

**Tender for Design, Supply, Testing, and Installation &
Commissioning along-with Comprehensive Annual Maintenance
Contract (CAMC) for 5 years of Battery Energy Storage Systems
(BESS) on Turnkey Basis under UI-ASSIST initiative with BRPL in
NCT of Delhi**

TERI/MAT/2019–20/002

Tender Date: 16-12-2019

Due Date for Submission of Bids: 17-01-2020

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6-C, Darbari Seth Block
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Table of contents

Part 1: General Information.....	3
Part 2: Instruction to bidders.....	8
Section 1: Contents of the Tender document	8
Section 2: Eligibility Conditions.....	11
Section 3: Preparation of tender	13
Section 4: Submission of tender	17
Section 5: Tender opening and evaluation	18
Section 6: Procedure for finalization of Bid	19
Part 3: General conditions of contract	21
Part 4: Scope of Work & Technical Specifications	32
Part 5: TECHNICAL BID	46
Part 6: Financial Bid	48
Format 1: Covering Letter.....	50
Format 2: General Particulars of the Bidder.....	51
Format 3: DECLARATION BY THE BIDDER	52
Format 4: Price fall clause.....	53
Format 5: Format for Earnest Money Deposit (EMD)	54
Format 6: Performance Bank Guarantee.....	55
Format 7: Format for Power of Attorney	57
Format 8: Format for experience letter.....	59
Format 9: CA Certificate for Audited Statement	60
Format 10: Consent Letter for financial contribution in the project.....	61
ANNEXURES	
Annexure I: BESS control flow diagram for Category-A.....	62
Annexure II: BESS control flow diagram for Category-B.....	63
Annexure III: BESS control flow diagram for Category-C.....	64

List of tables

Table 1: Particulars of Items	3
Table 2: Schedule of activities	3
Table 3: Description of annexures	5
Table 4: Particulars of Tender.....	7
Table 5: Detailed evaluation criteria and scheme of evaluation	12
Table 6: Category-wise BESS descriptions for all 3 sites.....	32
Table 7: Rated useful capacity of BESS advanced-level.....	36
Table 8: Rated useful capacity of lithium-ion battery	36
Table 9: Detailed description of PCS/ PCU	40
Table 10: National/ International Standards for Battery Energy Storage System.....	42
Table 11: National/ International Standards for PCS/ PCU	43
Table 12: Requirements of AC/DC Protection System	43
Table: 13 Descriptions of BESS for technical bid	46
Table: 14 Descriptions of BESS for financial bid	48

Mandatory to read all the terms and conditions before signing the tender

Tender Notice

The Energy and Resources Institute (TERI)

6-C, Darbari Seth Block

India Habitat Centre, Lodhi Road, New Delhi – 110003, Delhi, India

Background

Tender for Design, Supply, Testing, Installation & Commissioning along-with Comprehensive Annual Maintenance Contract (CAMC) for 5 years of Battery Energy Storage Systems (BESS) on Turnkey Basis under UI-ASSIST initiative with BRPL in NCT of Delhi

Section 1: Project Background & Objective

Large penetration of Distributed Energy Resources (DERs), such as rooftop solar into the Distribution Network (DN), fast changing demand patterns and the electrification of transportation through electric vehicles pose technical challenges to existing power distribution networks. Technical/operational challenges in terms of loss of load, deviations in power flow, fault/congestion in electricity distribution network and power quality distortions are expected to affect the performance of distribution utilities. This will impact the overall power system stability and dynamic behavior of the system. Grid-scale energy storage solutions possess the capability to support the sustainable growth of renewable energy sources' integration with the power system and provide grid-balancing services ensuring energy security and reliability. Developments in energy storage are vital if India has to meet its 2022 target of 175 GW of renewable energy based installed capacity. However, the relatively high cost of technology and a lack of project implementation experience pose initial hiccups. At the same time, strengthening the power distribution sector is among the topmost priorities of the union Government which has taken many initiatives through various policies and regulations to provide reliable & affordable electricity to all and bring down the AT&C losses across the country. Battery energy storage presents a strong technology case for resolving a significant proportion of the current operational issues faced by DISCOMs in the country. UI-ASSIST project is a step in that direction which aims to demonstrate various use-cases of BESS through pilot implementation.

UI-ASSIST: US-India collaborative for smart distribution System with Storage

UI-Assist (US-India collaborative for smart distribution system with storage) is a bi-lateral consortium of 30 collaborating entities, led in India by Indian Institute of Technology (IIT) Kanpur and by Washington State University (WSU) in the USA. Each of the consortium partners has an established track record of contributing to the significant changes already occurring in electric distribution systems. This collaborative project aims at addressing essential issues related to the adoption and deployment of smart grid concepts along with Distributed Energy Resources (DERs) including storage in the distribution network. An important objective of this project is to bridge the gap between smart grid, storage and renewable energy research and facilitate its subsequent adoption by distribution utilities in their systems through pilots with the joint efforts of the Indo-US consortium. For more details, refer to: <https://uiassist.org/>

Role of 'The Energy and Resources Institute (TERI)', New Delhi

TERI was established in 1974 with the initial focus on promoting efficient use of resources and reducing the adverse impact on environment and climate. TERI's research and research-based solutions have had a transformative impact on industry as well as on communities. TERI has fostered international collaboration on sustainability action by creating a number of platforms and forums by translating research into technology products, technical services, as well as policy advisory and outreach. All activities in TERI move from formulating local and national-level strategies to shaping global solutions to critical issues (www.teriin.org). Under the UI-ASSIST initiative, TERI has undertaken research on battery energy storage systems including their applications, operational control algorithms, ownership models etc., for the distribution downstream network. Further, TERI in association with its partner utility BSES Rajdhani Power Limited (BRPL) has conducted a detailed feasibility study within BRPL license area in the NCT of Delhi, and identified few locations to implement pilot to showcase BESS capabilities at the distribution level and develop appropriate model-cases.

About BRPL, New Delhi

BSES Rajdhani Power Limited (BRPL) is a joint venture of Reliance Infrastructure Ltd. & Government of NCT of Delhi. As a distribution licensee, they supply power to an area spread over 750 sq. km. with a consumer density of approximately 3,100 per sq-km. BRPL has achieved operational excellence by providing 24x7 reliable and quality power to its consumers for more than a decade. Catering to a peak demand of 3081 MW (recorded in summer 2018), the distribution utility has made remarkable efforts to limit the AT&C losses to fewer than 8%. BRPL is a proactive distribution licensee which is keen to implement several interventions which would not only help them in their day-to-day operations, but also help in operating in an environment friendly, sustainable and efficient manner. BRPL is also undertaking new initiative and interventions, namely rooftop solar power, promotion of electric vehicles, distributed battery energy storage, etc. (www.bsesdelhi.com/web/brpl)

Part 1: General Information

TERI invites bids from prospective bidders through tendering for **site survey, planning, design, engineering, and transportation to site, insurance, supply at site, un-loading, handling, installation, integration, testing, commissioning & demonstration and comprehensive AMC for acceptance of all equipment/ materials and miscellaneous items required completing the BESS installation**, as per the details given in tender document.

Table 1: Particulars of Items

Sl. No.	Item	Tender No.	Quantity Required	Tender fee (INR)	Earnest Money Deposit
1	Battery Energy Storage Systems to be supplied at New Delhi, India	<u>TERI/MAT/2019–20/002</u>	Systems for 3 pilot locations	1,000.00	3% of the bid cost

The tender document is available on TERI's website<<http://www.teriin.org/Announcements/>> from December 16th, 2019. It will also be made available at UI-Assist¹ official project website. Interested bidders may view/ download the Bid document, seek clarification, and submit their Bid up to the date and time mentioned in the table 2.

Table 2: Schedule of activities

Sr. No.	Milestone	Date and time (dd-mm-yyyy; hh:mm)
1	Release of tender (via appropriate medium)	16.12.2019; 4:00PM
2	Last date for submission of written questions by bidders	29.12.2019; 5:00PM
3	Pre-Bid Meeting (Technical presentation by TERI and General Q&A)	31.12.2019; 11:00 AM
4	Site visit	03.01.2020; 11:00AM
5	Response to Queries	07.01.2020; 5:00PM
6	Last date for submission of technical bid and financial bid response	17.01.2020; 5:00 PM
7	Opening of technical bid responses	20.01.2020; 11:00AM
8	Declaration of shortlisted firms on the basis of technical evaluation will be published on TERI/ UI-ASSIST official websites	27.01.2020; 4:00PM
9	Technical Presentation by the shortlisted bidders (presentation should be shared at least two days before the presentation date)	03.02.2020; 11:00AM
10	Financial bid opening of only technically qualified bidders	07.02.2020; 11:00AM
11	Finalization of Bidder (to be notified via website/ e-mail as necessary)	12.02.2020; 4:00PM

¹ <https://uiassist.org/>

*Note: Intimation will be given only to the selected Bidder(s) through E-mail, or list will be published on TERI/ UI-ASSIST official website.

The bidders need to submit the cost of the bid document and the EMD as stated above in the table through Demand Draft as bid document fees and as EMD in favour of The Energy and Resources Institute (TERI), payable at Delhi. TERI reserves the right to reject any or all tenders without assigning any reason thereof. The decision of TERI will be final and binding.

(General Manager-Materials)
TERI

Mandatory to read all the terms and conditions before signing the tender

Checklist of Annexures

(The following information/documents are to be annexed and flagged by the Bidders along with the bid)

Table 3: Description of annexures

Sr. No.	Annexure No.	Particulars	Yes/No Flag No.
1	Annexure I (a)	Details of Tender document fees (Demand Draft no., date, amount and bank name)	
2	Annexure I (b)	Details of Earnest money (Demand Draft no., Date, Amount and bank name)	
3	Annexure I (c)	General Particulars of the bidder as per tender documents	
4	Annexure I (d)	Declaration by the bidder as per tender document	
5	Annexure II	A copy of valid GST registration certificate and PAN	
6	Annexure III	Overall Average Annual Turnover of the Company/ Firm/ Corporation / NGO in the latest last three financial years (A summarized sheet of turnover of last three Financial Years certified by a registered CA) along with the latest balance sheet	
7	Annexure IV	A summarized sheet of cumulative experience, of past five years in successfully Supplying, Installation and Commissioning of BESS system along-with Purchase Order (PO) and completion certificates from central / State Government Agencies / PSU/ Private Firms*	
8	Annexure V	Valid CPRI/ ERDA/ equivalent international laboratory type test certificate of offered battery storage system and PCS. (Test certificate should have been issued on or, before 13-12-2019) Number of certificates: Certificate for any one of the above Certificate for any two or, more of the above	
9	Annexure VI	Others (i) An undertaking that the service center/ office are operational. The details of service center / office should be submitted with technical bid. (ii) An undertaking by the bidder, that no child labour will be used.	
10	Annexure VII	Duly filled and signed technical bid and technical specifications	

Please flag the annexure and write flag number in the box.

*Bidder's experience should be in supply, installation/commissioning (contracts executed, completed and handed over) and maintenance of BESS.

Note:

- Bids received without supporting documents for the various requirements mentioned in the tender document may be rejected.
- The tender document should be in proper spiral binding and all annexures and their flags should be in proper order.

(Signature of Bidder with seal)

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Table 4: Particulars of Tender

1	Tender No.	<u>TERI/MAT/2019-20/002</u>
2	Particulars of Work	Site survey, planning, design, engineering, transportation to site, insurance, supply at site, unloading, handling, installation, integration, testing, commissioning & demonstration for acceptance of all equipment/ materials and miscellaneous items required to complete the BESS installation, at identified locations within BRPL license area in the NCT of Delhi.
3	Last date and time of submission of tender documents	17.01.2020; IST 5:00 PM
4	Period of validity of rates for acceptance	06 months from opening of financial bid
5	Date and time of opening of tender (Technical bid)	20.01.2020; IST 11:00 AM
6	Date and time of opening of tender (Financial bid)	07.02.2020; IST 11:00 AM
7	Venue for opening of financial bids/ Pre-bid meeting	The Energy and Resources Institute (TERI), 6-C, Darbari Seth Block, India Habitat Centre, Lodhi Road, New Delhi – 110 003, Delhi, India

1. Bidders are advised to study the tender Document carefully. Submission of bid against this tender shall be deemed to have been done after careful study and examination of the procedures, terms and conditions of the tender document with full understanding of its implications.
2. The Bids will be opened in the presence of bidder's representatives, who choose to attend the bid-opening, at the venue, date and time as mentioned in the above Table.

(Signature of Bidder with Seal)

Part 2: Instruction to bidders

Section 1: Contents of the Tender document

1.1 CONTENT OF TENDER DOCUMENT

1.1.1 The tender procedure and contract terms are prescribed in the tender documents. In addition to the tender Notice, the Bidding documents include.

PART – I: Technical

Part – 1: Tender Notice

- i. Tender Notice
- ii. Covering Letter
- iii. Checklist of Annexures
- iv. Particulars of Tender
- v. General Particulars of Bidder
- vi. Declaration by Bidder

Part – 2: Instruction to Bidders

Section-1: Contents of tender document
Section-2: Eligibility condition
Section-3: Preparation of tender
Section-4: Submission of tender
Section -5: Tender opening and evaluation
Section-6: Procedure for finalization of Bid

Part – 3: General Condition of Contract

Part – 4: Scope of Work & Technical Specifications

Part – 5: Details of Warranty

Part – 6: Technical Bid

Part – II: Financial Bid

Part – 7: Formats & Annexures

The Bidder is expected to examine all instructions, forms, terms, and specifications as mentioned in the tender document. Failure to furnish all information required by the tender documents or submission of a bid not substantially responsive to the Bid Document in every respect will be at the Bidder's risk and is likely to result in out-right rejection of the bid.

1.2 LOCAL CONDITIONS

It shall be imperative for each bidder to fully understand the local conditions and factors, which may have any effect on the execution of the works covered under these documents and specifications. TERI shall not entertain any request for clarifications from the Bidder, regarding such local conditions.

1.2.1 Bidders eligible for bidding: Bidding is open to bidders from within the Employer's country. Consortium/ Joint Venture of two or, more firms as partners are not allowed.

1.2.2 Cost of bidding: The Bidder shall bear all costs associated with the preparation and submission of its bid including site visit, and the Employer will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process. Further the purchaser has the rights to get sample of Li-Ion/Advanced Lead Acid Battery Bank tested by any reputed independent test lab (approved by TERI/BRPL) at the cost of bidder.

1.2.3 Language of the Bid: The bid prepared by the Bidder and all correspondence and documents related to the bid exchanged between the Bidder shall be written in English language.

1.2.4 Pre-Bid meeting: A pre-bid meeting shall be organized by TERI/BRPL at the time and venue specified in Part 1. All the queries related to this tender must be shared with TERI at least one day before the date of pre-bid through written mode of communication. All the queries shall be replied in the pre-bid, in case any changes are required in the tender document the same shall be affected in the form of corrigendum to this tender.

