
4.3	O&M personnel 1. Vendor shall deploy following minimum personnel: (a) Technical / administrative / office personnel (i) One (1) technical-cum-administrative in-charge having degree in electrical / electronics engineering and experience in installation, Commissioning, O&M of solar plants with overall responsibility for complete plant operations including metering yard, substation bay and transmission line. The in-charge shall have competence to handle technical and operational / crisis problems. (ii) Required technicians (in discussion with BHEL) working level staff with ITI / diploma qualifications in engineering with competence for operating electrical / electronics / mechanical equipment, taking measurements, data logging / maintaining registers, preparation of reports in computer to be deployed at Solar plant. (iii) Required labourers (in discussion with BHEL) skilled/unskilled persons for regular house-keeping (cleaning / mopping etc), water cleaning of SPV modules, grass cutting and other maintenance works. (iv) **Note:** At least one technical personnel shall essentially be a certified / licensed person for HT operations (33KV minimum). This is a mandatory requirement. (b) Security personnel Minimum Nine (9) security guards to be deployed spread over three shifts (3+3+3) with competence to handle tough situations and safeguard the plant from miscreants. (c) In case, any of the above O&M personnel is on leave, reliever shall be arranged by the vendor so that there is no effect on O&M activity. 2. Similarly, O&M personnel shall be provided with raincoats, toolsets, earthing rods, safety gloves, safety goggles, gumboots, helmets and all other personal protective equipment (PPE) that will be relevant to ensure human safety. 3. Names, qualification, work responsibility of personnel shall be listed on a display board within control room. 4. Attendance register shall be maintained for all the contractor employee. 5. Vendor shall ensure statutory requirements such as ESI, PF and labour license for their O&M personnel posted at site. 6. BHEL shall have right to disallow any O&M employee, if found unfit to perform. BHEL instructions issued in writing shall be binding on vendor who shall replace the person.

	7. O&M personnel at site shall conform to general regulations in force at site and to any special instructions from local administration/SCCL. 8. O&M personnel at site shall be deemed to be aware of damages and risks incidental to conditions of BHEL land and works from time to time and BHEL shall not be responsible for any injury to personnel arising there from. 9. Training to O&M personnel It is the absolute responsibility of vendor to ensure imparting of necessary training to their O&M personnel to get them acquainted with the operations of various electrical and mechanical equipment of the power plant. For this purpose, vendor shall identify the O&M personnel well in advance and involve them during installation and commissioning stages so that they become well versed with various functional aspects of the power plant. 10. Availability of O&M personnel at power plant (a) Vendor shall ensure that operating staff are present in the power plant during plant operation (6:00 AM – 6:30 PM) every day. (b) Vendor shall ensure that certain minimum operating staff are present at the power plant even on festivals, public holidays and any other unique occasions so that the plant is run under competent supervision on all days. (c) Security guards shall be available at the power plant on round the clock basis and on all the days. In case of any break in duty of security guard(s), replacement with alternate guard(s) shall be ensured during the break time. 11. O&M personnel shall, strictly, not use any part of the power plant for their personal / residential purposes. Their presence at the plant shall, strictly, be meant only for the purpose of operation and maintenance of plant. 12. In case of Maintenance activity / failure or damage / accident / replacement / repair required for equipment as Solar modules, CRP panel, VCB, CT and PT, Auxiliary, Main transformer, transmission Line, Battery bank / charger etc, all site related activities e.g. unloading, erection, installation, charging, co-ordination with agencies involved, etc., shall be in O&M contractor's scope. Arrangement of JCB/ crane / hydra / additional labour hiring / Ladder, etc., for arranging replacement of failed equipment will be in the scope of the vendor. 13. O&M contractor shall ensure that wages to all the O&M staff and labour engaged (Skilled / Unskilled) are paid as per Appropriate Govt. Minimum Wages Act (To be ascertain by bidder). The wages shall be paid within the 7th day of every month. In case of failure of O&M contractor to pay minimum wages in time, then BHEL may pay the wages to the O&M Staff directly and deduct the same along with Costs from the running Bills of O&M contractor. The minimum Wages Act as well as the applicable Minimum Wages shall be displayed on a Board inside the Control Room. 14. O&M Contractor shall provide 2 Mobile SMARTPHONE handsets with Sim Cards, One to BHEL Engineer and another to O&M In Charge. These Cell Nos. Shall be displayed on boards within the Plant and shall be the Contact Nos for SCCL or BHEL to Contact the O&M Staff. O&M Contractor shall bear all costs for purchase of handsets, SIM Cards as well as for regular recharges.
