

NTPC Limited

(A Government of India Enterprise)



Invites

Expression of Interest

(EOI)

For Setting Up

A Pilot Project for Development and Installation of a Grid-Connected
Battery Energy Storage System (BESS) using
Sodium-Ion Battery Technology

DOCUMENTS OF EOI

This EOI document comprises the following sections:

- (i) Section I : EOI Information
- (ii) Section II : Introduction
- (iii) Section III : Instructions to the Applicants
- (iv) Section IV : Consideration of Response
- (v) Section V : Application Form and Annexures

Section – I

EOI Information

DETAILED NOTICE INVITING EXPRESSION OF INTEREST (EOI)**EOI No. NTPC/PE/ET&PR/EOI-06/2026-27****Date: 09.09.2026**

NTPC is inviting Expression of Interest for setting up a pilot project for development and installation of a grid-connected Battery Energy Storage System (BESS) using Sodium-Ion Battery Technology at existing NTPC Thermal Power Stations/ NTPC office buildings.

DOWNLOAD AND TIMELINES FOR SUBMISSION OF EOI

- a. Interested APPLICANTs may download the documents of EOI free of cost from <https://ntpctender.ntpc.co.in>
- b. Last date for submission of EOI : **15.10.2026**
- c. Last date for queries/ seeking clarifications : **05.10.2026**
- d. Date of opening of Eoi response : **16.10.2026**
- e. Response Validity : **6 months
from the last
date for EOI
Submission**

1.0 For consideration of EOI, APPLICANTs are required to e-mail a signed and scanned copy of the EOI, duly filled and completed in all respects, through the e-mail address mentioned hereunder. Email: suneetmehta@ntpc.co.in / abdulshaheedpk@ntpc.co.in

2.0 NTPC shall not be liable for any delays whatsoever in postal/mail delivery of EOI documents, and any EOI received after the stipulated date and time shall not be entertained. EOIs submitted without supporting documents will be summarily rejected.

3.0 NTPC reserves the right to reject or accept any or all applications, cancel/withdraw the EOI process without assigning any reason whatsoever and in such case, APPLICANT shall not have any claim arising out of such action. NTPC bears no responsibility or liability of any kind in reference to the EOI.

Section - II

Introduction

INTRODUCTION

1.0 ABOUT NTPC

NTPC is India's largest integrated power utility with roots planted way back in 1975 to accelerate power development in India. Since then, it has established itself as a leading power major with presence across the entire power value chain. From its conventional thermal power generation base, NTPC has diversified into hydro, solar and wind power and is also expanding into emerging areas such as nuclear power, battery energy storage, pumped hydro storage, green hydrogen and waste-to-energy.

The total installed capacity of NTPC Group is 91,080 MW, with more than 37 GW of capacity under construction. NTPC has set a target to achieve 149 GW of total installed capacity by 2032, including 60 GW of renewable energy capacity. During FY 2025-26, NTPC generated 432 billion units (BU) of electricity, contributing about 24% of India's total electricity generation.

NTPC Limited has reported a total income of INR 1,897.98 billion in the financial year 2025-26. NTPC Group achieved a net profit of INR 275.46 billion in the financial year 2025-26 and has been consistently paying dividends to its shareholders.

2.0 INTENT OF THE EXPRESSION OF INTEREST (EOI)

2.1 India is witnessing rapid growth in renewable energy capacity, particularly solar and wind.

With increasing penetration of variable renewable energy, the requirement for energy storage is also expected to increase significantly for effective integration of renewable energy, energy shifting, peak demand management and supporting reliable grid operation.

2.2 Battery Energy Storage Systems (BESS) are expected to play an important role in meeting this growing storage requirement. Presently, BESS deployment in India and globally is predominantly based on Lithium-ion battery technologies, particularly Lithium Iron Phosphate (LFP) chemistry, which is a commercially established technology for stationary energy storage applications.