1.2.5 Guided site Visit: The Bidders are advised to visit sites (at their own expense), prior to the submission of the bid, and make surveys and assessments as deemed necessary for proposal submission. The site visit will be facilitated by BRPL and TERI officials. Any additional equipment/ system required for successful implementation of BESS and not covered during initial site visit before submission of proposal shall be supplied. No payment on this account shall be paid by TERI/BRPL. A bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. Submission of a tender by a bidder implies that the bidder has read this notice and all other contract documents and has made itself aware of the scope and specifications of the work to be done and local conditions and other factors bearing on the execution of the work.

1 The Bidder is advised to visit and examine the site where the facilities are to be installed and its surroundings and obtain for itself, on its own responsibility, all information that may be necessary for preparing the bid and entering into a contract for supply and installation of the facilities. The costs of visiting the site shall be borne by the bidder fully.

2 The Bidder and any of its personnel or agents will be granted permission by the BRPL/TERI to enter upon its premises and lands for the purpose of such inspection, but only upon the express condition that the Bidder, its personnel and agents will release and indemnify the BRPL/TERI and its personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of the inspection.

1.3 CLARIFICATION:

A prospective Bidder requiring any clarification of the Tender Documents may contact TERI in writing or via email only at TERI's mailing address indicated in the invitation for tender.

Enquiries/clarifications may be sought by the Bidder as per the following:

Technical queries: Mr. Ashish Kumar Sharma, Research Associate, Electricity and Fuels Division, TERI

E-mail: ashish.sharma1@teri.res.in

Tender related queries: Ms. Trisha Sharma, Deputy Manager (Materials), TERI

E-mail: trisha.sharma@teri.res.in

1.4 AMENDMENT OF TENDER DOCUMENTS

At any time prior to the submission of the tender the TERI may for any reason, whether at its own initiative or in response to a clarification requested by the Bidder, modify the tender documents by amendments. Such document shall be made available on websites, time to time.

All are requested to remain updated with the website. No separate reply/intimation will be given elsewhere.

1.5 DISCLAIMER

- I. This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder should conduct its own estimation and analysis and should check the accuracy, reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their own interest.
- II. Other person under the law or contract, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this Document, any matter deemed to form part of this Document, provision of Services and any other information supplied by or on behalf of Purchaser or its employees, or otherwise arising in any way from the selection process for the Supply.
- III. Though adequate care has been taken while issuing the Bid document, the Bidder should satisfy itself that Documents are complete in all respects. Intimation of any discrepancy shall be given to this office immediately.
- IV. This Document and the information contained herein are Strictly Confidential and are for the use of only the person(s) to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors).

(Signature of Bidder with seal)

Section 2: Eligibility Conditions

Eligibility Conditions for Bidders

All completed tenders received will be evaluated by a panel comprising of experts from both “The Energy Resources Institute (TERI) & BRPL”, though they may seek information from respective bidders where ever they consider that necessary.

1. Minimum Eligibility Conditions:

- i. The bidder should be an organization registered/ incorporated under Companies Act, 1956 or Companies Act. 2013, and further amendment(s).
- ii. Bidders should not be under a declaration of ineligibility for corrupt and fraudulent practice. In this regard an undertaking (self-certificates) has to be provided that the bidder has not been blacklisted/ debarred by any central/state government or any other institution including electricity boards.
- iii. The bidder should have minimum three years of experience in executing contract of BESS across the globe. Purchase Order/ Completion Certificate of past three years should be enclosed.
- iv. The Bidder should have valid GST and PAN registration certificate. A copy of which should be enclosed.
- v. **Overall Average Annual Turnover of the Company/ Firm/ Corporation in the last three financial years(FY 2016-17, 2017-18& 2018-19) should be at least INR 10 Crore (Ten Crore).** This must be the individual Company /Firm/ Corporation turnover and not that of any group of Company/ Firm/ Corporation. A summarized sheet of average turnover certified by registered CA should be compulsorily enclosed along with corresponding balance sheets.
- vi. The Bidder having installed & operationalized the battery energy storage system(s) of cumulative installed capacity of 125 kW for 2 hours or higher, out of which at least one grid interactive battery energy storage system should be of 50 kW for 2 hours capacity or, higher (in India or globally). Certificate issued by the Employer/ Client certifying the operation without any adverse remark along-with copy of purchase order for at least 1 year prior to the date of techno-commercial bid opening, shall be provided.
- vii. Bidder must meet the Technical Specifications as stipulated in the Tender, and the bidder(s) must be able to provide the after-sales warranty and support services.

Note: Subsequent to award of contract, no deviation is acceptable in performance. In case any bidder is found unsatisfactory during the execution process, the award will be cancelled. In such an event, TERI/BRPL reserves the right to terminate the contract, impose strict action against the bidder(s), which inter-alia extends to other provisions of tender.

2. Other Eligibility Conditions

The 'Financial bids' of only those bidders shall be opened, who qualify in 'Minimum Eligibility Conditions' as above and score at least 70% (Seventy percent) Points in 'technical evaluation'. The 'Points' for the 'technical evaluation' shall be assigned as under:

Table 5: Detailed evaluation criteria and scheme of evaluation

Sr. No.	Criteria	Point/ Marks
1	Bidder's experience as a prime contractor for Supply, installation, Commissioning and maintenance of Lithium/advanced lead acid based BESS in past five years along with Purchase order and Completion certificate from central / State Government Agencies / PSU / Private firms More than 250 kWh More than 500 kWh More than 750 kWh	10 15 20 (Maximum)
	OR	
	Bidder's cumulative experience as sub-contractor for installation, Commissioning and maintenance of Lithium/advanced lead acid based BESS in past five years along with Purchase order and Completion certificate from central / State Government Agencies / PSU / Private firms More than 500 kWh More than 700 kWh More than 1,000 kWh	5 10 20 (Maximum)
2	Bidders will also make a techno-economic presentation of BESS (offered in the bid) to the officials of BRPL and TERI. Presentation must include brief about following points: <ul style="list-style-type: none"> Introduction to technology and associated equipment such as PCS, Battery cell/modules, Spare parts etc. (with specifications) Suitability of the technology characteristics for applications mentioned in the tender document Brief overview of major terms & conditions of the contract (if selected) Techno-economic analysis indicating cost of BESS in terms of per unit cycle cost and per unit cost Any other information bidder desires to provide More information may be requested from the bidder for evaluation purpose, if required. Bidders have to provide the information as and when requested.	50
3	Financial evaluation shall be carried out on the basis of total BESS cost for supply, installation, commissioning and maintenance, per unit cycle cost (INR/ cycle) or per unit cost (INR/ kWh) etc.	30
4	In-kind contribution in R&D activity related to BESS sizing & control algorithm, financial concession, disposal plan and safety.	Preferred

Note: In case of similar score obtained during technical and financial evaluation stage, in-kind contribution in R&D activity related to BESS sizing & control algorithm, financial concession, disposal plan and safety will be given preference.

Section 3: Preparation of tender

3.1 LANGUAGE OF BID AND MEASURE

- 3.1.1 All the tender related documents exchanged between Bidder and TERI shall be written in English language provided that any printed literature furnished by the Bidder may be written in another language as long as accompanied by an English translation of its pertinent passages in which case, for purpose of interpretation units of measurement shall be MKS system.

3.2 DOCUMENTS COMPRISING THE BID

- 3.2.1 The tender prepared by the Bidder shall comprise the following components:

- a) A covering letter as provided in tender document as Format – 1.
- b) General particulars of bidder, as provided in tender document as Format - 2.
- c) Declaration by the Bidder, as provided in tender document as Format - 3.
- d) Price Fall Clause to be provided by the Bidder, as provided in tender document as Format-4
- e) Details of EMD to be furnished by the bidder, as per tender document no Format-5.
- f) For submission of Performance Bank Guarantee, format no 6 to be used.
- g) Power of Attorney to be provided by the bidder, as per Format no 7.
- h) Experience letter as per format no-8.
- i) Details of CA audited balanced sheet to be provided by the bidder in Format 9.
- j) Consent letter for in kind donation to be provided as per format no 10.
- k) Documentary evidence establishing that the bidder is eligible to Tender and is qualified to perform the contract if its tender is accepted. Check list of Annexures as provided in tender document
- l) Tender document signed on each page, as a confirmation by the Bidder to accept all technical specifications/ commercial conditions along with all necessary enclosures/ annexures.
- m) Duly filled technical bid format.
- n) Declaration by the Bidder that no child labour has been employed.
- o) Bidder will provide an undertaking, that service centre will be opened before commencement of the work.
- p) A print-out (colored copy) of technical presentation.

3.3 BID PRICE

- 3.3.1 The bidder shall indicate prices on the appropriate financial bid schedule (in INR)

The expected bid price is INR 2 Crore for cumulative 400 kWh capacities at 3 sites.

3.3.2 DUTIES AND TAXES

The price quoted should include all taxes and duties, GST, surcharge on income tax, etc., if any. A Bidder shall be entirely responsible for all taxes, duties, license fees, etc. All taxes payable as per Government income tax & GST norms will be payable by the Bidder. TDS will be deducted from the payment of the Bidder as per the prevalent laws and rules of Government of India and Government of NCT of Delhi in this regard. All compliances (State/ Central/Local - GST / WCT/ ESI/ PF/ Labour laws etc. is to be met by the Bidder/ Contractor) and the same is to be produced by the Bidder / Contractor at the time of payment. The project cost/ Bid Price shall be inclusive of all duties and taxes, insurance etc. The prices quoted by the firm shall be complete in all respect and no price variation/ adjustment shall be payable, once price bid is accepted by TERI.

3.3.2.1 Variation in taxes, duties & levies:

- I. PURCHASE ORDER value shall not be subject to any variation on account of variation in Exchange rate(s)
- II. No variation in taxes, duties, statutory levies and any other compliance including ESI/PF etc. will be accepted after bidding.

3.3.2.2 Taxes & Duties on raw materials & bought out components:

Taxes & Duties on raw materials & bought out components are included in Order Value and are not subject to any escalation or variation for any reason whatsoever.

3.4 BID CURRENCIES

Prices shall be quoted in Indian Rupees (INR) only

3.5 PERFORMANCE GUARANTEE:

The successful Bidders, who execute the agreement with TERI for the work, shall have to furnish a security amount equivalent to 10% of contract price in the form of Performance Bank Guarantee (PBG – as per format no 4) valid for a period of 66 months from the date of execution of agreement. The bank guarantee may be issued by a nationalized bank and shall be in favour of 'TERI'. The aforesaid Bank Guarantee shall be furnished prior to the execution of agreement.

3.6 PERIOD OF VALIDITY OF TENDER

3.6.1 Validity of the price offer should be 6 (six) months from the date of opening of the financial bid of the tenders. Without this validity the tenders will be rejected.

3.6.2 In exceptional circumstances; TERI will solicit the Bidder's consent to an extension of the period of validity. The request and the response thereof, shall be made in writing. The contract performance security provided under clause 3.5 above shall also be suitably extended.

3.7 BID SECURITY (Earnest Money)

- 3.7.1 The bidder shall furnish, as part of its bid, bid security of 3% of the purchase order in the form of demand draft issued by a nationalized bank. The details of the same to be furnished by the bidder as per format no. 5.
- 3.7.2 Any bid not secured with the tender fee and earnest money will be rejected by TERI as non-responsive.
- 3.7.3 No Interest shall be payable on the amount of Earnest Money Deposit (EMD) to those Bidders who fail to get the contract and the EMD will be released after the finalization of tender 3.7.4 The tender security (earnest money) may be forfeited:
- a) If a bidder withdraws its tender during the period of tender validity specified by the Bidder in the tender.
- b) If the successful Bidder fails to sign the contract within stipulated period and submit the performance security within the specified period of 15 days from the date of finalization of order.
- 3.7.4 EMD of successful bidder shall only be released after signing of agreement and submission of 10% (Ten percent) of contract price as performance bank guarantee.

3.8 FORMAT AND SIGNING OF TENDER

- 3.8.1 The bid must contain the name and places of business of the persons making the tender and must be signed and sealed by the Bidder with the usual signature of the authorized signatory. The name and designations of all persons signing should be typed or printed below the signature.
- 3.8.2 Tender by Corporation/ Company/ Firm / NGO must be signed with the legal name of the Corporation/ Company/ Firm / NGO by the 'President', Managing director or by the 'Secretary' or other designation or a person duly authorized.
- 3.8.3 The original copy of the tender shall be typed or written in indelible ink and shall be signed by the bidder or a person duly authorized to bid and bidder to the contract. The letter of authorization shall be submitted along with power-of-attorney. All the pages of the bid shall be initialed by the person or persons signing the tender.
- 3.8.4 The bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder in which case such corrections shall be initialed by the person or persons signing the tender.

3.9 ALTERNATIVE BIDS:

Bidders shall submit bids, which comply with the bidding documents. Alternative bids will not be considered. The attention of Bidders is drawn to the provisions of clause 3.12.3 & 3.12.4 regarding the rejection of Bids, which are not substantially responsive to the requirements of the bidding documents.

3.10 EVALUATION OF BID

3.10.1 PROCESS TO BE CONFIDENTIAL:

Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process. Any effort by a bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the bidder's bid.

3.11 CLARIFICATION OF BIDS

To assist in the examination, evaluation and comparison of Bids, the Purchaser may, at its discretion, ask the bidder for clarification of its Bid. All responses to requests for clarification shall be in writing and no change in the price or substance of the bid shall be sought, offered or permitted.