4.4	O&M operations – daily basis (1) Site is very Dusty and hence Water cleaning of SPV modules (at least 2 times a month) O&M contractor shall deploy additional labour if required to complete this activity within the stipulated time. Labour shall be provided with Module cleaning equipment such as Mops etc an also Safety Gum—boot. (2) Control room and inverter room cleaning – dry sweeping, wet mopping (3) Water wash cleaning of toilets, urinals.

	(4) Logging of DC, AC, grid parameters (current, voltage, power, energy) at PCUs & VCB/ C&R panels, transformer temperatures, equipment tripping/ breakdown, grid outage etc as per BHEL formats. (5) SCADA data station / PC operations for daily monitoring of weather parameters, trend graphs and urgent reporting to BHEL in case of any problems / anomalies observed with any of the parameters. (6) Drinking water to be arranged for O&M personnel at site. (7) Contractor shall prepare and send Forecasting and Scheduling (F&S) generation reports as per extant regulations (SERC/CERC) for Forecasting, Scheduling, Deviation Settlement Mechanism and related matters. The scope under this Clause shall also include establishing and maintaining forecasting tools and appointment of QCA/Aggregator, if required. % Error (Deviation) shall be calculated as per the said regulations and DSM Charges in case of deviation beyond the permissible limits shall be borne by the vendor.
4.5	O&M activities – weekly basis (1) Removal of garbage from solar array field, switchyard, roads, drains, pathways, sand buckets; logging in registers with signatures of operating persons and in-charge. (2) Monitoring and logging of fire extinguisher levels / pressures as per BHEL formats
4.6	O&M activities – monthly basis (1) Inspection of fire extinguishers (weight, pressure indication, physical status etc) followed by refilling actions, if necessary, based on indications. Report to be submitted as per BHEL approved recording formats. (2) Earthing resistance measurements for solar array structures, control room equipment, switchyard equipment, lightning arrestors (ESE): measured values shall be recorded in registers and reported to BHEL as per BHEL approved recording formats. (3) Submission of values / status of plant parameters and events for the corresponding month, as below, as per BHEL approved formats: a. Daily values of solar array strings (SMB parameters) b. Daily values of weather parameters (solar energy, wind speed, ambient temperature) c. Daily energy generation d. Events (with date, time) of faults / tripping / breakdown of equipment e. Events (with date, time) of grid outage f. Events (with date, time) of equipment damages, accidents and thefts g. Activities of module cleaning (4) Monthly reports shall be submitted to BHEL for all the above data. (5) Energy generation / meter reading report to be prepared and submitted to the concerned department (STATE ELECTRICITY SUPPLY & TRANSMISSION BOARDS etc). Signatures from BHEL's customer and substation representatives shall be obtained wherever required. (6) Co-ordination with STU/SLDC/other statutory organizations as per the requirement on behalf of Employer for Joint Metering Report (JMR), furnishing generations schedules as per requirement, revising schedules as necessary and complying with grid requirements (7) Inspection of transmission line and Substation bay equipment
4.7	O&M activities - quarterly basis shall be billed once in 3 months after completion of activities (1) Cleaning of PCUs, VCB panels, C&R panels, ACBD, IRDB, FCBC, battery banks etc. to remove accumulated dust at plant and substation end. (2) Monitoring and status review, followed by rectification / calibration / replenishment / replacement actions as necessary and applicable for following: (3) Spare items of all electrical equipment (4) First aid box items - medicines and accessories (5) Safety gadgets

	(6) Tool kits and measuring instruments (7) Yard lights (8) Pumps, starters (9) Control room appliances: air conditioners, lights, fans, exhaust fans, switch boards etc. (10) Pest control for control room and inverter room (rats, snakes etc.) – sprays, chemicals, medicines etc. to be applied wherever required. 11) Submission of quarterly report on above activities to BHEL. 12) Cleaning of water storage tanks 13) Maintenance / Repair of Earth pits of solar array structures, control room equipment, switchyard equipment, lightning arrestors (ESE) in order to maintain the desirable Earth Resistance values. 14) Grass cutting – monthly once shall be carried out with help of grass cutting machines and manually engaging separate labour. The growth of grass / drying of grass is detrimental to Generation as well as to safety from fire hazards.