2.3 With the expected large-scale requirement of energy storage in the coming years, there is also a need to explore and evaluate different storage technologies for various applications and storage durations. Different technologies may offer different characteristics in terms of cost, safety, cycle life, efficiency, storage duration, operating conditions, scalability and supply-chain requirements.

- 2.4** India presently has limited domestic availability of commercially exploitable lithium resources and depends substantially on imports for battery cells and certain battery raw materials. Therefore, development and evaluation of alternative battery technologies based on more widely available raw materials can provide opportunities for diversification of the battery supply chain and greater indigenization of energy storage systems.
- 2.5** Sodium-Ion battery technology is emerging as one of the potential alternatives for stationary energy storage applications. Sodium is abundantly available from widely available resources and Sodium-Ion chemistries can reduce dependence on lithium and certain other critical materials. This provides potential for development of an indigenous supply chain and, with technology development and manufacturing at scale, a cost-competitive energy storage solution.
- 2.6** For stationary energy storage applications, factors such as cost, safety, cycle life, round-trip efficiency, degradation, operating temperature range, availability and long-term performance are important. In this context, Sodium-Ion technology may be evaluated for its performance and techno-commercial viability for grid-connected energy storage applications under Indian operating conditions.
- 2.7** Considering the scale and diversity of future energy storage requirements, NTPC is exploring various energy storage technology options for different applications. This includes both commercially established and emerging storage technologies. Such exploration would help in assessing their suitability for different applications and developing a diversified portfolio of energy storage solutions.
- 2.8** In this context, there is a need to explore different energy storage technology verticals with focus on techno-commercial viability, safety, performance, scalability, indigenous manufacturing potential and availability of raw materials. Pilot projects can provide actual operating experience and help establish performance and cost benchmarks for emerging technologies before considering their deployment at a larger scale.
- 2.9** Accordingly, NTPC intends to explore Sodium-Ion battery technology through a grid-connected pilot BESS project at existing NTPC Thermal Power Stations/ NTPC office buildings to assess its technical performance, safety, reliability, degradation, operational characteristics and techno-commercial viability under Indian grid and climatic conditions. The experience gained from the pilot would provide inputs for evaluating the suitability of Sodium-Ion technology for possible future deployment at larger scale.

2.10 The interested applicants will submit the technical data/ information, guarantee parameters, the estimated project cost and shall propose the financial contribution by themselves and NTPC and other information as sought in Section-V. For the purpose of this EOI, Applicants shall provide technical and techno-commercial details for the following two pilot project options:

- a. **Option-1: A pilot BESS with 100 kWh usable energy capacity, to provide a common basis for comparison of the proposed technologies.**
- b. **Option-2: A pilot BESS of capacity proposed by the Applicant, based on the standard configuration and suitable scale considered appropriate for demonstration of the proposed technology.**

The Applicant shall provide the technical details, estimated project cost along with detailed cost breakup and other relevant information for both the above options.

2.11 As the technology is still in its nascent stage, the EOI has been categorized based on Technology Readiness Levels (TRL). For proposals involving technologies at TRL 4 (validation in laboratory setup) and TRL 5 (model/prototype demonstration in relevant environment), the participating party shall bear a minimum of 50% of the total project cost as their financial contribution. For technologies at TRL 6 (prototype demonstration in industrial environment) and above, no minimum financial contribution shall be mandatory and the financial contribution, if any, shall be determined on mutually agreeable terms. The capacity of the pilot plant and the mode of execution shall be finalized based on the evaluation of the proposed technology and their TRL level. Proposals involving technologies below TRL 4 shall not be considered. Preference will be given to applicants who offer a higher financial contribution to the pilot project, including for technologies at TRL 6 and above. In the case of TRL 4 or 5, NTPC may return the financial contribution made by the EOI applicant upon the successful demonstration of the pilot project, subject to mutually agreed terms and conditions.