3.12 PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS

- 3.12.1 Purchaser will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order.
- 3.12.2 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.
- 3.12.3 Prior to the detailed evaluation, Purchaser will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.
- 3.12.4 Bid determined as not substantially responsive will be rejected by the Purchaser and/or the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

(Signature of Bidder with seal)

Section 4: Submission of tender

- 4.1 **Submission of tender:** The bid shall be submitted as per the guidelines given in the tender document.
- 4.1.1 The tender must be completed in all technical and commercial respect and should contain requisite certificates, drawings, informative literature, etc., as required in the specification.
- 4.1.2 **Technical and financial bid as per format are to be submitted in two separate and sealed envelopes marked Part-I & Part-II.**
- 4.1.3 First sealed envelope (Part-I) should contain earnest money, technical specification, brochure literature, other required documents etc. It should be super scribed with tender number. **All parts of tender documents except financial bid duly signed should be submitted in the first envelope.** Requisite earnest money, tender fees in the form of Demand Draft should be attached.
- 4.1.4 **Second sealed envelope (Part-II) should contain financial bid only.** It should be super scribed with Tender No. and 'Financial bid'. Anything in regard of financial condition, payment terms, rebate, etc. mentioned in financial bid may make the tender invalid. Therefore, it is in the interest of the bidder not to write anything extra in part-II except price. Both the envelopes should be put into one bigger envelop super scribed 'Complete bid'. Also, the soft copy of the complete bid document must be submitted in a USB drive.
- 4.2 **EXPENSES OF AGREEMENT:** A formal agreement for a period of 05 (Five) years from the date of commissioning and handing over of the system shall be entered into between TERI and the Contractor/ Bidder for the proper fulfillment of the contract. The expenses of completing and stamping of the agreement shall be paid by the successful bidder.
- 4.3 **DEADLINE FOR SUBMISSION OF BIDS:**
- 4.3.1 Bids must be submitted by the bidder in the date; time and address specified in the tender notice/documents.
- 4.3.2 The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents. All rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.
- 4.4 **MODIFICATIONS AND WITHDRAWAL OF BIDS:**
The Bidder is not allowed to modify or withdraw its Bid after the Bid's submission.
- 4.5 **DOCUMENTS COMPRISING THE BID:**
The bidders are required to submit the bids in two parts and submitted in 1 original + 1 duplicate to the following address:-
The Deputy Manager (Materials)
The Energy and Resources Institute (TERI)
6-C, Darbari Seth Block, IHC Complex
IHC Complex, Lodhi Road, New Delhi – 110003, Delhi, India

(Signature of Bidder with seal)

Section 5: Tender opening and evaluation

5.1 OPENING OF TENDER

The procedure of opening of the tender shall be as under:

- 5.1.1 First Part (Part-I) submitted having tender specification and super scribed as 'Technical Bid' shall be opened at the time and date mentioned in the tender notice by TERI's representatives in the presence of Bidders, who choose to be present.
- 5.1.2 Second Part (Part-II) containing Financial Bid shall be opened (after obtaining clarifications and establishing technical suitability of the offer) as per schedule. Second part of only those Bidders shall be opened whose first part (Part-I) shall be found technically suitable.

CLARIFICATION OF TENDER

- 5.2 To assist in the examination, evaluation, and comparison of bids TERI may at its discretion ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing.
- 5.3 TERI reserves the right to interpret the Bid submitted by the Bidder in accordance with the provisions of this document and make its own judgment regarding the interpretation of the same. In this regard TERI shall have no liability towards any Bidder and no Bidder shall have any recourse to TERI with respect to the selection process. TERI shall evaluate the Bids using the evaluation process specified in this document or as amended, at its sole discretion. TERI's decision in this regard shall be final and binding on the Bidders.

(Signature of bidder with seal)

Section 6: Procedure for finalization of Bid

6.0 The Procedure for Finalization of Bid would be as follows:

6.1 Finalization of Bid:

First the Technical bids shall be opened and evaluated.

Then the price bid of technically qualified bidders shall be opened.

The lowest rate (i.e., L-1) shall be the party to be awarded the contract. However, TERI reserves the right to split the order to more than one bidder if the technically qualified bidders can match the L-1 price.

6.2 Finalization of Empanelment:

First the Technical Bids shall be opened and evaluated.

Then the price bid of technically qualified parties shall be opened.

- The lowest rate (i.e. L-1) received (and in turn approved by the competent authority) would be the '**Approved Rate**'.
- Approved lowest rate (L-1) would be offered to those lowest Bidders (i.e. L-2, L-3 and so on) having price not more than 15% of lowest approved rates (L-1) and will be empanelled and awarded as per the discretion of TERI & BRPL, remaining of total bid quantity or as per his capacity given in the bid, whichever is lower.
- After work order is placed for work, it must be executed within the time schedule stipulated in work order. In case of delay (for any reason other than due to Force Majeure conditions or any extension thereof granted to him by TERI) a penalty equal to 1.0% of the price of the unperformed services for each week (For the purposes of calculation of delay, part of week shall be treated as week) of delay until actual performance up to a maximum deduction of 10% of the delayed services.
- Release of payment to Contractor/ Bidder will be done as per the payment schedule mentioned clause 28 of Part-3.

6.3 If the L-1 quote is more than 5% estimated value, then TERI reserves the right to negotiate with (lowest) L-1 bidder before finalization of the tender.

6.4 TERI reserves the right at the time of awarding the contract to increase or decrease the quantity of goods and similar locations of supply without any change in price or other terms and conditions.

6.5 TERI reserves the right to accept any bid and to reject any or all bids.

6.6 Notification of awarding the contract:

6.6.1 Successful Bidder(s) for contract shall be intimated in writing

6.6.2 From the time of Bid submission to the time of contract award, if any Bidder wishes to contact the Purchaser on any matter related to the Bid, it should be done in writing.

6.6.3 Any effort by a Bidder to influence the Purchaser and/or in the Purchaser's decisions in respect of Bid evaluation, Bid comparison or Contract Award, will result in the rejection of the Bidder's Bid.

6.7 CONTRACT

Before execution of the work, a contract agreement for execution of the work shall be signed by the Bidder with TERI within 15 days of communication from TERI. In case agreement is not executed within the stipulated time, earnest money will be forfeited.

(Signature of Bidder with Seal)

Mandatory to read all the terms and conditions before signing the tender

Part 3: General conditions of contract

- 1.0 In the deed of contract unless the context otherwise requires:
- 1.1 TERI shall short list the successful Bidder (s) on 'Rate Contract' basis after verifying their capacity (or may choose one party, i.e., L1, to execute the order). The Project shall be executed by TERI. The successful Bidder(s) shall have to sign the contract with TERI.
- 1.2 Preference will be given to the bidder who has applied for all 3 aforementioned sites, however subject to availability of the desired technologies, multiple bidders may be considered.

DEFINITIONS:

- 1.3 'TERI' shall mean the Director-General of TERI or his representative and shall also include its successors in interest and assignees. The 'Contractor' shall mean (successful bidder), i.e., the person whose tender has been accepted by TERI and shall include his legal representatives and successors in interest.
- 1.4 The agreement shall be on turn-key basis. The work shall be completed within stipulated time from the date of placement of work order. However 'TERI' may in case of urgency ask the bidder to complete the work earlier, with the mutual consent of the Contractor/ Bidder. In case the Contractor/Bidder fails to execute the said work within stipulated time, 'TERI' will be at liberty to get the work executed from the open market without calling any tender/e-tender and without any notice to the Contractor/Bidder, at the risk and cost of the Contractor/Bidder. Any additional cost incurred by 'TERI' shall be recovered from the Contractor/ Bidder. If the cost of executing the work as aforesaid shall exceed the balance due to the Contractor/Bidder, and the Contractor/Bidder fails to make good the additional cost, 'TERI' may recover it from the Contractor/Bidders' pending claims against any work in 'TERI' or in any lawful manner.
- 1.5 On the request of the Contractor/Bidder and also in the interest of the organization 'TERI' is authorized to extend the validity of the agreement, subject to that the request of the Contractor/Bidder is received before the expiry of the agreement period, or any extended period granted to the Contractor/ Bidder. Maximum period of extension shall be 2 months on the same terms and conditions as contained in this agreement.
- 1.6 The agreement shall be deemed to be extended till the date of completion of last work order subject to the completion period.
- 1.7 The Contractor, (i.e., the successful bidder), may be allowed to operate in the NCT of Delhi through a single authorized dealer for execution of the orders placed on authorized dealer. It will be the sole responsibility of the Contractor, to execute orders placed as per time schedule, and to ensure quality parameters, specifications and other requirements provided in the tender document and as per agreement.
- 1.8 In the interest of the work and the programme, agreement executed between the Contractor/Bidder and 'TERI' may be extended to a mutually agreed period, if the need so arises. It shall be sole responsibility of the Contractor/ Bidder to get verified the quality and quantity of the supplied material at the site of delivery.

2 LIQUIDATED DAMAGES

2.1 If the Contractor/ Bidder fails to perform the services within the time periods specified in the contract, 'TERI' shall without prejudice to its other remedies under the contract deduct from the contract price as liquidated damage, a sum equivalent to 1.0% of the price of the unperformed services for each week (For the purposes of calculation of delay, part of week shall be treated as week) of delay until actual performance up to a maximum deduction of 10% of the delayed services. Once the maximum is reached, 'TERI' may consider termination of the contract. In the case of violation of contract, TERI may confiscate pending payments/ dues of the Contractor/ Bidder assigning specific reasons and shall also have the power to debar/blacklist the Contractor/ Bidder in similar circumstances. TERI may also invoke performance/security bank guarantee.

3 The Contractor/ Bidder shall have to comply with all the rules, regulations, laws and by-laws for the time being in force and the instructions if any, of the organization, in whose premises the work has to be done. 'TERI' shall have no liability in this regard.

4 FORCE MAJEURE

4.1 Notwithstanding the provisions of clauses contained in this deed; the contractor/ bidder shall not be liable for forfeiture of its performance security, liquidated damages, termination for default, if he is unable to fulfill his obligation under this deed due to event of force majeure circumstances.

4.2 For purpose of this clause, 'Force majeure' means an event beyond the control of the contractor/bidder and not involving the contractor/bidder's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of Government either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes

4.3 However, if a force majeure situation arises, the contractor/bidder shall immediately notify 'TERI' in writing. The decision of the competent authority of TERI in above conditions shall be final.

5 The High court of Judicature at New Delhi and Courts subordinate thereto, shall alone have jurisdictions to the exclusion of all other courts.

6 The Contractor/Bidder shall not, without the consent in writing of 'TERI', transfer, assign or sublet the work under the contract or any substantial part thereof to any other party.

7 'TERI' shall have at all reasonable time access to the works being carried out by the Contractor/Bidder under the contract. All the work shall be carried out by the contractor/bidder to the satisfaction of 'TERI'.

8 If any question, dispute or difference what so ever shall arises between 'TERI' and the Contractor/Bidder, in the connection with the agreement except as to matters, the decisions for which have been specifically provided, either party may forthwith give to the other notice in writing of existence of such question, dispute or difference and the same shall be referred to the sole arbitration of the Director-General, TERI or a person nominated by him. This reference

shall be governed by the Indian Arbitration and Conciliation Act 1996, and the rules made there under. The award in such arbitration shall be final and binding on both the parties. Work under the agreement shall be continuing during the arbitration proceedings unless 'TERI' or the arbitrator directs otherwise.

- 9 'TERI' may intimate the Contractor/Bidder by notice in writing at any time to either stop the work all together or reduce or cut it down. If the work is stopped all together, the Contractor/Bidder will only be paid for work done and expenses distinctly incurred by him as on preparation or the execution of the work up to the date on which such notice is received by him. Such expenses shall be assessed by 'TERI', whose decision shall be final and binding on the contractor/ bidder. If the work is cut down, the Contractor/Bidder will not be paid any compensation what so ever for the loss or profit which he might have made if he had been allowed to complete all the work included in the contract.

10 INSPECTION AND TESTS

- 10.1 The following inspection procedures and tests are required by 'TERI' / 'BRPL' in the presence of TERI's/BRPL's representative if so desired by 'TERI'/'BRPL'.

- 10.2 'TERI'/'BRPL' or its representative shall have the right to inspect and/or to test the goods to confirm their conformity to the contract. The special conditions of contract and/or the technical specifications shall specify what inspections and test 'TERI' required.

- 10.3 Inspection at Works:

- 10.3.1 'TERI'/'BRPL', its duly authorized representative shall have at all reasonable times access to the Contractor/ Bidders premises or works and shall have the power at all reasonable time to inspect and examine the materials and workmanship of the works during its manufacture.

- 10.3.2 The Contractor/ Bidder shall give 'TERI' a written notice of 15-days before delivery of any material being ready for testing. It shall be mandatory that such notice should reach 'TERI' within 30 days of placement of work order. Such tests shall be on the contractor/ bidder's accounts/ expenses except for the expenses of the inspector. 'TERI'/'BRPL' reserves the full rights, to waive off inspection of material.

- 10.3.3 The Contractor/Bidder is required to get the entire lot of the ordered material inspected at one time, before the supply of the materials.

- 10.3.4 All arrangements for the inspection of materials will be done by Contractor /Bidder.

- 10.3.5 The inspection by 'TERI'/'BRPL' and issue of dispatch instruction there of shall in no way limit the liabilities and responsibilities of the contractor/bidder in respect of the agreed quality assurance programme forming a part of the contract.

11. WARRANTY

- 11.1 The Contractor/Bidder shall warrant as per standards for quality that anything to be furnished shall be new, free from all defects and faults in material, workmanship and manufacture, shall be of the highest grade and consistent with established and generally accepted standards for material of the type ordered, shall be in full conformity with the specifications, drawing or samples, if any and shall if operable, operate properly.

Nothing in clause 10 above shall in any way release the contractor/bidder from any guarantee or other obligations under this contract.

11.2 Performance of Equipment:

11.2.1 In addition to the warranty as already provided, the Contractor/ Bidder shall guarantee satisfactory performance of the equipment and shall be responsible for the period or up to the date specified in Clause 11.3 hereof after the equipment has been accepted by 'TERI' to the extent for any defects that may develop such defects shall be removed at his own cost when called upon to do so by 'TERI'.

11.2.2 The bidder to Guarantee the materials / items supplied against any defect of failure, which arise due to faulty materials, workmanship or design for the entire defects liability period. The Defect liability period shall be 12 months from the date of commissioning and warranty period of be 5 (five) years for complete system including battery from the date of commissioning and handing over of the system or number of lifecycles mentioned in the bid whichever is later. If during the defects liability period any materials / items are found to be defective, these shall be replaced or rectified by the bidder at his own cost within 30 days from the date of receipt of intimation. After completion of 5 years of installation due to ageing, available capacity shall not go below 95% of available capacity specified at the time of bidding.

11.3 The Warranty period shall be 5 (five) years for complete system including battery from the date of commissioning and handing over of the system. The Contractor/Bidder shall rectify defects developed in the system within warranty period promptly. In case the defects are not rectified within 2 working days the receipt of the complaint by the Contractor/ Bidder, 'TERI'/'BRPL' shall have full liberty to restore the system in working condition. The expenditure so incurred by 'TERI' shall be deducted from the contractor/bidder pending claims, security/performance guarantee deposit or in other law full manner.

11.4 Since the maintenance of the system may also be taken up by the Contractor/Bidder after expiry of five years of warranty period if the end user/'TERI'/'BRPL' so desires, the Contractor/Bidder shall take up annual maintenance of the installed system. Bidder has to provide the year-wise quote for the period of five years after expiry of warranty years.

11.5 The Contractor/ Bidder shall maintain the system under periodic maintenance contract with the end-user. The preparation of maintenance schedule is sole responsibility of the contractor/bidder. Additionally, a checklist shall be prepared to check/validate the critical operating parameters during maintenance. The checklist will be prepared by the bidder with all mandatory details.

