

Addendum-01

TENDER NO. MANPBT0028 EPC project for development of BESS at Ramagundam

Addendum: 01 Date: 11.11.2025

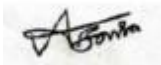

Addendum: 01 Date: 11.11.2025

Technical amendments is attached. Bidder to comply all the civil , Electrical , mechanical , Design inline with end customer & BHEL Specifications , amendments.

Any Queries shall be contacted to

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Prepared by: SAR (Mgr)	Reviewed by : VJ (SM)	Approved by: PM (AGM)
		

Amendments - EPC PACKAGE FOR DEVELOPMENT OF BESS AT NTPC THERMAL POWER STATIONS (Lot-1)

EXISTING SPECIFICATION	TO BE READ AS
<p>BATTERY SYSTEM: If the bidder itself has not manufactured or supplied Batteries for grid interactive battery energy storage system of cumulative installed capacity of minimum 20 MWh, out of which at least one grid interactive battery energy system should be of 5 MWh capacity or higher, in that case the bidder shall associate/collaborate for procurement/ sourcing of batteries from Battery Manufacturer who has manufactured and supplied Batteries of cumulative capacity of minimum 20 MWh for grid interactive battery energy storage system(s), out of which at least one reference grid interactive battery energy storage system should be of minimum 5 MWh capacity supplied in a single order. The reference grid interactive battery energy storage system of 5 MWh or higher capacity should have been successfully commissioned for at least six (6) months.</p> <p>Note: Design validation of Battery sizing, associated cable sizing, etc. shall be done by the Battery Manufacturer. Certification for the same from Battery Manufacturer shall be submitted by the Successful Bidder during detailed engineering.</p>	<p>BATTERY SYSTEM: If the bidder itself has not manufactured or supplied Batteries for grid interactive battery energy storage system of cumulative installed capacity of minimum 20 MWh, out of which at least one grid interactive battery energy system should be of 5 MWh capacity or higher, in that case the bidder shall associate/collaborate for procurement/ sourcing of batteries from Battery Manufacturer who has manufactured or supplied Batteries of cumulative capacity of minimum 20 MWh for grid interactive battery energy storage system(s), out of which at least one reference grid interactive battery energy storage system should be of minimum 5 MWh capacity supplied in a single order. The reference grid interactive battery energy storage system of 5 MWh or higher capacity should have been successfully commissioned for at least six (6) months.</p> <p>Note: Design validation of Battery sizing, associated cable sizing, etc. shall be done by the Battery Manufacturer. Certification for the same from Battery Manufacturer shall be submitted by the Successful Bidder during detailed engineering.</p>

EXISTING SPECIFICATION						TO BE READ AS							
ENERGY MANAGEMENT SYSTEM (EMS) Bidder/Sub Vendor should have designed/engineered and supplied EMS for grid interactive battery energy storage system of cumulative installed capacity 5 MWh or higher which should have been successfully commissioned at least six (6) months prior to the date of techno-commercial bid opening.						ENERGY MANAGEMENT SYSTEM (EMS) Bidder/Sub Vendor should have designed/engineered and supplied EMS for grid interactive battery energy storage system of cumulative installed capacity 5 MWh or higher which should have been successfully commissioned for at least six (6) months.							
S I. N o .	Plant	BESS (MW) rating	BESS (MWh) rating	Propo sed POI	Rema rks	S I. N o .	Plant	BESS (MW) rating	BESS (MWh) rating	Propo sed POI	Rema rks		
1	KUDGI STPP	240	480	220KV	New Bays	1	KUDGI STPP	240	480	400KV	New Bays		
S I. N o .	Plant	BESS (MW) rating	BESS (MWh) rating	Propo sed POI	Rema rks	S I. N o .	Plant	BESS (MW) rating	BESS (MWh) rating	Propo sed POI	Rema rks		
1	KUDGI STPP	240	480	220KV	New Bays	1	KUDGI STPP	240	480	400KV	New Bays		
S I. N o .	Plant	BESS (MW) rating	BESS (MWh) rating	Propo sed Point of interc o- nnecti on	Rating (Minimu m)	Quantit y [Workin g + Spare]	S I. N o .	Plant	BESS (MW) rating	BESS (MWh) rating	Propo sed Point of interc o- nnecti on	Rating (Minimu m)	Quantit y [Wor king + Spar e]