2.12 The interested applicants will submit technical data/information, guarantee parameters, the total estimated project cost and shall propose the financial contribution to be shared by themselves and by NTPC and other information as sought in Section-V. Also, the applicants will indicate the Technology Readiness Level (TRL) to which this proposal is being submitted and shall submit the relevant supporting documents for the same.

2.13 Based on techno-commercial analysis of the responses in the EOI and further discussions with interested parties, if it is found commercially feasible, NTPC may go for pilot installation / may not proceed with any project at this stage.

2.14 NTPC reserves the right to implement the project either on nomination basis or through Request for Proposal (RFP) process amongst the shortlisted parties identified through this EOI Process.

2.15 IPR Rights

a) **Applicable for all EOI Applicants:** IPR for the Sodium-Ion battery technology offered by the Applicant shall remain with the technology provider only. However, intellectual property rights, if any, generated specifically based on the pilot project for Sodium-Ion Battery Energy Storage System (BESS) for grid-connected stationary energy storage applications shall be co-owned by NTPC and the Applicant after successful demonstration of the pilot project.

b) **Applicable additionally for EOI Applicants with TRL level 4-5:** If, as per the mutually agreed terms and conditions, the financial contribution made by the EOI Applicant is returned by NTPC following the successful demonstration of the pilot project, the intellectual property rights generated through the pilot project may be monetized separately during the commercialization phase of the technology, subject to mutually agreed terms and conditions.

2.16 The response(s) received in the EOI/ information received post feasibility study will be utilized by NTPC for:

- a. Assessment of available Sodium-Ion battery technologies and their suitability for the intended stationary energy storage applications; **AND/OR**
- b. Assessment of technical performance, safety, cost, scalability, indigenous manufacturing potential and other techno-commercial aspects of Sodium-Ion BESS; **AND/OR**
- c. Formulation of technical specifications, performance requirements and other requirements for implementation of pilot/demonstration project(s); **AND/OR**
- d. Shortlisting of suitable Applicants/technology providers for forthcoming Request for Proposals (RFP)/tenders by NTPC for undertaking demonstration/commercial project(s)

3.0 Indicative Role and Responsibilities of Parties for Pilot Project

Indicative roles and responsibilities of the parties for the pilot project shall include, but not be limited to, the following:

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3.1 NTPC's Role:

- Land for installation and commissioning of the BESS within NTPC premises.
- Necessary support during operation and maintenance (O&M) of the pilot project.
- Provide feeder in the nearest available 415 V LT Switchgear for charging and discharging of the BESS. However, complete electrical system including cabling, termination etc., from terminal point onwards shall be in the scope of Applicant.
- Provide auxiliary power for BESS auxiliaries, if required, from the nearest available 415 V LT Switchgear. However, complete electrical system including cabling, termination etc., from terminal point onwards shall be in the scope of Applicant.
- Facilitate the Applicant in obtaining necessary site-related inputs.
- Facilitate the Applicant in applying for statutory clearances/approvals for the project, as applicable.
- Facilitate the installation, testing and commissioning of the system.
- Provide necessary support during operation and maintenance (O&M) of the pilot project.
- Support in collection and analysis of operating data for assessment of the performance of the BESS during testing and subsequent operation.

3.2 Applicant's Role

- Design, engineering, manufacture, supply, transportation, storage, erection, testing and commissioning of the complete Sodium-Ion BESS, including battery cells/modules/racks, Battery Management System (BMS), Power Conversion System (PCS), Energy Management System (EMS), switchgears/ACDBs, auxiliary systems and other equipment required for completion of the pilot project.
- Complete integration of the BESS with the electrical system at the identified point of interconnection, including all associated electrical, control, communication, protection and metering systems.
- Providing all necessary safety, fire detection, fire protection and emergency systems required for safe installation and operation of the BESS in accordance with applicable standards and statutory requirements.
- Comprehensive Annual Maintenance of the system under the Applicant's scope for a period of 3 years from the date of commissioning.
- Collection and sharing of operating data and analysis of the performance of the BESS during testing and subsequent operation.