11.6 On-site Warranty:

- a) Contractor / Bidder will create provision for receiving and recording all complaints, attending the complaints, stocking essential spares, provisioning trained service personnel, recording monthly logs of all activities, etc.
- b) During the 5 (five) year period, the repair works will have to be carried out at the premise except in exceptional circumstances where the equipment or any component may be required to be taken out for repair, for which specific written permission should be obtained from TERI. In such cases, standby arrangements are required to be made by Contractor / Bidder so that the BESS remains in functional state. All products have valid

- product warranty and hence on-site repair and maintenance service needs to be provided after getting replenishment of spares from respective product manufacturer.
- c) If the Contractor/ Bidder fail to attend the complaint within 2 working days, every time, a reasonable penalty of 5% (five percent) may be deducted from the pending amount due during that half yearly period.
 - d) Contractor / Bidder shall submit the bill along with the verification report counter-signed by TERI representative.
12. Notice statement and other communication sent by 'TERI'/'BRPL' through registered post or telegram or fax or email to the contractor/bidder at its specified addresses shall be deemed to have been delivered to the contractor/bidder.
13. Any work which is not covered under this contract but is essential required for the completion of job (to the satisfaction of TERI/BRPL) shall be carried out by the Contractor as extra item or which payment shall be made separately at the rates decided by TERI.
14. The work shall be carried out by the Contractor/ Bidder as per design and drawings approved by TERI/ BRPL, wherever, necessary, the contractor/ bidder shall submit relevant designs and drawings for approval of purchaser, well in advance. Work carried out without TERI's approval shall not be accepted and the purchaser shall have right to get it removed and to recover the cost so incurred from the Contractor/Bidder.
15. The Contractor/Bidder shall provide one copy of system pass-book containing instruction manual/routine maintenance manual and maintenance record of the systems with each unit supplied or installed, this shall be in both English and Hindi language. The draft of pass-book shall be approved by TERI.
16. The Contractor/Bidder shall not display the photographs of the work and not take advantage through publicity of the work without written permission of TERI/ BRPL. The contractor shall distribute and fix a calendar at site, showing instructions, Dos, Don'ts with each unit. The format of calendar should be approved by TERI.
17. **PATENT RIGHT AND ROYALTIES**
- The Contractor/Bidder shall indemnify 'TERI'/ 'BRPL' against all third party claims of infringement of patent, royalty's trademark or industrial design rights arising from use to the goods or any part thereof.
18. **PACKING& FORWARDING**
- 18.1 **Packing, Packing List & Marking:**
- I. Supplier shall pack or shall cause to be packed all commodities in boxes and containers and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BRPL without undue risk of damage in transit.
 - II. Exact weight and the extreme outside dimensions (length, width and height) of each container or box should be specified in technical. One copy of the packing list shall be enclosed in each package delivered. There shall also be enclosed in one package a master packing list identifying each individual package, which is part of the shipment. On any

packaging where it is not feasible to place the packing list inside the container, all pertinent information shall be stenciled on the outside and will thus constitute a packing list.

- 18.2 The contractor/Bidder shall inform 'TERI' of the date of each shipment from his works, and the expected date of arrival at the site atleast seven days in advance.

19. **DEMURRAGE**

All demurrage, and other expenses incurred due to delayed clearance of the material or any other reason shall be to the account of the contractor/bidder.

20. **INSURANCE**

The goods supplied under the contract shall be fully insured for 5 years against loss or damage incidental to manufacture or acquisition, transportation, storage during transportation and shall be included in the bid price. Complete BESS will be insured and insurance copy stating indemnification to be furnished by the bidder before release of second payment.

21. **TRANSPORTATION**

The Contractor/Bidder is required under the contract to deliver the goods to the site. E-way bill to be facilitated and arranged by the bidder.

22. **TERMINATION FOR INSOLVENCY**

'TERI' may at any time terminate the contract by giving written notice to the Contractor/Bidder without compensation to the Contractor/Bidder, if it becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to 'TERI'.

23. **TERMINATION FOR CONVENIENCE**

'TERI', may by written notice sent to the contractor/bidder, terminate the contract, in whole or in part at any time for its convenience. The notice of termination shall specify that termination is for the purchaser's convenience in the interest of 'TERI'.

24. **APPLICABLE LAW**

The contractor/bidder shall be interpreted in accordance with the laws of the purchaser's country i.e., India under Delhi jurisdiction.

25. **NOTICE**

- 25.1 Any notice given by one party to the other pursuant to the contract shall be sent in writing or by Email and confirmed in writing to the address specified for that purpose in the special condition of contract.

- 25.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

26 CORRUPT OR FRAUDULENT PRACTICES

26.1 The Purchaser requires that the Bidders observe the highest standard of ethics during the procurement and execution of the Project. In pursuance of this policy, the Purchaser defines, for the purposes of this provision, the terms set forth below as follows:

- a. "Corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or, those close to them, or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; and
- b. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition.

26.2 Will reject a proposal forward if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question ;

26.3 Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

27. OTHERS

27.1 Technical details, such as SoC, PCS/ PCU efficiency, round trip efficiency and throughput etc., shall be supplied along-with each consignment and copy should be sent to 'TERI' HQ for records.

27.2 Internal test reports and data sheets of all components like cell/modules, PCS, sensors, transducers etc. shall be supplied along-with each consignment a copy should be sent to 'TERI' HQ for records.

27.3. The Contractor/Bidder in consultation with 'TERI' will conduct training programme for users, focusing on main features, operation and maintenance of the systems.

27.4 The Contractor/ Bidder shall continue to provide spare parts after the expiry of warranty period at the users cost till the product life. If the Contractor/Bidder fails to continue to supply spare parts and services to users, 'TERI' shall take appropriate action against the contractor/bidder.

27.5 After successful supply/commissioning of the system and training, the system will be handed over to the person designated by TERI or, BRPL.

27.6 It shall be the sole responsibility of the Contractor/Bidder to get verified the quality and quantity of the supplied material at the site of delivery.

28. PAYMENTS:

The payments shall be made as per the following terms and conditions:

- (a) 10% payment of the purchase order will be made in advance at the time of issuing of purchase order.
- (b) 50% payment against delivery of material, as per purchase order, on site and subject to submission of documents as proof of delivery.
- (c) 35% payment against installation and commissioning of the system, as per purchase order, on site and subject to submission of documents as proof of delivery.
- (d) 5% payment after one year from the date of installation, given timely and satisfactory warranty coverage during the period and on submission of document.
- (e) Purchase order for on-site warranty for five years will be released separately. The payment for this activity will be released as reimbursement and on half-yearly basis, on submission of documents as proof of execution.
- (f) All the payment shall be released from TERI head office, New Delhi on submission of requisite documents / cofounding.
- (g) Comprehensive AMC cost shall be paid on half -yearly basis after expiration of warranty period; bill certification shall be done by project In-charge.
- (h) Bidder to submit the following documents against dispatch/Erection of each consignment (whichever is applicable):
 - I. Consignee copy of Lorry Receipt(LR)
 - II. Supplier detailed invoice showing commodity description, quantity, unit price, total price and basis of delivery
 - III. Original certificate issued by BRPL confirming receipt of material at site and acceptance of the same
 - IV. Dispatch clearance / inspection report in original issued by the inspection authority
 - V. Packing List
 - VI. Test Reports
 - VII. Guarantee Certificate
 - VIII. Insurance policy to be obtained by supplier
 - IX. Original certificate issued by BRPL confirming Installation, testing and commissioning of material at site and acceptance of the same by Site In charge and duly verified by EIC.

(i) Recoveries:

Whenever under this contract any money is recoverable from and payable by the bidder, the purchaser shall be entitled to recover such sum by appropriating in part or in whole by detecting any sum due to which any time thereafter may become due from the supplier in this or any other contract. Should the sum be not sufficient to cover the full amount recoverable the bidder shall pay to the purchaser on demand the remaining balance.

28.1 **Documents**

Following documents need to be submitted to TERI/ BRPL representatives for processing of payments:

A. 1st Payment (60%):

- (a) Invoice of complete material supplied along with proof of delivery at site (sign and stamp of person who has received and verified the materials)
- (b) Delivery challan(s) & E way bill

B. 2nd Payment (35%):

- (a) Complete list of installation location verified by TERI/BRPL representative
- (b) The warranty certificates for complete system (as per Purchase Order)
 - (i) Complete system warranty certificate from the supplier
 - (ii) Manufacturer warranty card / letter for all components and data sheet for lithium ion/various technologies battery cells/modules, inverter and PCS
 - (iii) All reports should be stamped and signed by the authorized representative of the contractor / bidder
 - (iv) Invoice of installation and commissioning as per purchase order.
 - (v) Insurance copy of the complete system.
 - (vi) Proof for the establishment of service center for the sites (photo, registration docs).
- (c) Commissioning and handover certificate (as prescribed), counter- signed by TERI/ BRPL.
- (d) Minimum two (2) photographs (dated) for each premise in soft copy of the BESS Unit. Photos should be clear and of minimum postcard size. Photo should cover all the components supplied at site.

C. 3rd Payment (5%):

One year functionality report duly signed by bidder, representatives from TERI and BRPL.

Comprehensive Annual Maintenance Contract half-yearly payment:

- (a) Detailed complaint log of all the complaints received during the period (half yearly).
- (b) Rectification log of all complaints attended and remedial measures taken (half yearly).
- (c) Verification report signed by user and TERI representative.
- (d) If the documents are not submitted within the specified stipulated time period, (at half yearly frequency) the contract will deem to be completed and the contractor will not have any claim for the payment.
- (e) Complete records for complaint and rectification log should be maintained and available during any visit.

NOTE:

1. For the prompt execution of the project, TERI may choose more than one Contractor / Bidder for carrying out the project.
2. The selected Contractor / Bidders are mandatorily required to open service center to carry out on-site warranty services at site before accepting any purchase order.

Non-tearable Logo (TERI, BRPL & UI-Assist) pasting has to be done on each BESS Unit.

29. In case of any ambiguity in interpretation of any of the provisions of the tender, the decision of 'TERI' shall be final.

30. Compliance: All compliances (State/ Central/ Local /GST/ WCT/ ESI/ PF/ Labour law, etc., is to be met by the Contractor / Bidder) and the same is to be produced by the vendor at the time of payment.

31. Indemnification:

Notwithstanding contrary to anything contained in this RFQ, Supplier shall at his costs and risks make good any loss or damage to the property of the Purchaser and/or the other Supplier engaged by the Purchaser and/or the employees of the Purchaser and/or employees of the other Supplier engaged by the Purchaser whatsoever arising out of the negligence of the Supplier while performing the obligations under this contract.

32. Materials -Quality& Workmanship

1. Immediately on award of contract, the bidder shall submit a detailed project report within 10 working days having planning and testing strategy with provisions for quality check performance at various stages of the project. The report shall also furnish details of method of checking and inspection and acceptance standards / values.
2. The bidder has to provide quality assurance certificates to TERI/BRPL for required components of BESS and shall comply with appropriate codes & standards. . Failure to abide by the same may result in rejection of contract by TERI/BRPL. **The Purchaser reserves the right to request for any additional information and also reserves the right to reject the proposal of any Bidder, if in the opinion of the Purchaser, the data in support of tender requirement is incomplete.**
3. Bidder shall comply with the contract in all respects to the satisfaction of TERI and BRPL.
4. For a period of 5 years, after system installation, the bidder shall be responsible for any defects that may occur due to faulty materials, design or workmanship. If it becomes necessary for the bidder to replace or repair any defective portion of the system, the bidder shall make such replacement or renewal within 48 hours of intimation and without any extra cost to TERI/ BRPL.
5. In-house system testing and visual inspection shall be done without any extra cost. The visual inspection shall be carried out in presence of TERI/ BRPL. Cost of Futile/abortive visit(s) shall be debited from the invoices.
6. TERI/ BRPL reserves the right to send any material being supplied to any recognized laboratory for testing, wherever necessary and the cost of testing shall be borne by the Bidder. In case the material is found not in order with the technical requirement / specification, the charges along with any other penalty which may be levied is to be borne by the bidder. To avoid any complaint the supplier is advised to send his representative to the stores to see that the material sent for testing is being sealed in the presence of bidder's representative.
7. The time and the date of installation of the system stipulated in the Purchase Order shall be deemed to be the essence of the Contract, and installation must be completed within 8

(eight) weeks of issuing PO. If the contractor fails to install or any consignment thereof within the period prescribed for such installation, TERI shall be entitled at their option: As agreed under the liquidated damages clause, TERI has the rights to recover a price sum equivalent to 2 % of the price of any article which the contractor failed to deliver, for each month. The same applies to a part of the month during which the delivery of such products may be in arrears subject to a maximum of 10% of the price.

8. Bidder has to sign quality agreement, before supply of the material. Detailed terms and conditions will be shared along with purchase order/ LOA which needs to be signed on stamp paper at that time when purchase order is placed.
9. In order to ensure efficient and flawless running of the system, there should be a dedicated skilled person to take care of system working at each site (Category A, B & C). **Separate component of CAPEX should be included in the financial Bid part for this workmanship.**
10. Bidder shall be responsible to clean and remove all residuals from the site after the installation of the system.
11. Prices basis for supply of materials:

Bidders require quoting their prices on landed cost basis and separate price for each item. For supply to installation site, the price shall be inclusive of packing, forwarding, and freights, GST to be mentioned separately. The above supply prices shall also include unloading at site stores. Transit and storage insurance will be arranged by bidder.
12. Bidder shall provide detailed completion/ commissioning report stating details of equipment installed at the locations mentioned in the tender.

(Signature of Bidder with seal)

Part 4: Scope of Work & Technical Specifications

Objective: Tender for Design, Supply, Testing, Installation and Commissioning along-with Comprehensive Annual Maintenance Contract (CAMC) for 5 years of Battery Energy Storage Systems (BESS) on Turnkey Basis under UI-ASSIST initiative with BRPL in NCT of Delhi

Location and Applications: Under UI-ASSIST initiative TERI in-association with BRPL conducted a detailed feasibility study within BRPL licensee area in the NCT of Delhi, and had identified few selected locations to demonstrate operational use cases of grid-scale BESS on pilot-basis. The details of BESS application(s) and size for specified locations are mentioned below:

- **Category-A:** BESS will be used to manage overload of a Distribution Transformer (DT) serving mainly residential consumers. BESS to be installed on the LT side of DT will be charged when the loading of DT is lower than a particular threshold level and discharged when loading exceeds the defined threshold level.
- **Category-B:** Here in, the proposed application of BESS is to supply the back-up power to common/critical loads (loads such as lift, water pump and lighting load) of gated group housing society during power outages. The system will be charged from grid power and also from existing solar PV installed as and when available. Additionally, there should be a provision to charge the BESS from DG power, DG synchronization if required.
- **Category-C:** TERI-School of Advanced Studies (SAS) is an institution with TOD tariff applicable for four months. In this case, BESS will be charged during off-peak hours and discharged during peak hours. This application aims to demonstrate BESS operations with difference in prices during a day at a constant rate. During remaining times of the year, BESS operations may be used for research work within technical constraints of the battery technology.