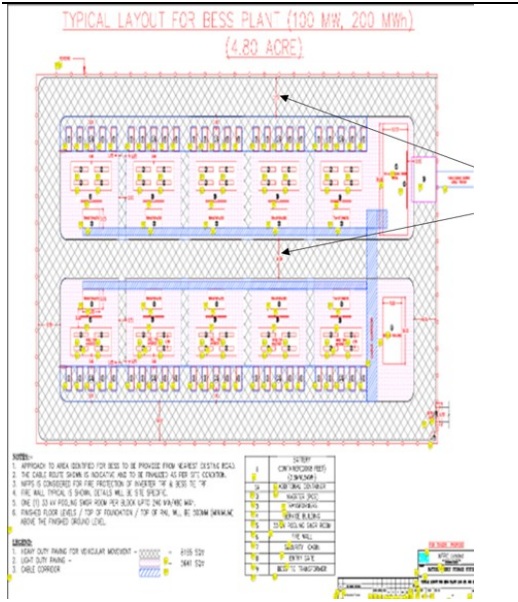
EXISTING SPECIFICATION							TO BE READ AS						
1.	Kudgi STPP	240	480	220kV	160MVA, 33kV/220 kV	2+1	1.	Kudgi STPP	240	480	400kV	160MVA, 33kV/33k V/400kV	2
2.	Mouda STPP Stage-I and II	200	400	132kV	100MVA, 33kV/132 kV	2+1	2.	Mouda STPP Stage-I and II	200	400	132kV	110MVA, 33kV/132 kV	2+1
3.	Solapur STPP	132	264	132kV	80MVA, 33kV/132 kV	2	3.	Solapur STPP	132	264	132kV	80MVA, 33kV/132 kV	2
4.	Barh STPP Stage-I and II	200	400	132kV	100MVA, 33kV/132 kV	2	4.	Barh STPP Stage-I and II	200	400	132kV	110MVA, 33kV/132 kV	2
5.	Nabinagar STPP Stage-I	200	400	132kV	100MVA, 33kV/132 kV	2	5.	Nabinagar STPP Stage-I	200	400	132kV	110MVA, 33kV/132 kV	2
6.	Simhadri STPP Stage-II	70	140	400kV	80MVA, 33kV/400 kV	1	6.	Simhadri STPP Stage-II	70	140	400kV	82.5MVA , 33kV/400 kV	1
7.	Simhadri STPP Stage-I	75	150	400kV	80MVA, 33kV/400 kV	1	7.	Simhadri STPP Stage-I	75	150	400kV	82.5MVA , 33kV/400 kV	1
8.	Ramagundam STPP Stage-III	50	100	33kV	NA		8.	Ramagundam STPP Stage-III	50	100	33kV	NA	
Details of switchyard bays at each project are indicated in table below:							Details of switchyard bays at each project are indicated in table below:						
Sl. No	Plant	BESS (MW) rating	BESS (MWh) rating	POI	Rating of bays	Number of Bays	Sl. No	Plant	BESS (MW) rating	BESS (MWh) rating	POI	Rating of bays	Number of Bays
1	KUDGI STPP	240	480	220 KV	245kV, 1600Amp, 40kA	2	1	KUDGI STPP	240	480	400 KV	400 KV, 3150A, 63kA	3
Terminal points:							Terminal points:						
Sl. No	Plant	BESS (MW) rating	BESS (MWh) rating	POI	Remarks		Sl. No	Plant	BESS (MW) rating	BESS (MWh) rating	POI	Remarks	
1	KUDGI STPP	240	480	220 KV	New Bays		1	KUDGI STPP	240	480	400 KV	New Bays	


EXISTING SPECIFICATION			TO BE READ AS		
Tender SLD Rev B			Tender SLD Rev C as Annexure 1		
b) Tie Transformer and it’s components (OLTC, Bushing, etc) shall be designed for 110% over load condition continuously without exceeding temperature rise limits as specified above, also Tie Transformer shall be designed for overloading as per IEC 60076 without any adverse impact on the transformer. Transformer Name plate shall mention Transformer MVA rating corresponding to 110% rating of Transformer.			b) Tie Transformer and it’s components shall be designed for cyclic loading, continuous loading and over load condition as per IEC 60076 without any adverse impact on the transformer.		
Project	Bay details for Point of interconnection		Project	Bay details for Point of interconnection	
Kudgi 240x 2 Hrs 2 Bays	Existing 220 kV bay no 8 & 9 Main Bus bar available. Only bay equipments are to be provided.		Kudgi 240x 2 Hrs 3 Bays	400 kV bay no 30, 31 & 32 Main Bus bar available. Bay equipment to be provided.	
New Inclusion			Drawings of existing 400kV Kudgi switchyard added in Annexure 02		
II Type test SI no. 4 Temperature Rise test shall be carried out at a tap corresponding to maximum losses (110% Load Loss +No load Loss at rated voltage and frequency)..... for future reference.			II Type test SI no. 4 Temperature Rise test shall be carried out at a tap corresponding to maximum losses (110% Load Loss +No load Loss at rated voltage and frequency)..... for future reference.		
Civil, structural and architectural works associated with RCC framed Service Building and Switchgear Building with brick wall cladding including substructure, superstructure and all other related works like cable trench etc., complete as per system requirement.			Civil, structural and architectural works associated with RCC framed Switchgear Building and, control room building (Service Building) with brick wall cladding including substructure, superstructure and all other related works like cable trench etc., complete as per system requirement.		


EXISTING SPECIFICATION	TO BE READ AS
<p>Minimum Thickness of Members & Galvanization</p> <p>All steel work used in construction of switchyard structures such as Towers & Beams, Lightning mast and equipment supporting structures including nuts, bolts and washers shall be galvanized.</p> <p>Minimum section thickness shall not be less than 4 mm. Weight of zinc coating shall be at least 0.610 kg/m² and foundation bolts shall have heavier zinc coating of at least 0.80 kg/m², for C3 category and at least 0.900kg/m² of C5 category.</p>	<p>Minimum Thickness of Members & Galvanization</p> <p>All steel work used in the construction of switchyard structures such as towers and beams, lightning masts, and equipment-supporting structures, including nuts, bolts, and washers, shall be galvanized.</p> <p>Minimum section thickness shall not be less than 4 mm.</p> <p>For C3 category projects, weight of zinc coating shall be at least 0.610 kg/m², and foundation bolts shall have heavier zinc coating of at least 0.80 kg/m².</p> <p>For C5 category projects, foundation bolts shall have zinc coating of at least 0.90 kg/m².</p> <p>For C5 category switchyard structures:</p> <ul style="list-style-type: none"> • Structural members with a thickness of 6.0 mm and above shall have a minimum zinc coating of 0.900 kg/m². • For members with thickness below 6.0 mm, the minimum zinc coating shall be 0.610 kg/m².
<p>Grating</p> <p>All gratings shall be electroforged types. Minimum thickness of the grating shall be 40 mm The opening size shall not be more than 30mmx100mm. The minimum thickness of the main bearing bar shall be 5 mm or as per design requirement whichever is higher. All gratings shall be hot dip galvanised at the rate of 610 g. per sq.m.(C5 category 900gm/sqm) after surface preparation by means of shot blasting or cleaned</p>	<p>Grating</p> <p>All gratings shall be electroforged types. Minimum thickness of the grating shall be 40 mm The opening size shall not be more than 30mmx100mm. The minimum thickness of the main bearing bar shall be 5 mm or as per design requirement whichever is higher. All gratings shall be hot dip galvanised at the rate of 610 g. per sq.m. after surface preparation by means of shot blasting or cleaned by acid pickling.</p> <p>For C5 category project:</p>