- Demonstration of performance parameters including usable energy capacity, charge/discharge capability, round-trip efficiency, availability, capacity retention/degradation and other guaranteed parameters, as applicable.
- Obtaining necessary statutory clearances and approvals required for installation, commissioning and operation of the BESS, with necessary facilitation by NTPC, wherever required.
- Sharing relevant cell, battery and system-level technical information required for comprehensive assessment of the Sodium-Ion technology and performance of the pilot project.
- Providing all equipment, systems, consumables, spares and services required for safe and reliable operation of the pilot project during the stipulated Comprehensive AMC period
- Providing necessary training to NTPC personnel for operation, safety and understanding of the Sodium-Ion BESS and its associated systems.
- Applicant shall comply with 'Make in India' and 'Public procurement' guidelines and orders issued time to time by DPIIT, DoE, MoF, MoP and other related Ministries of Government of India.

Section - III

Instructions to the Applicants

INSTRUCTIONS TO THE APPLICANTS**1.0 The Applicants should note that:**

- a. Language of the responses to the EOI or any queries/clarifications/correspondence shall be in English only.
- b. For expression of interest, Application Form and Annexures given in Section-V shall be duly filled and sent to NTPC by the APPLICANT in soft copy.
- c. Applicants should go through Section-I and Section-II thoroughly before filling and submitting the application form and annexures in Section-V.
- d. Applicants shall mention the name and contact details of two persons, with complete address, phone number and email id.
- e. NTPC Ltd. may, at its sole discretion, ask for additional information/ documents and/ or seek clarifications from the Applicant(s) after the Deadline for submission of response, inter alia, for the purpose of removal of inconsistencies or infirmities in their responses.

2.0 Enquiries and clarifications

Any clarifications on the EOI may be sought from the following via e-mail:

To: abdulshaheedpk@ntpc.co.in

CC to: suneetmehta@ntpc.co.in

3.0 Corrigendum

At any time before the last date of submission of EOIs, NTPC may, for any reason, whether at its own initiative or in response to a clarification requested by an Applicant, modify the EOI document. The amendment will be posted on the website and will be binding on the Applicants. The Applicant shall give due consideration to the amendment while submitting its EOI, and shall invariably enclose documents/information, as required,

on account of the amendment, as a part of the EOI. NTPC may, at its discretion, extend the deadline for the submission of EOIs.

4.0 Preparation of the response to EOI

The response to the EOI shall consist of Annexure-1, 2, 3 and 4 of Section-V.

5.0 Validity of the responses

The Applicant shall submit the responses which shall remain valid up to six (6) months after the response Deadline ("Response Validity"). NTPC reserves the right to reject any response which does not meet the above-mentioned validity requirement.

NTPC may solicit the Applicant's consent for an extension of the period of validity of the response. The request and the response in this regard shall be in writing. In the event any Applicant refuses to extend its response validity as requested by NTPC, NTPC shall terminate processing of such Applicant's responses. An Applicant accepting NTPC request for validity extension shall not be permitted to modify its response.

6.0 Submission of the response to EOI

The responses to the EOI are to be submitted in soft copy via below e-mail format-

To: abdulshaheedpk@ntpc.co.in

CC to: suneetmehta@ntpc.co.in

Ref. EOI No.

Dated

Submitted to:

Name, designation & address of the concerned officer of NTPC

Submitted by:

Name, address & contact no. of the Applicant

All the pages of the response should be duly stamped and signed by the authorized signatory. The responses to the EOI should be submitted within the deadline at the e-mail address provided in the Section-I of this EOI.

7.0 Costs and expenses towards response to EOI

The Applicants shall be responsible for all the costs associated with the preparation of the response and participation in discussions and finalization & execution of the documents related to this EOI. NTPC shall not be responsible in any way for such costs, regardless of the conduct or outcome of this short-listing/selection process.