Table 6: Category-wise BESS descriptions for all 3 sites

	Location	Application	Useful Capacity of BESS at the Beginning of Life	Battery Chemistry	Designed Rating of BESS
Cat-A	990-kVA DT in Taimoor Nagar, New Friends Colony, New Delhi	Overload management of DT (primary application)	230 kWh/ 125 kW	Li-Ion (NMC/ LFP) or, Advanced Lead Acid/ Ultra batteries	Technology Dependent
Cat-B	Dwarka (Ispatika Apartments, Dwarka), New Delhi	Supply Critical/ Common Load of a Gated Residential Community (primary application)	120 kWh/ 240 kW	Li-Ion (NMC/ LFP/ LTO)	Technology Dependent
Cat-C	TERI-SAS, Vasant Kunj Institutional Area, New Delhi	Savings on TOD price difference (primary application)	60 kWh/ 30 kW	Li-Ion (NMC/ LFP/ LTO)	Technology Dependent

Note: Above sites are indicative, in-case of any change BRPL/ TERI will provide other similar sites. There will be other applications of BESS in those sites, in-addition to primary applications.

Scope of work

1.0 Erection and commissioning

The Selected Bidder(s) shall be obligated to perform the following Scope of Work, but not limited to, in relation to installation of BESS.

- A. Site survey, planning, design, engineering, transportation to site, insurance, supply at site, un-loading, handling, installation, integration, testing, commissioning & demonstration for acceptance of all equipment/ materials and miscellaneous item required to complete the BESS installation, which includes, but is not limited to the following:**
- Battery packs, Power conditioning system, Air conditioning (AC) system, Fire-fighting system, UPS, system hardware, measurement & control device and other associated items necessary for trouble free operation and maintenance of whole system.
 - Containers, structures, earthing design, and battery modules inter-connection.
 - Power Conditioning Units (PCU) with monitoring & control related equipment such as actuators, sensors, transducers etc.
 - Appropriate protection and safety features.
 - Project Management including adherence to all requisite safety practices.
 - Fire-fighting and fire detection systems.
 - Factory acceptance test and site acceptance test
- B. Installation and Commissioning of BESS that includes:**
- Special care to be taken while designing the system to cater to heavy rainfall, strong winds, temperature difference and earthquake that may be prevalent in the area.
 - The Selected Bidder shall provide all related drawings to relevant IS/ IEC standards
 - Documentation and Training to TERI's and BRPL's officials.
 - Undertake Pre-commissioning and Commissioning of all supplied equipment.
 - Test running of the grid-connected BESS facility including battery operation trials at Site, prior to handover.
 - Installation of appropriate measurement and control devices at required location, with submission of drawings - approved prior to commencement of work on Site.
 - Commissioning certificate from relevant authorities for the facility.
- C. General Instructions**
- Security, safety, watch, and ward of all materials at sites shall be the responsibility of the Selected Bidder
 - Expenses for any other works, supply of material, and providing services required for the successful commissioning and operation of the plant, but not specifically mentioned in this document shall be borne by selected bidder.
 - Safety management to be strictly complied with by the Selected Bidder(s) throughout implementation activity.
 - All local labour, employment, and other issues shall be handled independently by the Selected Bidder.

- e. The entire responsibility and risk relating towards the manpower working at the Site, and compliance of different statutory regulations like Workman Compensation Act, Employees State Insurance Corporation (ESIC), Factory Act. 1948, Contract Labour Regulation, and Abolition Act 1970, Shop and Establishment Act. 1948, and other Statutory regulatory bodies shall solely lie with the Selected Bidder. The Selected Bidder shall also be solely responsible for payment of wages, provident fund, bonus, retrenchment compensation leave, etc. applicable as per various statutory regulations to their entire workforce, and keep TERI/BRPL and the eligible consumer indemnified in this regard against any Claim.

2.0 Operation and maintenance

- a. The operation & maintenance of the BESS would include wear, tear, overhauling, insurance, and replacement of defective cells, invertors, PCUs, spares, consumables & other parts for a period of five years.
- b. The BESS system shall include energy management system (EMS), battery management system (BMS) and dashboard to display key operational parameters such as voltage, current, battery SoC, frequency etc.
- c. Monitoring of BESS performance and supply of all technical, production/operation data and information and making it available as and when required.
- d. The supplier shall be responsible to carry out routine and preventive maintenance and replacement of each and every component / equipment of the BESS in case of any failure and bidder shall provide all labour, material, consumables etc. for routine and preventive maintenance at his own cost.
- e. Carryout preventive maintenance of each and every component of the BESS and shall provide the required manpower, materials, consumables, components or equipment etc at regular intervals as per the discretion of BRPL/TERI.
- f. Carry out maintenance activities as a result of sudden failure/breakdown of any particular component or equipment. Bidder shall be responsible to carry out breakdown maintenance of each and every component of the BESS and shall provide the required manpower, materials, consumables, components or equipment etc. for breakdown maintenance at his own cost irrespective of the reasons of the breakdown/failure.
- g. Visit to the site on call basis to provide maintenance services within 12 hours of lodging of complaint by BRPL/ TERI through Telephone/ E-mail or, any form of written communication.

OPERATION & MAINTENANCE MANUAL

An Operation, Instruction and Maintenance Manual in English or Hindi language as per the requirement should be issued enclosing

- a. Basic principles of BESS operation.
- b. A small site specific write-up (with a block diagram) on the BESS – its components, battery packs, inverter, junction boxes and expected performance shall be provided.
- c. Type of battery technology, Make & Model number, Voltage & capacity of inverter and cells, used in the BESS.
- d. Technical characteristics of the entire component are required to be provided.
- e. Clear instructions on regular maintenance and trouble shooting of the BESS

- f. Name and address of the contact person in case of non-functioning of the system.
- g. DO's and DONT's (to be provided by the bidder)

3.0 Failure to rectify the problem

- a. If the Selected Bidder fails to rectify the problem, the distribution utility herein BRPL shall rectify the problem at the expense of the Selected Bidder.
- b. In case of non-responsiveness of the Selected Bidder to carry out the O & M work, BRPL is free to empanel or allocate the work to the other selected company to carry out the maintenance activity. The payment for the O&M will be recovered from the contract performance guarantee of the Selected Bidder.
- c. BRPL reserves the right to make surprise checks/ inspection visits at its own or through authorized representative to verify the O&M activities being carried out by the Selected Bidder. Failure to adhere to above guidelines will result in penal action including debarring from participation in other tender.

Delivery

Delivery of materials: All the materials as specified in the purchase order should be delivered at the sites of installation within 6 (six) weeks of issuance of LOA. Transit insurance and storage insurance till the handing over of all materials will be within the scope of work. The Contractor / Bidder should provide the manufacturer's warranty on all components supplied.

Delivery time for installation and commissioning: Installation should be completed within 8 (eight) weeks from the date of issuance of Purchase Order. The systems will be deemed commissioned only after successful trial run of the system for three (3) days from the date of installations. Warehousing and storage of all components will be in the scope of work till the commissioning of all systems as per the purchase order.

Technical Specifications for Battery Energy Storage System

The bidder shall be able to provide the components of the BESS as per following technical specifications described below in this section.

Battery Sub-system

The cells shall be supplied as group of cells combined into modules and inter-connection of cells, modules should be designed properly to prevent the damage during transportation. The cells & modules should be able to absorb the anticipated vibration/shock associated with the transportation.

Battery Technology

Definitions of various terminologies related to battery energy storage system should comply with IEC 60050-482 (International electro-technical vocabulary for cells/ batteries) if otherwise not specified.

- I. Advance lead acid (Lead with Graphite/ Carbon) or Li-ion (NMC & LFP) shall be used in the battery energy storage system for application under category-A. Cost break-up and technical specification shall be provided for aforementioned advance lead acid and Lithium-ion battery technologies for rated useful capacity of BESS as mentioned below in the table 7.

Table 7: Rated useful capacity of BESS advanced-level

Sr. No.	Parameters	Unit	Value
1	Useful capacity at output of power conversion system at rated DoD as per battery design	kWh	230 (Category A)
2	Peak power requirement	kW	125 (Category A)
3	Depth of Discharge	%	>75 (Adv. Lead Acid) > 85 (Li-ion)
4	Life Cycle*	Nos.	At-least 3,000 in case of Advanced Lead Acid and 4,000 for Li-Ion at rated DoD
5	Round Trip Efficiency (DC-DC)	%	> 85 (Adv. Lead Acid) > 90 (Li-ion)
6	Service Life	Years	At-least 10 or, 4,000 cycles whichever is less
7	Charging time	Hours	Maximum 4 hrs. from rated DoD to full capacity

- II. Lithium-ion battery (NMC, LFP, LTO etc.) shall be used in the energy storage system for applications under category-B &C. Techno-economic specifications of different Li-Ion battery technologies (in-case of multiple technologies available with bidder) should be shared with TERI.

Table 8: Rated useful capacity of lithium-ion battery

Sr. No.	Parameters	Unit	Value
1	Useful capacity at output of power conversion system at rated DoD as per battery design	kWh	120 (Category B) 50 (Category C)
2	Peak power requirement	kW	240 (Category B) 30 (Category C)
3	Depth of Discharge	%	85
4	Life Cycle*	Nos.	At least 4,000 at rated DoD
5	Round Trip Efficiency (DC-DC)	%	> 90
6	Service Life	Years	At least 10 years or 4,000 cycles for NMC & LFP/10,000 cycles for LTO whichever is less
7	Charging time	Hours	Maximum 4 hrs. from rated DoD to full capacity

*Manufacturer should also provide minimum throughput of battery at a rated DOD.

Battery Energy Management System

Category A

Battery storage shall discharge based on battery capacity and real-time loading of DT. Reference for discharge current shall be evaluated as per equation (4) expressed in annexure-I. The reference value shall be updated periodically (interval time will be decided in consultation with system integrator) depending upon the electrical parameter measurement. The charging shall be performed in constant current constant voltage (CCCV) mode. However, change of operating mode from CC to CV during charging shall be determined on the basis of bidder recommendations.

Category B

BESS shall supply the power to common/critical load during power outage event. The system shall monitor the grid parameters (voltage, current, frequency, power factor etc.) and total load demand during power outages. The system shall be able to discharge with 2C rate and it shall also be synchronized with DG set in such a manner that it should not back feed the power to DG. When the BESS is discharged completely during power outages then the power to the load shall be supplied through the DG set for remaining duration. Additionally, there should be a provision to charge the BESS from DG power, if required. Grid power, common/critical load demand and battery capacity will be monitored continuously and whenever power failure occurs, BESS shall supply the power to load as per equation (5) and (6) expressed in annexure-II.

Category C

The battery storage shall discharge during pre-defined peak hours with constant C-rate as per equation expressed in annexure-III. The charging of BESS shall be performed through grid in off-peak hours. Battery SoC shall be monitored periodically to evaluate the remaining capacity at start of discharge operation and accordingly a constant rate of discharge will be defined. Further, an additional feature shall be provided to change/edit the discharge duration and rate of discharge whenever required.

Note: Control Algorithm mentioned in Annexure-I, II and III can be improvised, if required, in discretion with TERI & BRPL considering proper functioning of BESS.

The Battery Energy Management System (EMS) architecture shall comply with following requirements:

- Energy management system shall comprise of hardware & software for managing the power/energy flow through BESS for specific application.
- BESS should have the capability to monitor and control the operational parameters (Grid V & I, P, Q, f, battery V & I, SoC, relay/actuator command etc.) remotely through communication interface.
- The EMS shall include monitoring, data acquisition and control to provide continuous visualization or display of key operational parameters, as well as permanent archival of all measured parameters. For monitoring & control, sensors and transducers shall be installed. The system shall record values of all operational parameters in fix and removable non-volatile memory. It shall be capable of making all monitored data and events available through the Distributed Network Protocol (DNP3) communication interface and shall allow the display of current values and recent historical trend (such as past 24 hours).
- The sampling time for recording of the parameters shall be adjustable up to 100 ms. The real-time analogue data such as grid voltage & current, battery voltage & current, SoC, frequency etc. at 10 second interval and digital data such as alarm, events will be stored for 30 days.
- Human machine interface (HMI) shall display the single line diagram of whole system with color display and alarms & events shall be displayed in the form of list. The operation of HMI should be user friendly.
- It should have feature to control the BESS operation both in automatic and manual mode (set/reference point can also be defined manually as well).

- The control features in Energy Management System (EMS) shall be customizable and shall have feature to update the algorithm time to time as per requirement.
- Cell-level battery management system shall be provided to take care of cell parameters (voltage, SoC and temperature) within specified range as per the requirement of battery technology.
- EMS of BESS shall be designed in such a way that it could be interfaced with existing SCADA system of the utility. The field status of key operational parameters must be communicated to a centralized control station of the distribution utility through Modbus communication and it shall have feature to control the system from centralized control station. In addition, the bidder shall also create local control station to monitor & control the system operation locally from an industrial computer/ PC as well as through a smart phone application based on android or IOS.
- EMS shall link all three (3) sites which are to be installed in the current tender. However, EMS shall be extendable in case additional battery storage systems get installed in future at other locations or existing battery energy storage system gets replaced with a newer technology and/or of different size. The bidder shall share the open Application Program Interface (APIs) of the EMS with customizable data structure for integration of any future battery energy storage system of any make at multiple locations. EMS shall be interoperable with any other EMS or Distributed Energy Resources Management System (DERMS) having the same protocol and with SCADA through IEC 60870-5-104 protocol. It is reemphasized that the EMS so supplied should be supporting open protocols capable of integrating multiple battery energy storage systems at different locations in future as well. The communication between the EMS (which is to be located at BRPL's Central SCADA Control Center at 33kV Balaji Grid Station, Kalkaji) and different locations of BESS needs to be established by the bidder through suitable communication channels.
- BESS operation should be controlled by one operator at a time, positioned either locally or remotely and thus it must have suitable interlock features. Local control should be highly placed in control hierarchy. Real-time analogue & digital inputs & outputs should be visible on the display screen both locally and remotely and logical command shall also be displayed in control centre. An integrity scan shall also be made periodically and any discrepancy occurs between field status and command, shall be intimated through alarm.
- Software interlocking should be provided to ensure that inadvertent incorrect operation of switchgear causing damage and accidents in case of false operation does not take place.
- A restricted access to monitor the operating parameters through web/ online portal as well as mobile app shall be provided to TERI and BRPL.

