Brief Scope of Work

Brief Scope of Work for EPC package for development of 56 MW Floating Solar PV Project with 60 MW / 240 MWh Battery Energy Storage System (BESS) at NTPC North Karanpura

Design, Engineering, Supply, Packing and Forwarding, Transportation, Unloading, Storage, Installation and Commissioning of grid connected 56 MW floating solar PV project coupled with 60 MW /240 MWhr Battery Energy Storage System **(BESS)** on turnkey basis. Further the bidder has to obtain site-specific data from the owner in preparation for developing installation and implementation plans.
Detailed provisions in regard of scope of work and technical features/specification of equipment/ systems/ services, contained in the Bidding Document shall be final and binding

1.0 SCOPE OF WORK FOR Solar + BESS:

Successful Bidder shall be responsible for providing all equipment, component, and services necessary to install a fully functional floating solar PV plant with BESS.

1.01 Design, Engineering, Supply, Packaging and Forwarding, Transportation, Unloading, Storage, Construction, Erection, Testing, Commissioning of grid connected 56 MW floating solar PV project coupled with 60 MW /240 MWhr Battery Energy Storage System **(BESS)** on turnkey basis. BESS capacity to be considered is the rated AC discharge capacity at Point of injection/Metering. Power evacuation system and equipment including integration in existing 220 kV switchyard is considered in the scope of Bidder.

1.02 Bidder can choose AC coupled BESS and/or DC coupled BESS for the project.

1.03 BESS yearly degradation, RTE and APC details will be mentioned in detailed specifications.

1.04 Bidder has to bid for the complete project including Floating solar , BESS and power evacuation works.

1.05 BESS should be provide in standardized container with minimum DC capacity of 5 MWhr per container.

1.06 BESS containers should have applicable NFPA compliance.

1.07 Designed life of BESS system including that of battery shall be of 15 years (considering daily single cycle operation) from the date of successful completion of trial run.

1.08 Degradation in Discharge capacity and Round trip efficiency shall be calculated on on annual basis and bidder has to prove the guaranteed capacity and RTE on annual basis.

1.09 Comprehensive Operation and Maintenance (O&M) works of BESS system for 15 years from the date of successful completion of trial run shall be in scope of Bidder.

1.10 Grid compliance study, Reactive power compensations and power quality compliance for entire solar+BESS system upto 400 KV/220 KV grid interconnection point at NTPC projects switchyard shall be in scope of bidder.

1.11 Project shall comprises of Floating Solar PV, BESS containers, Battery Management System (BMS), Energy Management System (EMS) and SCADA, Power Conversion System (PCS), Protection system, Communication System, HT

& LT System, Auxiliary power system, Monitoring & Control system, Fire Fighting, remote control and monitoring, HT & LT Transformers, 220 kV Power evacuation Infrastructure, and all other associated materials and accessories necessary for trouble free operation and maintenance of the solar + BESS system.

1.12 BMS and EMS of the BESS should comply with the latest IS or/and IEC or/and IEEE standards. Fire safety of the Battery and container should be in line with latest Indian or/and international standards.

1.13 Floating solar PV plant should be as per Technical Specification of Contract and latest guidelines of CEA, CERC and LDC.

1.14 O&M of Floating Solar and Power Evacuation system shall be considered for 5 years from commissioning date.

1.15 Bidder has to ensure the Minimum Guaranteed generation from floating Solar PV plant.

1.16 Site-grading, clearing of vegetation.

1.17 Providing power supply and water supply for construction purposes.

1.18 Construction of control room with switchgear room, with all electrical fitting and furniture, security cabin etc.

1.19 All associated electrical and civil works required for interfacing with grid (i.e. transformer(s), switchgear, protection system, cables, etc).

1.20 Metering philosophy should be as per site requirement and metering system will be in the scope of bidder.

1.21 Provide documentation for design and expected performance through design calculations, software, design drawings, equipment drawings, and modifications to the existing drawings.

1.22 Develop detailed start up and site acceptance plan.

1.23 Provide training for the operators, engineers, technicians and maintenance personnel.

1.24 Supply any special equipment and tools required for the operation and maintenance of the project.

1.25 Provide a warranty for the battery energy storage system (BESS) and its constituents equipment as per technical specification.