8.0 Disclaimer

This Expression of Interest (EOI) has been prepared by NTPC Ltd. for response from Indian/Global Company/their Consortium/Affiliates/Representatives for setting up a Pilot Project for a grid-connected Battery Energy Storage System (BESS) using Sodium-Ion Battery Technology.

In submitting the response to the EOI, the Applicant certifies that it understands, accepts, and agrees to the disclaimers on this page. Nothing contained in any other provision of the EOI nor any statements made orally or in writing by any person or party shall have the effect of negating or superseding any of the disclaimers set forth herewith.

Section-IV

Consideration of Response

CONSIDERATION OF RESPONSE**Responsiveness check**

The responses submitted by Applicants shall be scrutinized to establish their interest in setting up a Pilot Project for a grid-connected Battery Energy Storage System (BESS) using Sodium-Ion Battery Technology, and may be rejected under the following conditions. Responses shall be deemed non-responsive for the following reasons:

- Responses that are incomplete, i.e., not accompanied by any of the applicable formats inter-alia covering letter power of attorney, applicable undertakings, provided in more details at annexure in Section-V.
- Responses not signed by authorized signatory and / or stamped in the manner indicated in this EOI.
- Material inconsistencies in the information/ documents submitted by the Applicant
- An Applicant submitting more than one response to this EOI either itself or through an affiliate or subsidiary company.
- Response validity being less than that required as per Clause 5 of section-III of this EOI.
- Response being conditional in nature.
- Response not received by the response Deadline.
- Response having Conflict of Interest.
- Applicant delaying in submission of additional information or clarifications sought by NTPC, as applicable.

All responses that meet the responsiveness check requirements set out above in this section of the EOI document shall be considered as responsive. In case of non-submission of relevant details as above, the responses may be considered as “non-responsive”, at the sole discretion of NTPC and will not be considered further.

Section-V

Application Form & Annexures

Annexure-1**FORMAT FOR COVERING LETTER CUM UNDERTAKING**

(The covering letter should be on the Letter Head of the Applicant)

Date : _____ Place : _____

To,

.....

Sub.: (INVITATION FOR EXPRESSION OF INTEREST)

Ref.: EOI No._____, **dated**_____(the “EOI”)

Dear Sir,

We, the undersigned [insert name of the “Applicant”], having read, examined, and understood in detail the (INVITATION FOR EXPRESSION OF INTEREST), hereby submit our response.

We confirm that neither we nor any of our Parent Company/Affiliate/Ultimate Parent Company has submitted a response, other than this one, directly or indirectly, in response to the aforesaid EOI.

1. We give our unconditional acceptance to the EOI, issued by NTPC, as amended. In token of our acceptance of the EOI, the same has been signed and stamped by us and enclosed with the response. We hereby confirm that the provisions of the EOI shall be binding on us.
2. We have submitted our response strictly as per provisions and formats of the EOI, without any deviations, conditions and without mentioning any assumptions or notes.
3. We hereby unconditionally and irrevocably agree and accept that the decision made by NTPC in respect of any matter regarding or arising out of the EOI shall be binding on us. We hereby expressly waive any or all claims in respect of EOI process. We confirm that there are no litigations or disputes against us, which materially affect our ability to participate or function under the obligations regarding EOI.

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4. Details of the contact person are furnished as below:

Name:

Designation:

Address:

Contact numbers:

email id:

5. We are enclosing herewith the entire response containing duly signed formats in electronic format sent via email to: abdulshaheedpk@ntpc.co.in as per the EOI for consideration.
6. It is confirmed that our response is consistent with all the requirements of submission as stated in the EOI and subsequent communications from NTPC, if any.
7. The information submitted in our response is complete, strictly as per the requirements stipulated in the EOI and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our response.

We confirm that all the terms and conditions of our response are valid for acceptance for a period of six (6) months from the response Deadline.