Following parameters to be displayed at the control centre:

- I. Operating Mode:
 - a) Grid connected/ Standalone mode
 - b) Automatic/ Manual mode
 - c) Charge/discharge
- II. Application mode (as described above for different category)
- III. Measurements (V, I, P, Q, SoC, charge/discharge rate freq., energy export/import)
- IV. Events and alarms
- V. Breaker position/operation

- VI. Parameters of PCS such as active power, reactive power, power factor, operating DC voltage etc.
- VII. Fault information
- VIII. Status of air conditioning and fire protection system
- IX. Smoke/fire alarm and container opening alarm

System Hardware Requirements

Monitoring & control centre shall include workstation, keyboard, mouse, LAN cable and all associated items. Local LCD display shall be provided to monitor various functions and parameters locally viz. Charge, discharge, current, voltage, power, alarms etc.

The system shall preferably be based on personal computer technology with a Microsoft Windows 7 or later operating system. Other system architectures are acceptable, but regardless of system architecture, the system shall, at a minimum, provide remote data inquiry from personal computer based platform and data file export capabilities in ASCII format or, independent media (such as universal serial bus drive) that are readable on personal computer based systems.

The system shall provide unsolicited message capability for reporting critical alarms and indication locally and remotely to the BRPL's SCADA system.

Processor and RAM should be selected in such a way that it should not use more than 50% of the disk space.

An additional remote monitoring unit (42") displaying required features shall also be provided at TERI HQ with suitable configurations.

There should be CCTV surveillances for installations at each site with real-time recordings.

Battery Management System (BMS) and Power Conditioning System (PCS) Functionality Requirements

Monitoring:

BMS shall monitor battery system parameters such as string voltage & current, SoC, cumulative number of cycles along with DoD. It shall also monitor utility side parameters such as voltage, charge/discharge current and protection system readings/status.

Charge control:

PCS shall control the charging state of each module based on monitoring of parameters and power/energy requirements. It should charge the module in float/boost mode and/or Constant Current Constant Voltage (CC-CV) mode as per requirements of battery sub system. Further, it should regulate the voltage to limit the temperature rise in the cell.

Power Control:

PCS shall be able to supply rated power to grid/battery for specified duration (as per requirement) as required without violating the temperature rise limits. Additionally, it shall control the active and reactive power separately. Though, the primary requirement of the project is to supply only active power (power factor must be greater than 0.98 from BESS but there should be provision to supply

reactive power as well if required. Power quality parameters of PCS shall comply with relevant IEC/IEEE standards.

Operation Mode:

The output of the PCS (voltage and frequency) needs to be synchronized with secondary side output of Distribution Transformer (DT) when the battery energy storage system is operating in synchronized mode of DT. In other cases, PCS output voltage shall remain within 1% of the set value i.e 433V. PCS must have inbuilt isolation transformer to disconnect the system from grid in case of any hazardous situation. It shall operate in inverter mode during discharging and rectifier mode during charging of battery system.

Auxiliary power supply:

Auxiliary loads of BESS shall be supplied power either from AC bus of PCS or else a separate connection shall be established from control room. Useful capacity at output of power conversion system at rated DoD as mentioned in tables above are after consideration of Auxiliary power consumption the BESS. It is re-emphasized that the useful capacity at output of power conversion system as mentioned in above tables is after consideration of round-tip efficiency, rated DoD, auxiliary power consumption, (which should preferably be less than 2%) etc.

Enclosure:

PCS should be placed in waterproof and dustproof enclosure rated to minimum IP-54 protection with provision to prevent moisture condensation, airborne dust rodents etc. It shall be kept indoor (inside container/enclosure of BESS) floor-mounted, self-supporting sheet metal enclosed cubicle type. The contractor shall provide all associated items such as base frames, removable gland plates, copper lugs anchor bolts and hardware. Cubicle door should be earthed properly.

Table 9: Detailed description of PCS/ PCU

Sr. No.	Parameters	Unit	Value
1	Maximum power rating	kVA	140 (Category A) 270 (Category B) 35 (Category C)
	Power rating	kW	125 (Category A) 240 (Category B) 30 (Category C)
2	Power factor	Cos Φ	0.9 (leading to lagging)
3	Efficiency	%	> 97
4	Voltage withstand capabilities	Volts	+15/-20% of rated voltage on both AC & DC side
5	Frequency	Hz	50 \pm 3 %
6	Power quality parameters	As per IEC/IEEE standards (IEEE 519-1992/2003)	
7	Communication interface with SCADA system	Modbus (Port: RS-485) / IEC 60870-5-104 protocol	

Design and Construction Requirements

- BESS system will be inter-connected with grid at secondary terminal of distribution transformer i.e. three-phase four-wire, 433 Volts (L-L) at point of common coupling (PCC). The above mentioned inter-connection point is suggested for category-A & category-C application. However, probable inter-connection point of BESS for category-B will be at 3-phase output of DG set. However, it may further change slightly after the site visit to installation site.
- The whole system (battery, PCS, auxiliary source, PMS, firefighting system etc.), shall be enclosed in a container or cabinet with IP-54 class of protection or as per national/ international standards (IEC-60529). The system must be placed in a container and it should have feature for heat load management. The standard containerized solution including both Battery modules and PCS shall be preferred. The system's container shall meet all standard safety requirements. Further, the battery container material should have electro-chemical compatibility and resistant to acid & alkaline material. The container should be fire retardant and it shall be able to withstand the tensile stress due to internal pressure of the cells or electrolyte in the worst operating condition.
- Each cell should be provided with pressure regulated valve (if required as per battery technology). The valve should be self-re-sealable and fire resistant.
- The terminals of the cells shall be coated with corrosion resistant materials and it should be non-reactive to acid and alkaline. It shall also be covered with insulating material to prevent any accidental contact with live electrical connections.
- All the batteries shall be mounted in a metallic stand/frame. The frame should be painted with acid/base resistant paint. The suitable isolation should be provided between base of frame and ground to avoid the grounding of frame.
- All sensors, transducers, circuit boards, and test points in the System shall be easily and safely accessible for calibration and maintenance.
- The additional items such as enclosures, junction boxes, grounding, instrumentation, wiring etc. required for fully functional system as per specification shall be provided / installed by contractor.
- External connection to the cells, including inter-cells or inter-module connections (such as cables/ straps etc.) shall also be designed to prevent failure during transportation.
- The modules can be interconnected in series or parallel configuration to achieve the specified energy and power requirements.
- BESS shall be provided with air conditioning system to manage the heat load of the system and rating of AC should be defined accordingly. It should be rugged, reliable and maintenance free and designed for long life time. It shall be designed for continuous operation. The system should be equipped with changeover feature to keep system healthy.
- Energy meter of 0.5 class accuracy (as per IS-14697) shall be provided for recording export/import energy from/to BESS. CTs and PTs used in the energy meter will be under scope of contractor.

Safety Requirements

System Safety

- Safety of Li-Ion cell shall be ensured as per IEC-62281 and container should have IP-54 class of protection.
- Each cell shall be equipped with a flame arrester to defuse any flammable gas escaped during charge and discharge. In addition to the fire suppression system, the flame arrester is required to prevent the fire from one cell to the adjacent cells and needs to be provided from the perspective of safety as per relevant standards.
- The safety for whole BESS system shall be ensured as per UL-9540.
- Adequate fire protection system should be provided for whole system (cells, modules, PCS etc.).
- Suitable earthing system should be designed and provided for BESS.
- PCS shall have adequate safety feature for complete isolation from grid in case of any malfunctioning (Separate isolation transformer may be connected between grid and BESS, if required). In addition, there should be a provision for manual as well as automatic disconnection of BESS from distribution system.
- Temperature rise protection system should be provided for battery and PCS.
- Provision should be provided for AC/DC protection (over/under voltage, over/under current, earth fault protection, over/under frequency for AC, transient/surge protection, breaker failure protection etc.).
- Emergency alarm system should be provided for any malfunctioning of BESS operation.

In addition to above mentioned safety requirements, manufacturer will be responsible to carry out following test (described in table below) required for safety and performance standards:

Table 10: National/ International Standards for Battery Energy Storage System

Requirements	Standards
Safety requirements	IEC-62133 or IEC 62620:2014 or UL-1642 or UL-1973 UL-9540 (for every components of BESS)
Performance tests, designations, markings, dimensions and other requirements	IEC 61960
Test methods and requirements to ensure safety during transport other than for recycling or disposal	IEC 62281 or, UL-1973
Tests and requirements for verifying the mechanical behavior	IEC-61959/ IEC-62897
Design, Operation & Maintenance of BESS	IEEE P2030.2.1 IEEE P2030.3
Planning & Installation of Electrical Energy Storage System	IEC-62935

Table 11: National/ International Standards for PCS/ PCU

Requirements	Standards
General and safety requirements	IEC 62040-1 or IEC 62477-1 or Equivalent
Interconnecting distributed resources with electrical power system	IEEE 1547 IEC 61850 (communication standard) UL 1741 (testing)
Power conditioners - Procedure for measuring efficiency	IEC 61683 or, Equivalent
Environmental testing	IEC 60068-2 (1,2,14,30)
Switches / Breakers / Connectors	IEC 60947 (1, 2, 3)
Power metering & monitoring devices	IEC 61557-12
Power quality parameters	IEEE 519-2003 or IEC 61000-4 series

Fire Fighting System

Adequate fire protection should be provided to tackle any fire incident likely to arise in battery energy storage system as per the international standard IEC 62897 (for Li-ion). Different types of fire extinguishers (Sinorix N₂, Hepta Fluoro Propane or equivalent for electrical safety) shall be installed to take care of fires which are likely to happen and protection from such incident shall be ensured as per International fire code (IFC-ICC).

Protection System

Protection system must be capable of monitoring all the operating parameters and sensing all abnormal conditions to isolate the faulty circuit or component without damaging other parts of the system. Adequate indications/ alarms should also be provided locally as well as at remote control system for identification of faults and taking preventive / corrective actions.

The protection system shall work on following principles:

- I. The fault is described as internal and external fault. The internal fault is associated with battery system where as external fault is for distribution system. In the external fault, the system shall recover automatically from fault condition when healthy condition detected.
- II. The protective device closest to fault location shall clear the fault without damaging other part of the system.
- III. Lightning arrestor shall be installed to protect the whole system from damaging effect of lightning.

Protection system supplied by contractor shall include all the required components such as relay, contactor and switches, for operation of BESS, which may not be specified in this tender specification.

The requirements of AC/DC protection system are listed in table 12 below:

Table 12: Requirements of AC/DC Protection System

AC Protection	DC Protection
AC under/over voltage	DC under/over voltage
Over current protection	DC over current relay
Earth fault protection	Ground fault protection
Breaker failure protection	Breaker failure protection
Transient/surge protection	Transient/surge protection
Synchronization check for relay	Synchronization check for relay if any

AC Protection	DC Protection
Loss of phase	-----
Over/under current frequency	-----

Protection for Temperature Rise

The contractor shall design a protection system for temperature rise in the battery modules/cells, PCS or any other component of the BESS, due to short circuit in any part of the system, failure in temperature controller or sensors or any other internal/ external fault.

Protection for Spillage

Protection shall be provided for electrolyte spills that are related with the type of electrolyte used. It shall have feature to prevent the discharging of electrolyte to nearby installation site.

Emergency Stop

There should be provision of manual and automatic disconnection of the BESS from distribution system if;

- Protection system failure is detected during self-diagnosis, healthy check
- Breaker trip coils or interrupting device fails
- DC supply is lost

Disposal/ Battery Recycling Plan

Once a storage device has reached the end of its useful life, the bidder should have a disposal or recycle plan for both the lithium ion and advanced lead acid batteries. The batteries should be in completely discharged condition prior to their disposal. The DC connection terminals of the batteries must be insulated with electric tape to prevent accidental contacts. The Li-Ion/ advance lead acid batteries can be incinerated and the packaging materials shall be labeled as lithium ion/ advance lead acid batteries. Incineration must be performed by an approved and permitted waste treatment facility that handles lithium ion batteries.

It shall be the responsibility of Bidder/Contractor to;

- ensure that used batteries collected are sent to the registered recycling agencies or for disposal;
- ensure that necessary arrangements are made for safe transportation from site to the premises of recyclers or for disposal;
- ensure that no damage to the environment occurs during transportation;

System Testing

Factory Test

The contractor shall carry out factory acceptance test (FAT) at sub system and module level and it shall include for all component to the extent possible. The contractor shall submit FAT document to approving authority. It shall include following test:

- Visual Inspection of equipment including dimension and overall design
- Verification of sensors, metering and alarms
- Verification of all control function including remote control, monitoring and communication interface
- Verification of system performance at full/ partial Energy/ Power ratings

- Verification of maintenance and replacement features for unit batteries and other components
- During the FAT, system shall be operated as specified and designed in all the operating states, use cases and duty cycles. It shall meet power/ energy requirements and shall be demonstrated to meet the safety requirements.

Operation of all control, protective relaying and instrumentation circuits shall be demonstrated by direct tests, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local and remote operation of the controls shall be demonstrated.

BESS shall be verified for operation at temperature extremes defined in specification. For this, if it is not possible for the full system, then independent laboratory certification of operation of critical components and subsystems shall be submitted at the time of FAT.

- During FAT, if something mal-operates then FAT shall be suspended and resumed after rectification of the problem. The system shall not be accepted for shipment until all FATs have been successfully completed.

Site Test

The contractor shall submit a comprehensive plan for site acceptance test to approving authority for approval. SAT plan shall include procedures to test correct system responses to system disturbances and operating scenarios described in the specification.

The test shall include, as a minimum, following procedure:

- Verification of sensors, metering and alarms
- Verification of all control functions including automatic, local and remote control
- Verification of the performance criteria
- Demonstration of all the intended applications
- Demonstration of grid interface protection & control system
- Verification of power quality parameters

Special Tools and Mandatory Spares

The bidder shall ensure the deployment of all special tools and tackles, required for installation, testing & commissioning and maintenance of BESS. Additionally, the contractor shall also furnish list of special tools and tackles for the system (such as switches, measurement & sensing device, transducers etc.), referred by employer during the operation of the system. Further, bidder shall provide the mandatory spares along with the list of mandatory spares for the system and no such spares to be used during commissioning of equipment or warranty period. Any spares required for commissioning / warranty shall be arranged by the Contractor.

In-addition, battery modules of capacity 1 kWh of lithium-ion (NMC/ LFP/ LTO or advanced lead acid) shall also be provided as spare items, which will be used for research purpose and placed in TERI's Smart Control Laboratory at TERI Gram, Gual Pahari, Gurugram, Haryana.