EXISTING SPECIFICATION	TO BE READ AS
by acid pickling.	<ul style="list-style-type: none"> • Grating members with a thickness of 6.0 mm and above shall have a minimum zinc coating of 0.900 kg/m². • For members with thickness below 6.0 mm, the minimum zinc coating shall be 0.610 kg/m².
<p>iv) Coating for Mild Steel parts in contact with Water.</p> <p>a) All mild Steel parts coming in contact with water or water vapour shall be hot dip galvanised. The Minimum Coating of Zinc shall be 610 g/ Sq.m for C3 category (C5 category 900 gms/sqm) for galvanised Structures and shall comply with IS: 4759 and other relevant Codes. Galvanising shall be checked and tested in accordance with IS: 2629.</p> <p>b) The galvanising shall be followed by the application of an etching Primer and dipping in black bitumen in accordance with BS: 3416, unless otherwise specified.</p> <p>v) Gratings</p> <p>All gratings shall be blast cleaned to Sa 2 ½ finish or cleaned by acid pickling as per ISO 8501-1 and shall be hot dip galvanized at the rate of 610 gm/sqm for C3 category 900gm/sqm for C5 category.</p> <p>vi) Hand Railings and Ladders</p> <p>All handrails and ladders shall be galvanised at the rate of 610 gms / Sq.M for C3 and 900gm/sqm for C5 category as per IS: 4736.</p>	<p>iv) Coating for Mild Steel parts in contact with Water.</p> <p>a) All mild Steel parts coming in contact with water or water vapour shall be hot dip galvanised. The Minimum Coating of Zinc shall be 610 g/ Sq.m for C3 category comply with IS: 4759 and other relevant Codes. Galvanising shall be checked and tested in accordance with IS: 2629.</p> <p>For C5 category project:</p> <ul style="list-style-type: none"> • For members with a thickness of 6.0 mm and above shall have a minimum zinc coating of 0.900 kg/m². • For members with thickness below 6.0 mm, the minimum zinc coating shall be 0.610 kg/m². <p>b) The galvanising shall be followed by the application of an etching Primer and dipping in black bitumen in accordance with BS: 3416, unless otherwise specified.</p> <p>v) Gratings</p> <p>All gratings shall be blast cleaned to Sa 2 ½ finish or cleaned by acid pickling as per ISO 8501-1 and shall be hot dip galvanized at the rate of 610 gm/sqm for C3 category</p> <p>For C5 category project:</p>

EXISTING SPECIFICATION	TO BE READ AS
	<ul style="list-style-type: none"> • Grating members with a thickness of 6.0 mm and above shall have a minimum zinc coating of 0.900 kg/m². • For members with thickness below 6.0 mm, the minimum zinc coating shall be 0.610 kg/m². <p>vi) Hand Railings and Ladders All handrails and ladders shall be galvanised at the rate of 610 gms / Sq.M for C3 as per IS: 4736. For C5 category project:</p> <ul style="list-style-type: none"> • For members with a thickness of 6.0 mm and above shall have a minimum zinc coating of 0.900 kg/m². • For members with thickness below 6.0 mm, the minimum zinc coating shall be 0.610 kg/m².

Tender Document Condition	Bidder's Queries	NTPC Reply
<p>For normal duty paving, reinforcement of the RCC paving shall consist of minimum 8mm diameter bars @ 200 mm c / c in both directions at the centre of the slab. For heavy duty paving/ passage, reinforcement of the RCC paving shall consist of minimum 10mm diameter bars @ 200 mm c / c in both directions at the centre of the slab.</p>	<p>Bidder understands that the heavy-duty paving is RCC paving of 0.15m thick and reinforcement of 10mm diameter bar at 200mm c/c and the light duty paving shown in the Typical BESS layout in the Section E - Tender drawings is the normal duty paving of RCC paving of 0.15m thick and reinforcement of 8mm diameter bar at 200mm c/c. Kindly confirm.</p>	<p>The bidder shall comply with the technical specification.</p>
 <p>NOTES:-</p> <ol style="list-style-type: none"> 1. APPROACH TO AREA IDENTIFIED FOR BESS TO BE PROVIDED FROM NEAREST EXISTING ROAD. 2. THE GABLE ROOF SHALL BE PROVIDED AND TO BE PROVIDED AS PER CITY CODE. 3. BESS IS CONSIDERED FOR THE PROTECTION OF INVERTED TO A BESS TO BE. 4. THE WALL TYPICAL TO BESS SHALL BE AS PER SPEC. 5. THE GABLE ROOF SHALL BE PROVIDED FOR BESS TO BE PROVIDED. 6. FINISHED FLOOR LEVELS / TOP OF FOUNDATION / TOP OF WALL, BE BESS TO BE PROVIDED. <p>LEGEND:</p> <ol style="list-style-type: none"> 1. LIGHT DUTY PAVING FOR REGULAR MOVEMENT - 100mm 2. LIGHT DUTY PAVING - 100mm 3. GABLE CORNER <p>TO BE PROVIDED BY BIDDER:</p> <ul style="list-style-type: none"> 1. APPROACH TO AREA IDENTIFIED FOR BESS TO BE PROVIDED FROM NEAREST EXISTING ROAD. 2. THE GABLE ROOF SHALL BE PROVIDED AND TO BE PROVIDED AS PER CITY CODE. 3. BESS IS CONSIDERED FOR THE PROTECTION OF INVERTED TO A BESS TO BE. 4. THE WALL TYPICAL TO BESS SHALL BE AS PER SPEC. 5. THE GABLE ROOF SHALL BE PROVIDED FOR BESS TO BE PROVIDED. 6. FINISHED FLOOR LEVELS / TOP OF FOUNDATION / TOP OF WALL, BE BESS TO BE PROVIDED. 	<p>As per the Typical layout for BESS, it is shown to provide 10.5 wide heavy duty paving area. Bidder proposes to provide internal road of Bitumen of 3 m wide carriage way and 0.5 m thick shoulder on both side as per Standard NTPC Specification instead of Heavy-duty paving inside the BESS locations and PSS location due to space constraint. Kindly confirm.</p> <p>Bidder proposes to provide Gravel filling of 0.15m thick instead of the light duty paving shown in Typical BESS layout. Kindly confirm.</p>	<p>Bidder's proposal is not acceptable, and the bidder shall comply with the technical specifications.</p> <p>Bidder's proposal is not acceptable, and the bidder shall comply with the technical specifications.</p>