8. We confirm that we have not taken any deviation so as to be deemed **“Non-Responsive”** as stipulated in Section-IV of this EOI.
9. We understand that you are not bound to accept any response you receive.
10. We declare that our firm is neither put on Holiday nor Black-listed by any Government/PSU/Private firm or Financial Institution.

We remain,

Yours sincerely

(Name, Designation and Signature of Authorized Person)

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

Annexure-2**APPLICANT'S ORGANIZATION DETAILS TO BE SUBMITTED BY APPLICANT**

(Note: Documents in support of meeting the respective requirement shall be submitted by the Applicant.)

- 1) Name of the Company
- 2) Legal status of the Company
- 3) Brief description of the Company including details of its business groups/subsidiaries/ affiliates:
- 4) Existing Manufacturing facilities – Locations, Capacity
- 5) Date of Incorporation:
- 6) Date of Commencement of Business:
- 7) Full address including Telephone nos. / Fax nos.:
 - a. Registered Office:
 - b. Head Office:
 - c. Address for communication:
 - d. Contact Details:
 - e. Office Address in India, if any:
- 8) Indicate the **Technology Readiness Level (TRL)** at which this proposal is being submitted
- 9) Collaborations/tie-ups with manufacturer (if applicable),
- 10) Details of Indian parties, if any, for installation, supply, services, and collaboration
- 11) Financial Data of Organization (Attach Relevant document in proof of same)

Applicant is requested to submit its annual financial turnover during the last three (3) preceding financial years. Applicant shall submit the audited Balance Sheet and Profit & Loss account for the above three financial years.

	Financial year 2023-24	Financial year 2024-25	Financial year 2025-2026
Turnover			
Net worth			
Profit			

Include financial data of both applicant and collaborator, if any (Turn over, PAT, balance sheet, Contract value of executed projects (Cumulative and single largest contract) for last 3 years). In cases where audited results for the last financial year as on the date of EoI submission date is not available, the financial results certified by a practicing Chartered Accountant shall be considered acceptable.

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Annexure-3

TECHNICAL INFORMATION TO BE SUBMITTED BY APPLICANT

The Applicant shall furnish the following information along with relevant supporting documents.

1.0 About the Technology and Technology Provider

Applicant shall fill the required details and attach relevant documents as per Table-1, Clause-A and Clause-B, Annexure-4.

2.0 About the Reference Plant

Applicant shall fill the required details and attach relevant documents as per Table-1, Clause-C, Annexure-4.

3.0 About Proposed Pilot Project

Applicant shall fill in the required details and attach relevant documents as per Table-1, Clause-D, Annexure-4.

4.0 Budgetary Cost:

4.1 Applicant shall furnish the estimated total capital cost for the proposed pilot project for both Option-1 and Option-2, as specified under Clause 2.10 of the EOI, along with a cost break-up of all major components/items, as applicable, including:

- Battery system including cells/modules/racks, battery enclosure/container, BMS, HVAC/Thermal Management System etc.
- Power conversion system (PCS)
- LT Switchgear/ACDBs and associated equipment
- Energy Management System
- Control, monitoring and communication system
- Auxiliary systems and auxiliary power supply arrangement
- Civil and Infrastructure works
- Installation and Commissioning
- Miscellaneous Items
- Package BOP, as applicable (as required for completion of the pilot project)
- Safety and protection systems

The Applicant shall also indicate the scope of supply and services, inclusions/exclusions, terminal points, facilities required at site and tentative project schedule for both the options.

4.2 Estimated 3-year Comprehensive AMC cost with spares and consumables for both Option-1 and Option-2.

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Note:

- Applicant shall separately mention taxes, duties, freight and insurance applicable for the above items/project.
- Applicant shall mention the budgetary cost of equipment supply for Indian items and imported items separately.
- Financial contribution by the party/ proposed mode of project execution

5.0 Project Timeline:

Applicant shall mention project completion period from award of job till Commissioning and Performance Guarantee Test with necessary details.

