

Brief Scope of Work for EPC package for development of Battery Energy Storage System (BESS) at NTPC Kayamkulam (250 MW/1000 MWh)

Design, Engineering, Supply, Packing and Forwarding, Transportation, Unloading, Storage, Installation and Commissioning of grid connected 250 MW/1000 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:

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

- 1.01 Design, Engineering, Supply, Packaging and Forwarding, Transportation, Unloading, Storage, Construction, Erection, Testing, Commissioning of grid connected 250 MW /1000 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.
- 1.02 BESS yearly degradation, RTE and APC details will be mentioned in detailed specifications.
- 1.03 Project is divided into two blocks as follows:
 - a. Block-1: 125 MW / 500 MWhr integrated at 33 kV Existing Solar Pooling Switchgear
 - b. Block-2: 125 MW / 500 MWhr integrated at 220 kV switchyard
- 1.04 Bidder has to bid for at least one block and can bid for both the blocks.
- 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 BESS system upto 400 KV/220 KV grid interconnection point at NTPC projects switchyard shall be in scope of bidder.
- 1.11 Project shall comprise of BESS containers with Battery Racks, 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 Transformers, any other associated materials and services necessary for trouble free operation and maintenance of the BESS.
- 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 BESS should be in line with latest guidelines of CEA , CERC and LDC.
 - 1.14 Site-grading, clearing of vegetation.
 - 1.15 Providing power supply and water supply for construction purposes.
 - 1.16 Construction of control room with switchgear room, with all electrical fitting and furniture, security cabin etc.
 - 1.17 All associated electrical and civil works required for interfacing with grid (i.e. transformer(s), switchgear, protection system, cables, etc).
 - 1.18 Metering philosophy should be as per site requirement and metering system will be in the scope of bidder.
 - 1.19 Provide documentation for design and expected performance through design calculations, software, design drawings, equipment drawings, and modifications to the existing drawings.
 - 1.20 Develop detailed start up and site acceptance plan.
 - 1.21 Provide training for the operators, engineers, technicians and maintenance personnel.
 - 1.22 Supply any special equipment and tools required for the operation and maintenance of the project.
 - 1.23 Provide a warranty for the battery energy storage system (BESS) and its constituents equipment as per technical specification.