Tender Document Condition	Bidder's Queries	NTPC Reply
	<p>Kindly clarify the meaning and relevance of this line as depicted in all General Arrangement (GA) drawings for the Thermal Power plants.</p>	<p>This line represents the slope. Bidder to refer to Legend No. 8 as shown in the GA drawing of Solapur.</p>
<p>Chain Link Fencing with minimum 02 numbers of 6m wide Gates shall be provided. Guard room for BESS Area shall also be provided at one gate as decided during detailed engineering.</p>	<p>Bidder proposes to provide 1 number 6m wide gate for BESS locations and 1 guard room at the gate. Kindly confirm.</p>	<p>Bidder's proposal is not acceptable, and the bidder shall comply with the technical specifications.</p>
<p>As such any structure demolition is not envisaged, however, any foundation or underground obstructions shall be demolished as per clause v, Part II A of Technical Specification</p>	<p>Bidder understands that the demolition of any existing structures present inside the proposed BESS locations at Thermal power plants will be under NTPC scope. Kindly confirm.</p>	<p>Bidder to refer to Clause No. 1.00.00(v) of Technical Specification Part-A, Sub-Section II-A.</p>

Tender Document Condition	Bidder's Queries	NTPC Reply
	<p>A safety building is coming in the BESS location of Ramagundam as per the GA layout shared with amendment 1. Bidder wants to know whether the safety building to be demolished or shift the Boundary of BESS location as shown in the Google Pro image. Kindly clarify the same.</p>	<p>The proposed area of BESS is excluding existing structures such as safety building, Sheds etc.</p> <p>As such, no structural demolition is envisaged. However, any foundations or underground obstructions shall be demolished as per Clause (v), Part II-A of the Technical Specification.</p>
<p>2.02.02 BESS TIE TRANSFORMER Rating and Quantity of BESS Tie Transformers applicable for each project</p>	<p>As per the recent amendment issued by the Central Electricity Authority (CEA) dated 11.09.2025 regarding power transformer selection guidelines:</p> <p>"Developers shall ensure that the nameplate rating (in MVA) of the ICT/transformer at the RE Generator pooling station shall be at least 110% of the maximum active power generation from the RE plant."</p> <p>The transformer ratings provided in Clause No. 2.02.01 under "BESS TIE</p>	<p>Refer Technical Amendment 2</p>

Tender Document Condition	Bidder's Queries	NTPC Reply
	<p>Transformers" represent the minimum power transformer capacity. However, the final transformer rating must comply with both the above CEA amendment, and the CEA document titled "Adoption of Standard Technical Specifications of Transformer(s) for Solar Park Pooling Station" dated 22.06.2021.</p> <p>Example:</p> <p>For Kudgi STPP, the previously recommended transformer rating was 125 MVA. However, based on the revised CEA guidelines, the calculation is as follows:</p> <p>Maximum active power generation: 240 MW</p> <p>Required transformer capacity: 240 MW + 10% = 264 MW</p> <p>Converted to MVA: 264 MW @ 0.95P.F ≈ 277 MVA</p> <p>Split across two units: 277 MVA ÷ 2 = 138.5 MVA per transformer</p> <p>Despite this, the standard transformer rating available for a 220 kV / 33 kV two-winding configuration—as per the 2021 CEA specifications—is 125 MVA.</p> <p>Kindly advise the recommended power transformer rating for each plant included in this package, considering both the latest CEA amendment (dated 11.09.2025) and Adoption of Standard Technical Specifications of Transformer(s) for Solar Park Pooling Station" dated 22.06.2021.</p>	

<u>Tender Document Condition</u>	<u>Bidder's Queries</u>	<u>NTPC Reply</u>
INTERCONNECTION FROM BESS TO POI IN EXISTING THERMAL PLANT	The bidder understands that the POI refers to the high-voltage (HV) side of the power transformer connected to the respective substation's bus at plant end under the clause no. 2.02.01 "BESS TIE Transformers". All compliances as per CEA / statutory regulations and PG tests shall be conducted at this POI. Please confirm	Bidder's understanding is correct.
Protection, control, and SOE data for associated 400 kV/220/132/33 kV system shall be integrated with the existing switchyard SAS system. Following minimum equipment shall be included for EMS interface	Bidder request to provide the existing control, protection & communication system details for integrating with the existing switchyard SAS system	Bidder to refer technical amendment 1 in this regard. Any other details/drawings of existing system required by the Bidder shall be provided during detailed engineering stage.
Note#1 (Simhadri STPP-II): No switchyard is envisaged with Simhadri Stage-II Note#2 (Simhadri STPP-1): Complete DIA is to be provided under Simhadri Stage-I BESS package. Deleted	Bidder request to provide the detailed scope which is deleted	Bidder to refer technical amendment 1 in this regard.
	Bidder request to provide the existing switchyard layout plan & section details of NTPC Simhadri	Details/drawings of existing system required by the Bidder shall be provided during detailed engineering stage