Part 5: TECHNICAL BID

For Battery Energy Storage System
TENDER NO.: TERI/MAT/2019-20/002

Table : 13 Descriptions of BESS for technical bid

Sl. No.	Description	To be Furnished by the Tenderer
A	Battery	
1	Make/Manufacturer	
2	Type / Chemistry	
3	Design capacity of battery in terms of KWh	
4	Self-Discharge rate	
5	DOD	
6	Life cycle of battery	
7	Round trip efficiency	
8	Dimensions and weight of battery	
9	Test certificate available for battery cell/module (IEC Standards / NABL accredited labs / CPRI labs/ERDA/ BIS Standards)	
10	Number of series & parallel connected cells and modules	
11	Power/energy rating cells and modules	
12	BESS favorable operating temperature	
B	Power Conditioning Unit	
1	Make/manufacturer	
2	Type of charge controller(DC-DC converter)	
3	Efficiency of charge controller(DC-DC converter)	
4	Inverter- power rating & efficiency	
5	Inverter minimum response time	
6	Test certificate available (IEC Standards / NABL Accredited labs / CPRI labs/ERDA /BIS Standards)	
C	Lighting Arrestor	
1.	Type of Lighting Arrestor and make	
2	Type of Earthing	
D	Earthing	
1	Type of Earthing, make and capacity	
2	No of Earthing	
E	Connecting cables/wire	
1	Material and size& specifications	
2	Details of Switches	
F	Measurement & control devices	
1	Sensors	
	Type/make	
	Accuracy/precision	
	Sensitivity	
2	Transducers	
	Type/make	

Sl. No.	Description	To be Furnished by the Tenderer
	Accuracy/precision	
	Sensitivity	

The bidders are requested to provide additional information required in order to showcase the technology suitability as per the mentioned applications under all the three categories.

(Signature of Bidder with seal)

Mandatory to read all the terms and conditions before signing the tender

Part 6: Financial Bid

TENDER NO.: TERI/MAT/2019–20/002

Name of the Firm: -----

Site survey, planning, design, engineering, transportation to site, insurance, supply at site, un-loading, handling, installation, integration, testing, commissioning & demonstration for acceptance of all equipment/ materials and miscellaneous item required to complete the BESS installation, in the NCT of Delhi.

Table: 14 Descriptions of BESS for financial bid

Sl	Description	HSN Code	Total Cost of BESS (Li-ion)*	Total Cost of BESS (Lead-acid)*	GST - Hardware	GST - I&C	GST - AMC	Per unit cost (INR/kWh)	Per cycle cost (INR/Cycle)	Net Amount (INR)
1	Cat A - 990 kVA DT in Taimoor Nagar, New Friends Colony									
A	Cat A – Supply, installation and commissioning									
B	Cat A - Comprehensive maintenance charges for five years									
2	Cat B - Dwarka (Ispatika Apartments, Dwarka)									
A	Cat B -Supply Installation and commissioning									
B	Cat B - Comprehensive maintenance charges for five years									
3	CAT C - TERI-SAS, Vasant Kunj Institutional Area									
A	Cat C – Supply, Installation and commissioning									
B	Cat C - Comprehensive maintenance charges for five years									
	Total Amount (in figures and words) for Cat A									
	Total Amount (in figures and words) for Cat B									
	Total Amount (in figures and words) for Cat C									

*Component-wise cost break-up to be shared along with Financial bid

NOTES:

1. Certified that rates quoted above are as per the requirement, specification terms & conditions mentioned in the tender document.
2. The rates are inclusive of all taxes & duties, storage, transportation up to site, insurance, etc. and any other job required to properly execute the work.

(Signature of Bidder with seal)

To be submitted only in Part-II in financial bid.

Other documents / conditions, terms if enclosed may lead to rejection of bid.

Format 1: Covering Letter

FROM:

(Full name and address of the Bidder)

.....

.....

To:

General Manager (Materials)
The Energy and Resources Institute (TERI)
6-C, Darbari Seth Block, India Habitat Centre
Lodhi Road, New Delhi – 110003, Delhi, India

Subject: Offer in response to tender specification no.: TERI/MAT/2019-20/002

Sir,

We hereby submit our offer in full compliance with terms and conditions of the above tender. The bid, duly signed on each page, is submitted along with our acceptance of all specifications as well as terms and conditions.

We confirm that, we have the capability for the **Site survey, planning, design, engineering, transportation to site, insurance, supply at site, un-loading, handling, installation, integration, testing, commissioning & demonstration for acceptance of all equipment/ materials and miscellaneous item required to complete the BESS installation** and carrying out five years comprehensive warranty maintenance of BESS Unit for the given time period (supporting documents in proof of capacity should be attached)

We confirm that, all the terms and conditions of the tender have been read and understood carefully before filling up the tender.

The tender is submitted in two separate envelopes named Part-I for Technical Bid & Part-II for Financial Bid only. Both the envelopes should be put into one bigger envelop super scribed 'Complete bid'

(Signature of Bidder with seal)

Format 2: General Particulars of the Bidder

Sl. No.	Name of Bidder	
1.	Name of the Company	
2.	Registered Office Address	
3.	Year of Incorporation	
4.	Postal Address	
5.	Mobile number	
6.	Telephone, Telex, Fax Number	
7.	E-mail address	
8.	Website	
9.	PAN number (enclose a copy)	
10.	Name, designation, and mobile phone no. of the representative of the Bidder to whom all references shall be made	
11.	Anything/extra other than price of items (as mentioned in price Schedule) to be written in the price schedule	
12.	Have the Bidder to pay arrears of income tax? If yes up to what amount?	
13.	Have the Bidder ever been debarred by any Government Dept. /Undertaking/Private Company for undertaking any work?	
14.	Details of offer (please mention number of pages and number of drawings in the hard copy)	
15.	Reference of any other information attached by the tenderer (please mention no. of pages and no. of drawings)	
16.	Number of full-time technical / professional staff in the Company having experience in energy storage	

(Signature of Bidder with Seal)

Format 3: DECLARATION BY THE BIDDER

(Regarding Tender No. TERI/MAT/2019-20/002)

I/ We _____ (herein after referred to as the Bidder) being desirous of tendering for the work under the above mentioned tender and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications, etc., as mentioned in the tender document,

DO HEREBY DECLARE THAT

2. I am fully aware of all the requirements of the tender document and agree with all provisions of the tender document.
3. I am capable of executing and completing the work as required in the tender.
4. I accept all risks and responsibilities directly or indirectly connected with the performance of the tender.
5. I have no collusion with other Bidders, any employee of TERI or with any other person or firm in the preparation of the bid.
6. I have not been influenced by any statement or promises of TERI or any of its employees, but only by the tender document.
7. I am financially solvent and sound to execute the work.
8. I am sufficiently experienced and competent to perform the contract to the satisfaction of TERI.
9. The information and the statements submitted with the tender are true.
10. I am familiar with all general and special laws, acts, ordinances, rules, and regulations of the Municipal, District, State, and Central government that may affect the work, its performance or personnel employed therein.
11. I have not been debarred/black-listed on account of their past activity from similar type of work by TERI and or Government undertaking/Department/ Any other private company.
12. This price offer shall remain valid for acceptance for 6 (six) months from the date of opening of financial bid of tender and tender terms and conditions will be valid till the time work is not completed.
13. I give the assurance to execute the tendered work as per specifications and terms and conditions.
14. I confirm the capability for **Site survey, planning, design, engineering, and transportation to site, insurance, supply at site, un-loading, handling, installation, integration, testing, commissioning & demonstration for acceptance of all equipment/ materials and miscellaneous item required completing the BESS installations on the identified locations and capacities as per the tender specifications.**
15. I confirm that none of my family members are working with TERI

Or,

I hereby declare that following employees of TERI are my family members (if applicable):

(a)...

(b).....

Format 4: Price fall clause

To,

The Energy and Resources Institute,
6-C, Darbari Seth Block,
India Habitat Centre, Lodhi Road
New Delhi – 110 003, Delhi, India

Subject: Price fall clause against Tender No. - TERI/MAT/2019-20/002

Dear Sir / Madam,

With reference to the tender no. TERI/MAT/2019-20/002 dated 13.12.2019, it is hereby confirmed that the price quoted by _____ (Name of the Contractor/ Bidder) for the supplies of system, against this tender is the best possible price we could offer and no further reduction in the price is possible.

It is further confirmed that till the date of submission of this bid, _____ (Name of the Contractor / Bidder) has not supplied any system with services, having the same specification, as mentioned in the above tender, to any government agency / departments, below the price quoted by it in the tender.

Thanking you,

(Bidder Name with Stamp/ Seal)

Authorized Signatory

Format 5: Format for Earnest Money Deposit (EMD)

To,

The Energy and Resources Institute,
6-C, Darbari Seth Block,
India Habitat Centre, Lodhi Road
New Delhi – 110 003, Delhi, India

Subject: Submission of EMD against Tender No. - TERI/MAT/2019-20/002

Dear Sir / Madam,

With reference to tender no. TERI/MAT/2019-20/002 dated 13.12.2019, M/s.
(here in after called the "Bidder") having its Registered Office at
....., Enclosed Demand draft for Earnest Money Deposit (EMD) of Rs
..... in the shape of demand
draft No dated issued by (Name of the
Bank and branch) drawn in favor of The Energy and Resources Institute, New Delhi payable at New
Delhi.

Thanking you,

(Bidder Name with Stamp)

Authorized Signatory

Mandatory to read all the terms and conditions before signing the tender

Format 6: (F/MAT/10): Performance Bank Guarantee

BG NO:

DATED:

VALID UPTO:

In consideration of _____ (hereinafter called "the Company" which expression shall include its successors and assigns), having agreed inter alia to consider as "Consultant" for providing services to TERI to add value by delivering and ensuring the for _____ the Consultant of M/s. _____ (hereinafter called the "Bidder" which expression shall include its successors assigns), for _____ to be awarded under work order no: _____ upon the "Bidder" furnishing an undertaking from the Bank as hereinafter appearing in lieu of the performance bank guarantee .

We ----- (hereinafter called the "Bank" which expression shall include its successors and assigns), at the request of the bidder and with the intent to bind the Bank and its successors and assigns do hereby unconditionally and irrevocably undertake to pay the Company forthwith on first demand without protest or demur or proof or satisfaction or condition and without reference to the bidder, all sums payable by the bidder as and by way of performance bank guarantee to the Company, up-to an aggregate limit of **Rs. _____/- (Rupees _____)**

AND THE BANK DOTH HEREBY FURTHER AGREE AS FOLLOWS:

1. This Guarantee/Undertaking shall be a continuing guarantee and shall remain in full force and effect for all claims or demands made by the Company on the Bank until the Company discharges this Guarantee/Undertaking subject, however, that the Company shall have no claims under this Guarantee/Undertaking after the midnight of _____ or any written extension(s) thereof.

PROVIDED that if the aforesaid work awarded for or any part thereof shall be awarded to the Work Awarded on or before the said date, whether on the basis of accompanying work order or any other basis, then the validity of this guarantee/undertaking shall stand extended based on the request letter of the Company for all claims and demands made by the Company for further three months.

2. The Company shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this Guarantee/ Undertaking at any time and/or from time to time any wise to postpone and/or vary any of the powers, rights, and obligations exercisable by the Company against the Consultant and either to enforce or to forbear from enforcing all or any of the terms and conditions of or governing the said Work Order and/ or any contract consequent upon any award of work or the securities available to the Company or any of them and the Bank shall not be released from its liability under these Presents and the liability of the Bank hereunder shall remain in full force and effect notwithstanding any exercise by the Company of the liberty with reference to any or all the matters aforesaid or by reason of any other act, matter or thing whatsoever which under law relating to the sureties or otherwise which could, but for this provision have the effect of releasing the Bank from all or any of its obligations hereunder or any part thereof, and the Bank specifically waives any and all contrary rights whatsoever.

3. It shall not be necessary for the Company to proceed against the bidder before proceeding against the Bank and the Guarantee/ Undertaking herein contained shall be enforceable against the Bank and the Guarantee/ Undertaking herein contained shall be enforceable against the Bank as principal debtor notwithstanding the existence of any other undertaking or security for any indebtedness of the Consultant to the Company and notwithstanding that any such security shall at the time when claim is made against the Bank or proceedings taken against the Bank hereunder, be outstanding or unrealized.

4. The amount stated by the Company in any demand, claim or notice made with reference to this guarantee shall as between the Bank and the Company for the purpose of these presents is conclusive of the amount payable by the Bank to the Company hereunder.

5. The liability of the Bank to the Company under this Guarantee/Undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the bidder and the Company, the bidder and the Bank and/or the Bank and the Company or otherwise howsoever touching these Presents or the liability of the bidder to the Company, and notwithstanding the existence of any instructions or purported instructions by the bidder or any other person to the Bank not to pay or for any cause withhold or defer payment to the Company under these Presents, with the intent that notwithstanding the existing of such difference, dispute or instructions, the Bank shall be and remain liable to make payment to the Company in terms thereof.

6. This Guarantee/Undertaking shall not be determined or affected by the liquidation or winding up or dissolution or change of constitution or insolvency of the bidder or any change in the legal constitution of the Bank or the Company.

7. Without prejudice to any other mode of service, a demand or claim or other communication may be transmitted by the Company to the Bank either by post or by fax. If transmitted by fax, the transmission shall be complete as soon as acknowledged by bank.

8. Notwithstanding anything contained herein:

(i) The Bank's liability under this guarantee/undertaking shall not exceed **Rs. _____/- (Rupees _____)**

(ii) This guarantee/undertaking shall remain in force up-to ____ years

(iii) The Bank shall be released and discharged from all liability under this guarantee/undertaking unless a written claim or demand is issued to the Bank on or before _____ or, the date of expiry of any extension(s) thereof if this guarantee/ undertaking has been extended.

The Bank doth hereby declare that the **Manager** who is authorized to sign this Guarantee /Undertaking on behalf of the Bank and to bind the Bank thereby.

This _____ day of _____ 201__

Yours faithfully

Signature: _____

Name & Designation: _____

Name of the Branch: _____

Format 7: Format for Power of Attorney

(To be on non-judicial stamp paper of INR 100 as per Stamp Act relevant to place of execution.)

(a) Power of Attorney to be provided by the Bidding Company in favour of its representative as evidence of authorized signatory's authority. Know all men by these presents, we..... (Name and address of the registered office of the bidding Company as applicable) do hereby constitute, appoint and authorize Mr. /Ms.

..... (name & residential address) who is presently employed with us and holding the position of as our true and lawful attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of our Bid in response to the Tender No..... dated issued by The Energy and Resources Institute, New Delhi (hereinafter referred to as "TERI") including signing and submission of the Bid and all other documents related to the Bid, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document which the TERI may require us to submit. The aforesaid Attorney is further authorized for making representations to the TERI and providing information / responses to TERI representing us in all matters before TERI and generally dealing with TERI in all matters in connection with Bid till the completion of the bidding process as per the terms of the above mentioned Tender. We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us. All the terms used herein but not defined shall have the meaning ascribed to such terms under the tender.

Signed by the within named

..... (Insert the name of the executant company) through the hand of

Mr.

duly authorized by the Board to issue such Power of Attorney

Dated this day of Accepted

.....