4.8	O&M activities – half yearly basis shall be billed once in 6 months after completion of activities Tilting of Solar PV Module structures (Two cycle per year). Each cycle to be completed within 15 days' period. O&M Contractor shall engage separate labour as required for completing this activity within the time schedule specified.
4.9	O&M activities – yearly basis shall be billed once in 12 months after completion of activities (1) BDV measurements for oil samples from all the transformers and submission of report to BHEL. (2) Calibration of Weather Monitoring Station equipment (3) Filtration of oil to be arranged, if required, based on BDV measurement report. Tightness of cables, earthing and hardware, replacement of gasket, silica gel breather, paint touchup, arresting oil leakages and oil top-up of all transformers (33KV and aux transformers) and other related electrical works (4) Testing and calibration of VCBs, relays, CTs, PTs, LA, GOS, ABT meter etc in plant, metering yard, transmission line and substation bay (5) Testing and maintenance of transmission line items (6) Lubrication of moving contacts (VCBs, GOS switches, Earth switches etc) with appropriate grease etc for plant, line and substation equipment. (7) Cleaning of sewerage lines, septic tanks (if found necessary) (8) Painting of switchyard gate / fencing, earthing chambers, other steel structures within control room and switchyard if required based on conditions of rusting etc for plant, line and substation equipment. (9) Repair and Maintenance of Roads and drains such as: I. Crack repairing of the road surface. II. Pot-holes over the top road surface to be rectify. III. Maintenance of shoulders for the rain cuts or damage due to some external reasons. IV. Before and after the monsoon season the storm water drainage shall be maintained & cleaned for smoother flow of storm water. (10) Checking tightness of hardware in solar array structures and tightening wherever required. (11) Checking tightness of power cable terminations in SPV modules (MC4), SMBs, electrical panels of control room, Inverter room, Transformer yards, Metering yard, transmission line and substation equipment.

4.10	O&M activities –Once in 5 years shall be billed only after completion of this activity after 5 years of O&M (1) Painting of Main Control room building and inverter room buildings using weather proof cement based acrylic emulsion paint (Exterior grade) for outside and oil bound distemper paint for inside the building
4.11	O&M activities - as and when required (contextual basis) (1) Monitoring and operation of plant electrical equipment as and when required: (a) GOS Air break switches (b) VCB on/off: local operations from outdoor HT panel and remote operations from indoor remote annunciation panel (c) Settings numerical relays in HT panels/ C&R Panels: review and revision in consultation with BHEL. (d) ACB on/off operations on LT side. (e) PCU operations: emergency close, LCD displays (selection of settings, monitoring the DC/AC/event/fault status parameters), operation of duct fans. (f) Battery and battery charger operations (g) Bore well pump operations to fill the storage tanks. (h) Supply of water using tankers in case of no bore well water (2) Coordinating, on behalf of BHEL, and obtaining renewal of statutory licenses, clearances and approvals from state departments. (3) All the equipment required for O&M for the healthy operation of the Plant must be calibrated, time to time, from the NABL accredited labs and the certificate of calibration must be provided prior to its deployment. (4) Reporting, on an immediate basis (within max 2 hours) of functional problems / damages in site installed items to facilitate immediate repair / replacement. Further, vendor shall correspond / coordinate with respective equipment vendor / service center, on behalf of BHEL, for getting the service engineers to the site. Later, coordinating with the service engineers during their visit to site, and assisting them in the trouble shooting process until the problem is resolved. Vendor shall report to BHEL (within max 2 hours) immediately after the problem is resolved. (5) Vendor shall keep updating the spares inventory at the site every time there is consumption of spare items towards replacement. In case of shortage of spares, the same shall be reported on an urgent basis (with max 2 hours) to BHEL. (6) Coordinating with authorities upon failures at sub-station bay, grid failures, line problems etc and implementing the needful steps to restore the plant to normal operation. (7) The electrical charges for the auxiliary consumption and broadband internet, telephone charges, if any, of the SPV plant during the entire period will be in scope of the vendor (8) Theft incidents: immediate reporting to BHEL, filing FIRs with police stations on behalf of BHEL, coordination for site inspection by insurance companies and clearance of insurance claims, logging of events (date, time) and maintaining records. (9) Accidents: immediate reporting to BHEL, coordinating with hospitals, logging of events (data, time) and maintaining records. (10) Procurement of all O&M consumables for fulfilling the activities detailed above will be in the scope of vendor.