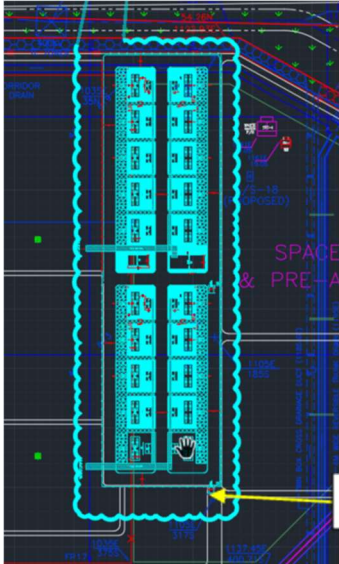
					<u>Tender Document Condition</u>	<u>Bidder's Queries</u>	<u>NTPC Reply</u>		
					1. Ratings and quantity of BESS tie transformer for each project are indicated in the tender documents 2. The requirement and sizing of reactive power compensation shall be based on system studies to be carried out by the bidder and shall comply with CEA (Technical Standards for Connectivity to the Grid) Regulations and applicable grid code provisions. Accordingly, suitable reactive power compensation devices shall be provided by the bidder.	As per the recent amendment issued by the Central Electricity Authority (CEA) dated 11.09.2025 regarding power transformer selection guidelines: "Developers shall ensure that the nameplate rating (in MVA) of the ICT/transformer at the RE Generator pooling station shall be at least 110% of the maximum active power generation from the RE plant."	Refer Technical Ammendment-2		
					YES. BESS Tie transformer is applicable for Simadhri STPP-II new 400kV DIA with 2 BESS Tie Transformer bays is to be considered for connection of BESS at Simadhri.	Bidder request to clarify the detailed scope of work	Bidder to refer Technical amendment 1 in this regard.		
					Additionally, OWS shall also be provided in Central Control Room (CCR), and switchyard to ensure reliable monitoring and control. control and relay panels associated with switchyard shall be kept in AC Kiosk/ existing switchyard control room .	Bidder understands that only 2 nos. of EWS+OWS to be provided at the CCR, no OWS is required at the Employer's existing main plant control Room (at switchyard). Kindly confirm the same.	Bidders understanding is NOT correct. OWS indicated in this clause is required at CCR of the thermal plant. No OWS is to be provided in the switchyard control room.		
					j. Interaction on real-time with IEX for schedule of charging and discharging.	Bidder understands that a. EMS should have the provision to push data to IEX through IEX compatible protocol (i.e. OPC UA/ MODBUS TCP/IP/ IEC104).	Bidder's understanding is correct. However, necessary equipment,		


<u>Tender Document Condition</u>	<u>Bidder's Queries</u>	<u>NTPC Reply</u>
	<p>B. IEX platform is not in bidder's scope.</p> <p>Kindly confirm bidder's understanding</p>	<p>provisions for IEX interface, including required protocols and data exchange capability, shall be provided by the bidder and shall be finalized during detailed engineering.</p>
<p>Exposed conduit/pipe shall be adequately supported by racks, clamps, straps or by other approved means. Conduits /pipe support shall be installed square and true to line and grade with an average spacing between the supports as given below, unless specified otherwise</p>	<p>The bidder requests further clarification regarding the conduit-to-conduit spacing specified in the clause, as the stated clearance appears to be excessively high for practical consideration.</p>	<p>Technical specification is clear. Bidder to comply with Technical specification requirement.</p>


<u>Tender Document Condition</u>	<u>Bidder's Queries</u>	<u>NTPC Reply</u>
<p>Conduit /pipe size (dia). Spacing</p> <p>Upto 40 mm 1 M</p> <p>50 mm 2.0 M</p> <p>65-85 mm 2.5 M</p> <p>100 mm and above 3.0 M</p>		<p>Bidder's understanding is not correct. The spacing specified in metres is for support for exposed conduits/pipes. Bidder to comply with Technical specification requirement.</p>
<p>Fire detection & protection system shall be provided as per relevant applicable codes/standards (BIS/NFPA/IEC/ Equivalent) compliance and as per proven & standard practice of industry/OEM meeting statutory/regulatory requirements in India.</p>	<p>Bidder understands that as per NFPA 855, both hydrant and sprinkler systems are required for the BESS area, and accordingly, a fire pump room will be provided. Kindly confirm. Furthermore, please confirm the requirement of drain pit for the collection of water discharged during or after fire suppression activities in the BESS containers.</p>	<p>Fire water based (Hydrant & Sprinkler System) along with fire water tanks, pumping & pressurization, piping, valves, etc. shall be provided for BESS of each project by the Bidder. Bidder to note that integration with existing fire water network & pumping system is not</p>
<p>Bidder to note that no water based fire protection system (Hydrant/Spray) is envisaged and hence integration with existing fire water network & pumping system is not required.</p>		


Tender Document Condition	Bidder's Queries	NTPC Reply
		<p>envisaged.</p> <p>Clarification No. 179 of Technical Clarification No.-01 stands withdrawn.</p>
<p>HVAC/Cooling System: The BESS shall include HVAC/Cooling system designed to maintain battery temperatures at levels acceptable to the Battery Manufacturer's normal Battery warranty conditions, conducive to acceptable battery life, and as required to maintain battery capacity for all seasons/climatic conditions at the site. The HVAC/Cooling System shall be designed to ensure temperature uniformity within the battery. The HVAC/Cooling system shall be designed as per applicable codes/standards for such applications and in line with relevant CEA regulations (as applicable). Further, mechanical ventilation system (comprising of supply air fans & exhaust air fans, etc.) shall also be provided for switchgear rooms, pantries, toilets, etc. Air Conditioning System comprising of ductable/non-ductable air conditioners</p>	<p>Apart from the cooling system for the BESS, the bidder understands that air conditioning is required only for the Office, Conference Room, and Control Room. All other areas such as the Switchgear Room, Battery Room, LV Panel Room, Toilets, Pantry, etc. will be provided with mechanical ventilation only (no air conditioning). Please confirm if this understanding is correct.</p>	<p>Bidder's understanding is correct. However, if any specific area/room requires air conditioning as per OEM recommendations, the same shall be considered.</p>

Tender Document Condition	Bidder's Queries	NTPC Reply
shall be provided in Control Room, office space, etc.		
At least one (1) no. unit, capacity same as each working unit as a common standby shall be provided for control rooms/RIO room/etc. operating 24 hours a day, served by non-ductable split (cassette / Hi-wall) and ductable type air conditioners.	Bidder understands that one ductable or non ductable standby unit has to be provided for control room served by ductable or non ductable split/package AC unit. Kindly confirm	Specification requirement is clear that at least one (1) no. unit, capacity same as each working unit as a common standby shall be provided for control rooms/RIO room/etc. operating 24 hours a day, served by non-ductable split (cassette / Hi-wall) and ductable type air conditioners.
Air-conditioned areas like Water system control room and area served by Package air conditioner shall be maintained at 24 deg. C \pm (plus or minus) 1 deg. C and relative humidity of 50% \pm (plus or minus) 5%.	Bidder understands that water system control room refers to control room served by split/package air conditioning unit. Kindly confirm.	Bidder's understanding is correct.
The fresh air quantity for air-conditioned areas of Water System Control room building and other control room building etc. shall be	Bidder proposes to consider the fresh-air quantity to be determined based on ASHRAE/ISHRAE guidelines for air-conditioned	Bidder to comply with specification requirements.