Signature of Attorney

(Name, designation and address of the Attorney)

Attested

..... (Signature of the executant)

(Name, designation and address of the executant)

.....

Signature and stamp of Notary of the place of execution

Common seal of has been affixed in my/our presence pursuant to Board of
Director's Resolution dated.....

WITNESS

1. (Signature)

Name.....

Designation.....

2. (Signature)

Name.....

Designation..... **Notes:**

The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s).

In the event, power of attorney has been executed outside India, the same need to be duly notarized by a notary public of the jurisdiction where it is executed.

Also, wherever required, the executant(s) should submit for verification the extract of the chartered documents and documents such as a Board resolution / power of attorney, in favour of the person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).

Format 8: Format for experience letter

(To be submitted on the letterhead of Bidding Company)

To,

The Energy and Resources Institute (TERI),
6-C, Darbari Seth Block, India Habitat Center Complex, Lodhi Road,
New Delhi – 110 003, Delhi, India
Phone: 011 2468 2100
Fax: (+91 11) 2468 2144, 2468 2145

Dear Sir,

Sub: Tender for Design, Engineering, Supply, Civil Work, Erection, Testing and Commissioning including Warranty along with Operation & Maintenance for 5 Years for Grid-Connected Battery Energy Storage System in Licensing area of Utility (BRPL)

Ref:

Tender No:

Dated:

We submit our Bid/Bids for the total capacity of _____ kWh in Project Category A / B/C for which details of our Qualification Requirements are as below.

Experience of design, engineering, supply, civil work, erection, testing and commissioning of BESS projects:

S.No	Name and Location of the Project	Client	Size of Project (kWh)	Date of Completion	Completion Certificate/ Work Order (as annexure of this format)
					Yes/No

Yours faithfully

Signature and stamp (on each page) of Authorized Signatory* of Bidding

Company Name:

Date:

Place:

Format 9: CA Certificate for Audited Statement

To whomsoever it may concern,

Name of Bidder	Financial year	Year of Incorporation	Annual Turnover (in Crore)

Signature and Stamp of Chartered Accountant / Statutory Auditor of Company

Name:

Date:

Place:

Mandatory to read all the terms and conditions before signing the tender

Format 10: Consent Letter for financial contribution in the project

I, _____ [Name of Eligible Bidder] with reference to tender no. TERI/MAT/2019-20/002 dated 16.12.2019, having its Registered Office at _____, I hereby declare that I will contribute _____ percent of the project cost (amount in Rs. _____ and in words _____) to TERI as in-kind contribution.

Or

I, _____ [Name of Eligible Bidder] with reference to tender no. TERI/MAT/2019-20/002 dated 16.12.2019, having its Registered Office at _____ I hereby declare that I will contribute *in carrying out* R&D activities related to BESS sizing & control algorithm. I will assist TERI in performing following activities as in-kind contribution.

(Provide list of R&D activities in bullets)

Signature: _____

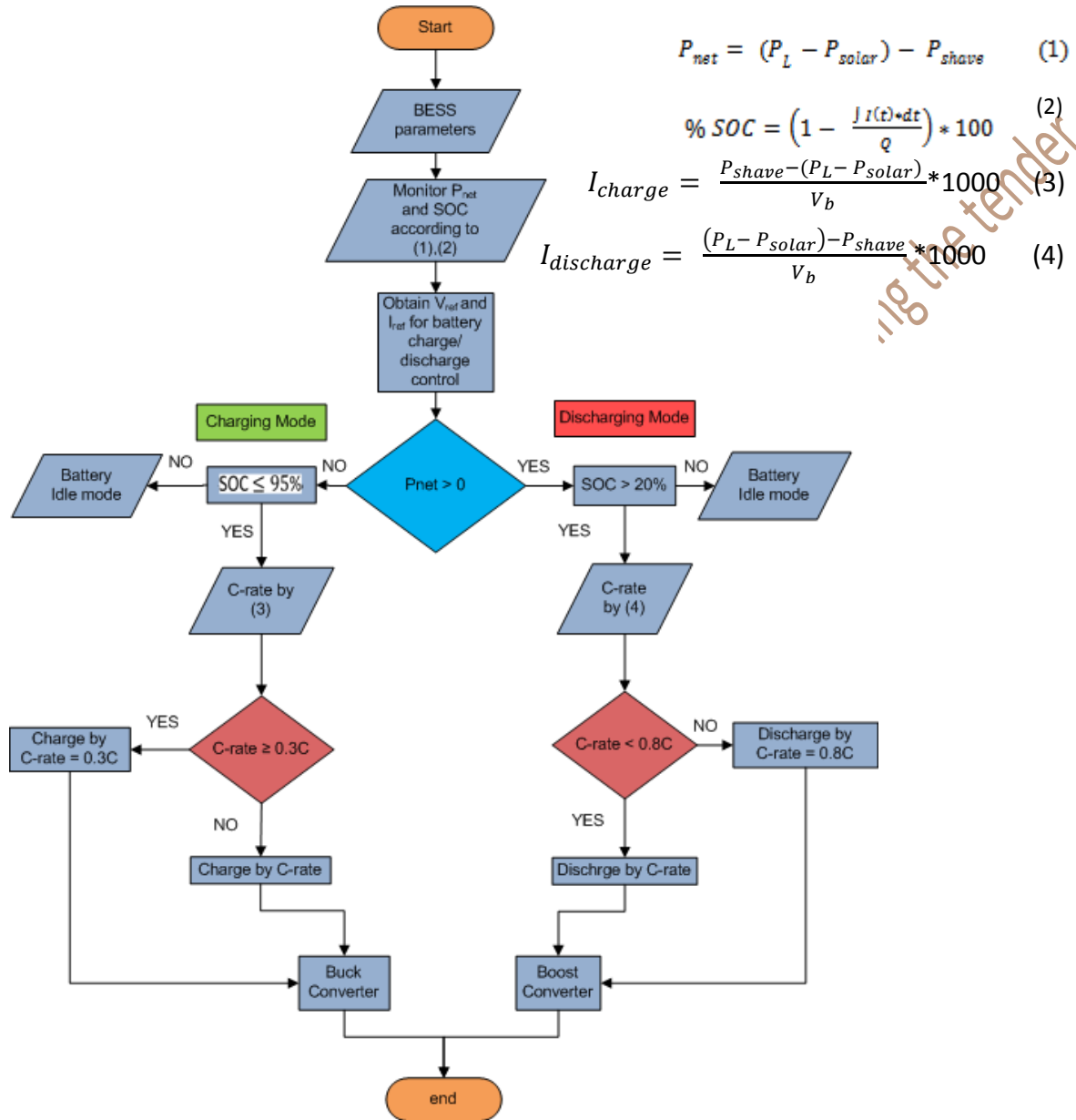
Date: _____

Location: _____

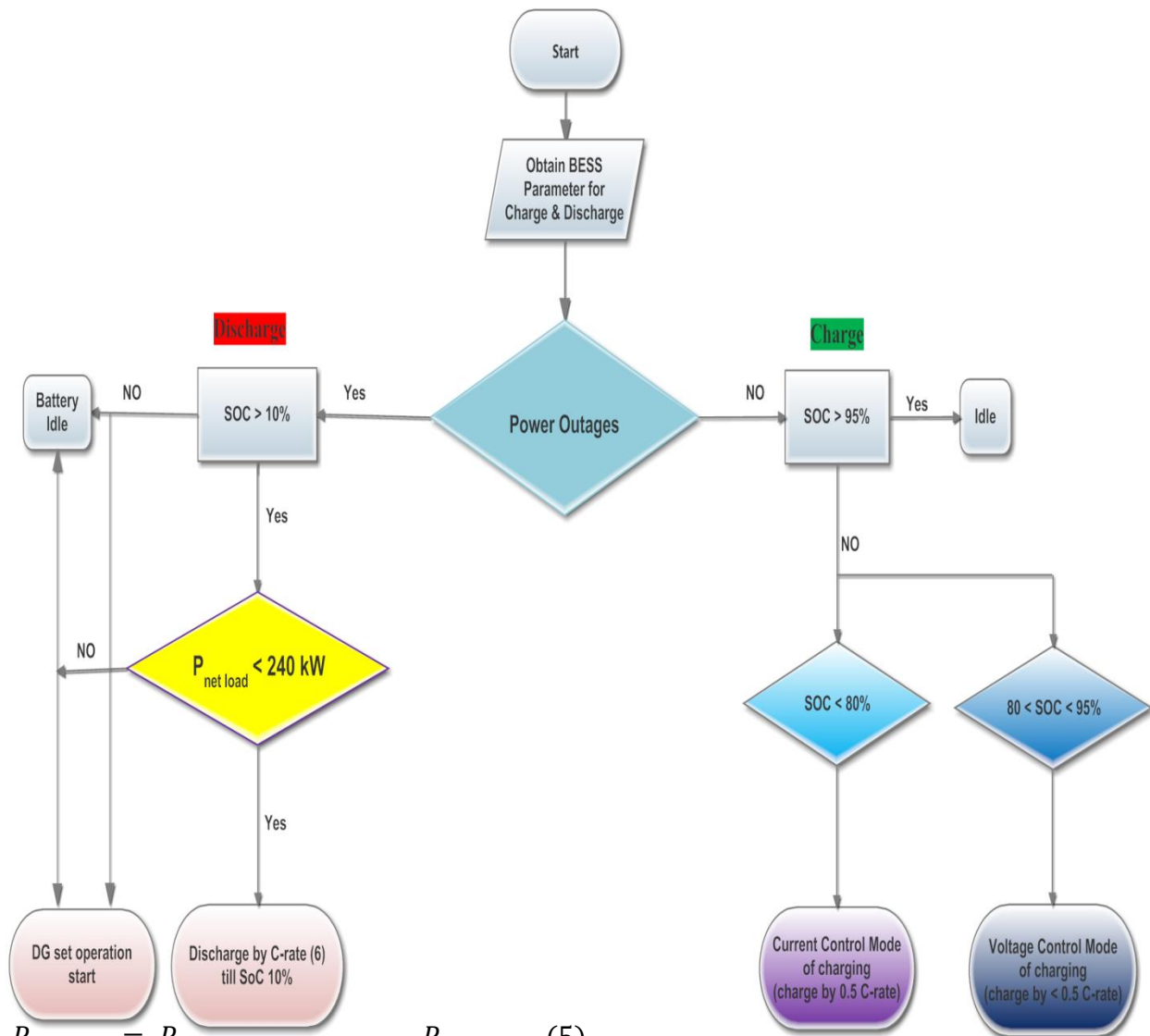
Contact No.: _____

Mandatory to read all the terms and conditions before signing the tender

Annexure I: BESS control flow diagram for Category-A



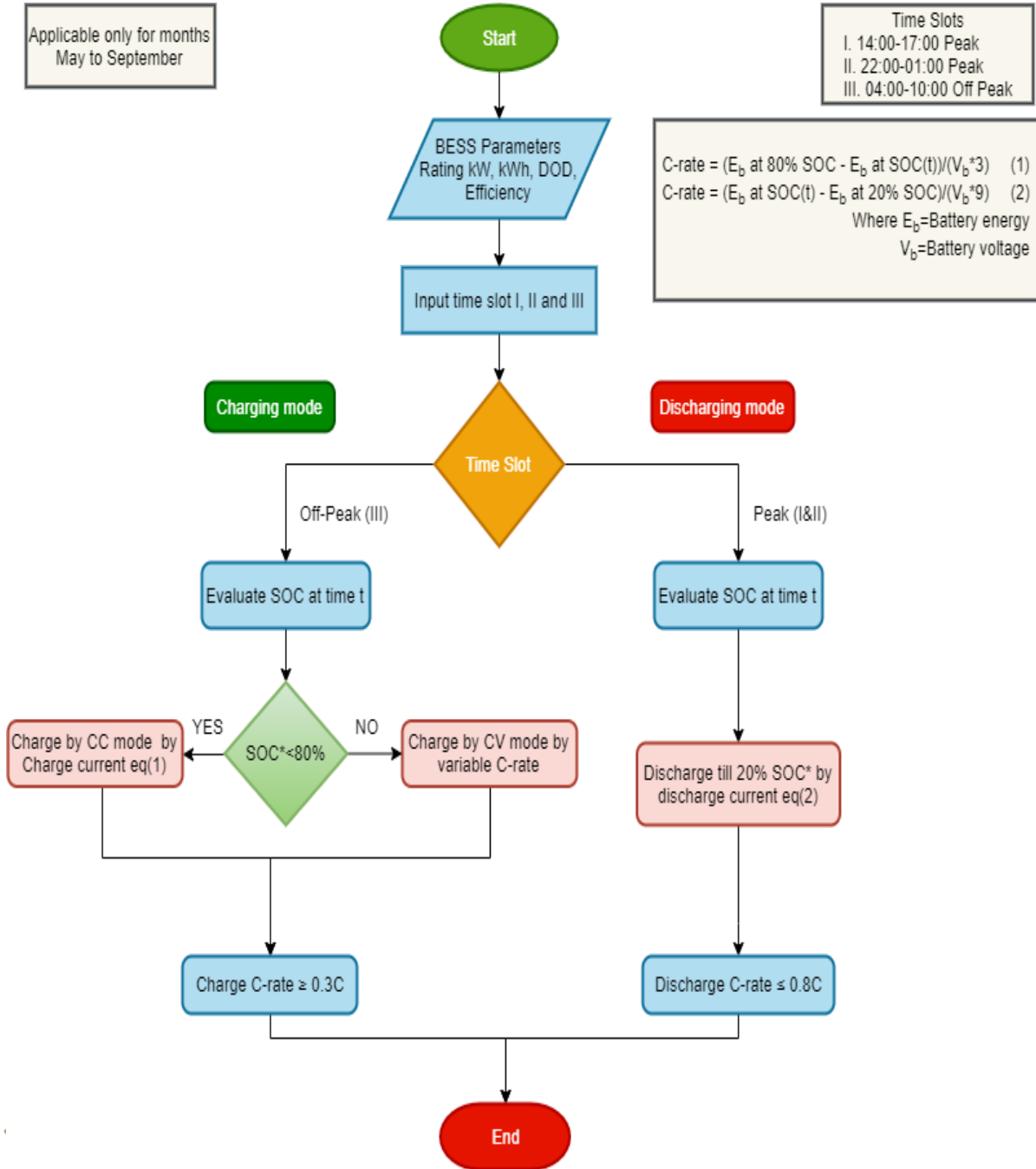
Annexure II: BESS control flow diagram for Category-B



$$P_{net\ load} = P_{Gross\ load\ demand} - P_{solar} \quad (5)$$

$$I_{discharge} = \frac{P_{net\ load\ (kVA)}}{V_b} * 1000 \quad (6)$$

Annexure III: BESS control flow diagram for Category-C



SOC*: SOC limit could be changed as per system integrator recommendations