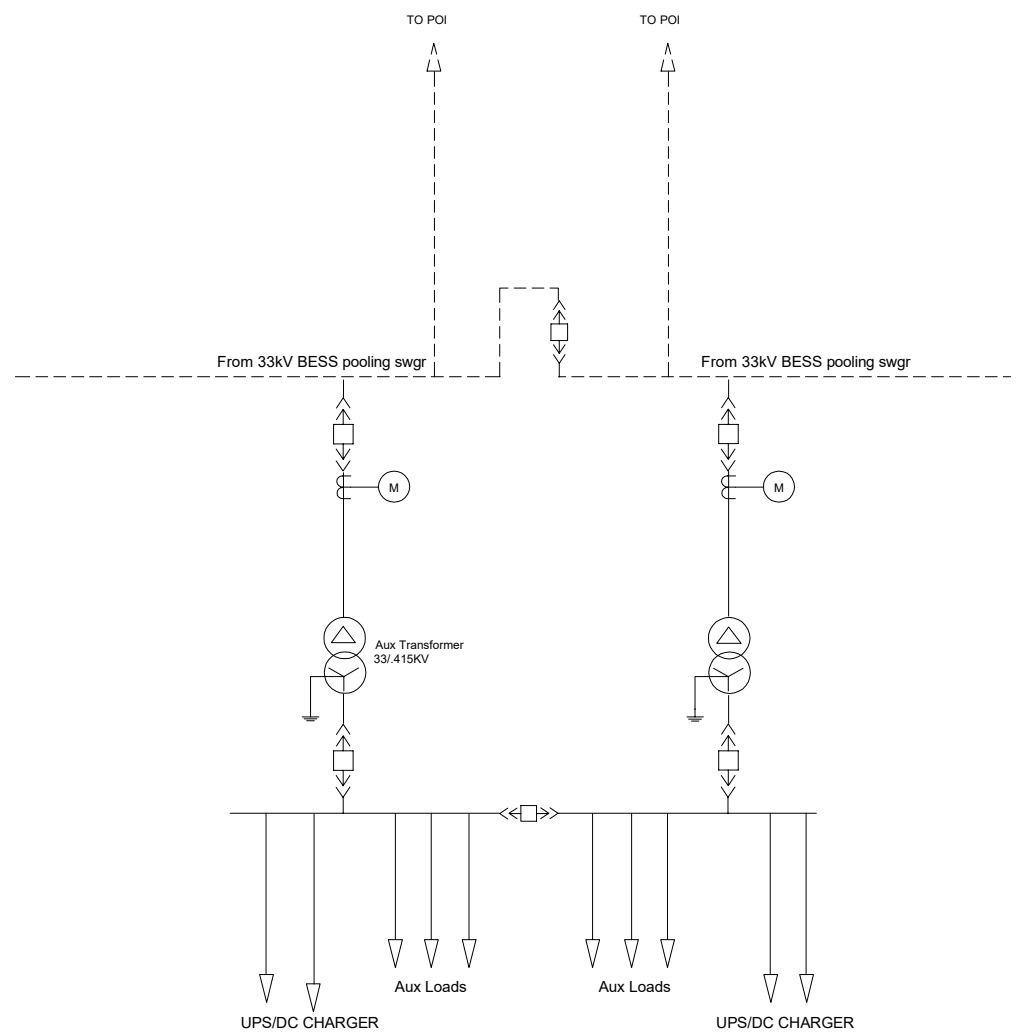
Tender Document Condition	Bidder's Queries	NTPC Reply
<p>0.45 M3/minutes/person or 1.0 air change per hour whichever is greater. However, for office areas quantity of fresh air shall be minimum 1.5 air changes per hour.</p>	<p>areas, for balanced sizing of the air-conditioning unit. Kindly confirm.</p>	
<p>Ventilation System 1. Minimum Air changes per hour in mechanically ventilated areas shall be as follows: i) General areas - 20 ii) MCC/ Switchgear rooms and Battery rooms - 30 & other areas where gaseous fumes/ vapors are generated.</p>	<p>Bidder request confirmation for sizing the ventilation system, if 10 ACH for general areas such as toilets, pantry, storeroom and 20 ACH for Electrical room such as Switchgear, battery room and LV panel room etc. would be acceptable. Kindly confirm.</p>	<p>Bidder to comply with specification requirements.</p>
	<p>Power mech office and access road to the building are falling within the assigned BESS plot. Extra required areas are not available. Bidder understands that the allocated plot will be cleared from all these hindrances by NTPC if not kindly clarify the scope of demolition of this structure.</p>	<p>BARH: The power mech office shall be dismantled by NTPC. As such, no structural demolition is envisaged. However, any foundations or underground obstructions shall be demolished as per Clause (v), Part II-A of the Technical</p>

Tender Document Condition	Bidder's Queries	NTPC Reply
	<p>As per NTPC layout, a width of 187.3m is required whereas the available width is 159.24m only. Bidder requests clarity on whether the plot extends on either side including the existing roads. In case roads are enclosed within the given location, kindly clarify the scope of demolition and approvals.</p>	<p>Specification.</p> <p>SIMHADRI: The available area between the fencing of SWYD and plant boundary wall shall be utilized for installation of desired capacity of BESS.</p> <p>Detailed layout to be developed by the bidder, if required, surrounding roads to be utilized for required surrounding spaces.</p>

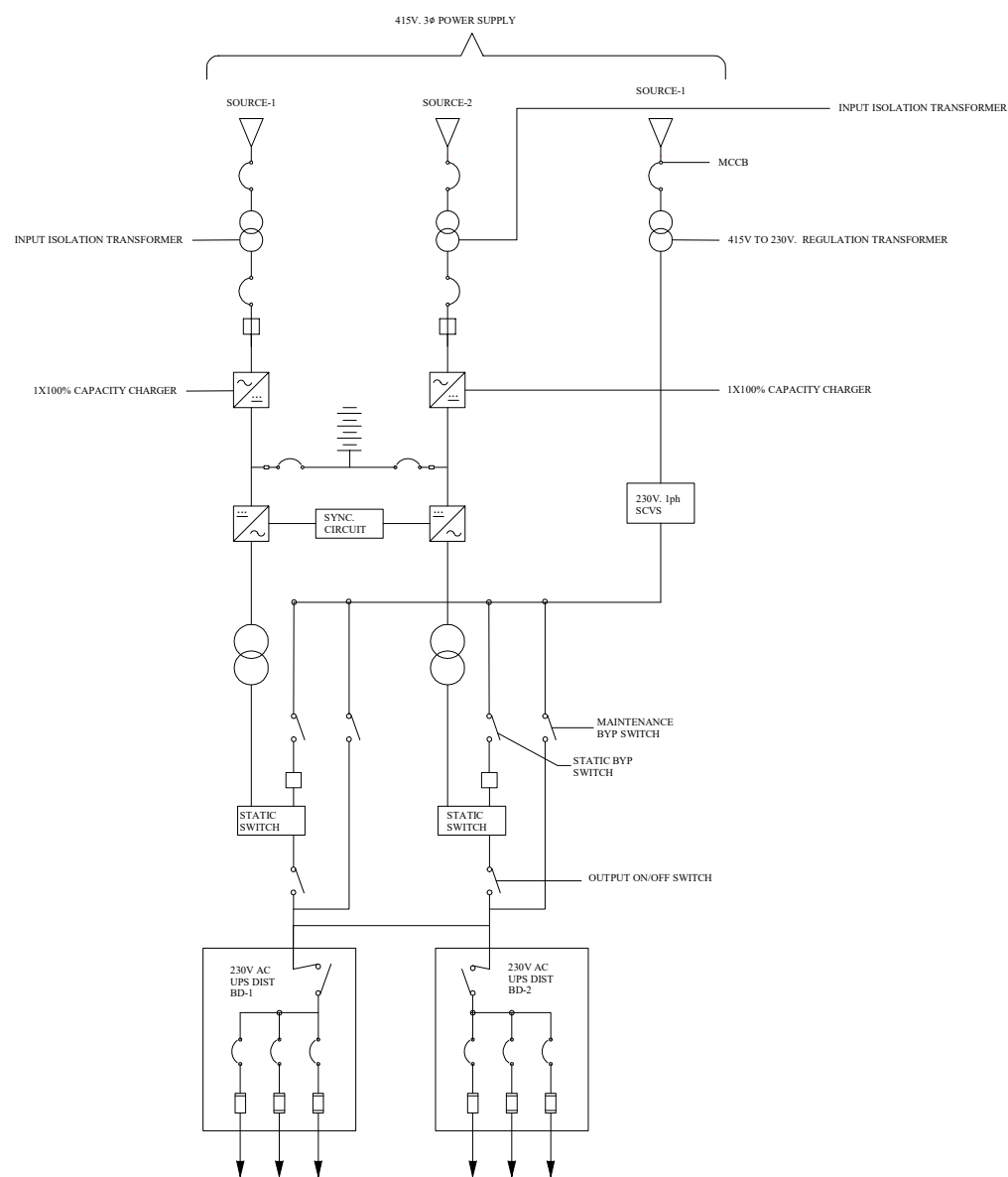
Tender Document Condition	Bidder's Queries	NTPC Reply
	<p>As per NTPC layout, a width of 144m is required which includes a building in the allocated location. Bidder requests clarity on whether the demolition of building is in the scope of the bidder.</p>	<p>KUDGI: Building referred by the bidder and within proposed 480 MWh BESS project area is a temporary fabrication yard and same will be dismantled by NTPC Kudgi site.</p> <p>As such, no structural demolition is envisaged. However, any foundations or underground obstructions shall be demolished as per Clause (v), Part II-A of the Technical Specification.</p>

Tender Document Condition	Bidder's Queries	NTPC Reply
	<p>Bidder understands there are multiple structures present at the site. Kindly clarify the scope of demolition of these structures.</p>	<p>MOUDA: Please refer to the drawing provided with the amendment#01. The area for BESS is earmarked, avoiding the existing structures. Area of ~9 Acres will be provided for the installation of BESS as mentioned in the drawing.</p> <p>As such, no structural demolition is envisaged. However, any foundations or underground obstructions shall be demolished as per Clause (v), Part II-A of the Technical Specification.</p>
<p>BATTERY SYSTEM: If the bidder itself has not manufactured or supplied Batteries for grid interactive battery energy</p>	<p>Bidder understands "the bidder shall associate/collaborate for procurement/ sourcing of batteries</p>	<p>Bidder's understanding is not correct. Bidder to</p>

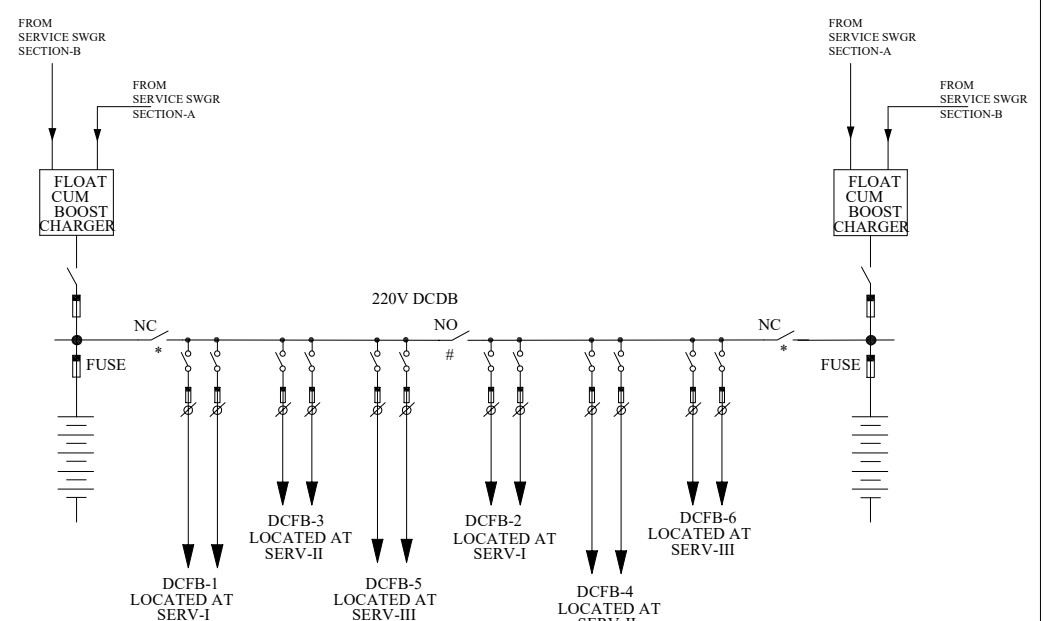
<u>Tender Document Condition</u>	<u>Bidder's Queries</u>	<u>NTPC Reply</u>
storage system of cumulative installed capacity of minimum 20 MWh, out of which at least one grid interactive battery energy system should be of 5 MWh capacity or higher, in that case the bidder shall associate/collaborate for procurement/ sourcing of batteries from Battery Manufacturer who has manufactured and supplied Batteries.....	from Battery Manufacturer who has manufactured and supplied Batteries" means bidder may not directly procure BESS battery from Battery Manufacturer and can make such procurement from an intermediary entity also which in turn can procure the battery from Battery Manufacturer who has manufactured and supplied Batteries of cumulative capacity of minimum 20 MWh for grid interactive battery energy storage system(s), out of which at least one reference grid interactive battery energy storage system should be of minimum 5 MWh capacity supplied in a single order. NTPC may clarify and confirm.	associate/collaborate with either Battery manufacturer or supplier meeting provenness criteria as specified in Technical specifications. Bidder may refer Technical Amendment-02.



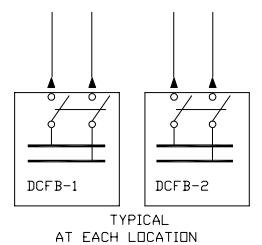
MULTIPLE LOAD CENTERS AS PER REQUIREMENT



TYPICAL FEEDERS FOR VITAL LOADS



OUTGOING DC FEEDERS AS PER REQUIREMENT



TYPICAL
AT EACH LOCATION

LEGEND:


- The diagram illustrates various electrical symbols used in circuit diagrams, each paired with its name:

 - LIGHTNING ARESTOR**: Represented by a horizontal line with a rectangle in the middle and two vertical lines at the ends.
 - VT**: Represented by a vertical line with a rectangle in the middle and two horizontal lines at the ends.
 - EARTH SWITCH**: Represented by a horizontal line with a switch symbol (a small circle with a diagonal line) in the middle.
 - CT**: Represented by a horizontal line with a switch symbol (a small circle with a diagonal line) in the middle.
 - CIRCUIT BREAKER**: Represented by a square symbol.
 - DISCONNECTER**: Represented by a circle with a horizontal line through the center.
 - BUSHING CT**: Represented by a rectangle with a circle inside it.
 - DOUBLE BREAK LINE ISOLATORS**: Represented by two horizontal lines with a switch symbol (a small circle with a diagonal line) in the middle.
 - CIRCUIT BREAKER DRAWOUT TYPE**: Represented by a square symbol with two arrows pointing outwards from the top and bottom.
 - TRANSFORMER**: Represented by two overlapping circles.

NOTES:-

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH TECHNICAL SPECIFICATION.
2. NUMBER OF FEEDERS SHOWN ARE INDICATIVE. SAME SHALL BE PROVIDED AS PER PROJECT REQUIREMENT.
3. THE SELECTION OF LT OUTGOING FEEDERS SHALL BE AS FOLLOWS:
 - (i) UPTO 400 A - MCCB
 - (ii) ABOVE 400 A - BREAKER
4. BIDDER SHALL PROVIDE DC SYSTEM/UPS SYSTEM OF ADEQUATE CAPACITY FOR MEETING ALL DC/EMERGENCY AC LOADS.
5. SPARES IN SWITCHGEAR SHALL BE PROVIDED AS PER TECHNICAL SPEC.
6. WHEREVER NO RATING HAS BEEN INDICATED, SIZING SHALL BE CARRIED OUT AS PER SYSTEM REQUIREMENT
FINAL FEEDING ARRANGEMENT TO BE DECIDED DURING DETAILED ENGINEERING.
7. MAIN PQ METERS FOR PPC SHALL BE PROVIDED AT POI. STANDBY PQM SHALL ALSO BE PROVIDED AT
TIE TRANSFORMER FEEDERS FROM 33KV POOLING SWITCHGEAR.

													27-10-25
	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ES	APPD	DATE			
	CLEARED BY												

		<p align="center">NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION</p>	
PROJECT		<p align="center">BATTERY ENERGY STORAGE SYSTEM (BESS) AUX POWER SUPPLY ARRANGEMENT</p>	
TITLE		<p align="center">SINGLE LINE DIAGRAM</p>	
SIZE A1	SCALE NTS	DRG. NO. 9999-000-POE-A-001	REV. NO. C