(Sign & Company Seal)

Authorized signatory

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

Annexure-4**(Technical Data)**

Note: Applicant shall fill in the required details and attach relevant/supporting documents, wherever applicable.

Sl. No.	Description	Applicant to fill
(A) About the Technology Provider		
1.	Name of Applicant	
2.	Whether the proposed technology is owned by the Applicant	Yes/No
3.	If No, name and address of Technology Owner/Developer/IP Owner	
4.	Whether Applicant has technology tie up/ collaboration with Technology owner/developer/ IP Owner	Yes/No (Attached copy of Technology tie up/ collaboration Agreement along with validity of agreement)
5.	Experience of Applicant/Technology Provider in development/manufacturing of the proposed Sodium-Ion Battery Energy Storage technology in: a) stationary/grid-scale applications b) other applications	
6.	Location and capacity of manufacturing/assembly facilities for cells/modules/BESS, as applicable	
7.	Any other relevant details	
(B) About the Technology (Applicant shall furnish the following details. Wherever required, relevant annexures may be provided to furnish supporting details, drawings, configurations, datasheets and other relevant information)		
1.	Brief write-up on the proposed Sodium-Ion battery technology, including working principle and key features (Annexure with write up and required details to be provided)	
2.	Cell chemistry proposed, including cathode, anode and electrolyte etc.	
3.	Cell type and key cell parameters – nominal voltage, capacity (Ah), energy (Wh) and energy density (Wh/kg)	
4.	Typical Cell-to-Module-to-Pack-to-Rack-to-Battery Enclosure/Container Configuration (Detailed configuration to be furnished as an annexure, including number of cells per module, modules per pack, packs per rack, racks per enclosure/container, series/parallel arrangement at each level, typical voltage and capacity at each level, and overall enclosure/container configuration.)	
5.	Technology Readiness Level along with supporting documents (Certificate from end-	

	user/industry/laboratory/third party reputed organization/institute to be submitted. Suggested format attached as Annexure-5)	
6.	Suitable applications/use cases of the proposed technology	
7.	Key merits and limitations of the technology for stationary energy storage applications	
8.	Round-trip efficiency	
9.	Recommended Depth of Discharge (DoD)/operating SoC range	
10.	Cycle life, indicating DoD, C-rate and End-of-Life criterion	
11.	Calendar/design life	
12.	Expected degradation/capacity retention over life	
13.	Operating temperature range and effect of temperature on performance	
14.	Charging and discharging rate (C-rate)	
15.	Safety characteristics of technology and applicable safety tests/certifications	
16.	Thermal management philosophy	
17.	Scalability and modularity of the technology	
18.	Recyclability/end-of-life management of battery	
19.	Any other relevant technical details	
(C) DETAILS OF REFERENCE PILOT/COMMERCIAL INSTALLATIONS		
1.	Name and location of reference project	
2.	Name of project owner/end user	
3.	Pilot/Demonstration/Commercial installation	
4.	Role and scope of Applicant/Technology Provider in the project	
5.	Rated power and energy capacity (kW/MW and kWh/MWh)	
6.	Battery chemistry and cell manufacturer	
7.	Application/use case	
8.	Date of commissioning / present status, if under implementation	
9.	Period of successful operation, if commissioned	
10.	Round-trip efficiency and capacity retention/degradation achieved, wherever available	
11.	Details of any major operational/safety issue, if any	
12.	Supporting documents such as PO/LOA, commissioning/performance certificate, as applicable	

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(D) Details of the Proposed Pilot Plant

The Applicant shall furnish details of the proposed pilot project for the following two options:

Option-1: 100 kWh Pilot BESS – To provide a common basis for comparison of proposals.

Option-2: Applicant-Proposed Pilot BESS – Applicant may propose a suitable capacity based on its technology/configuration and recommended scale for demonstration.

The Applicant shall furnish the following details for both options:

Sl. No.	Description	Option-1 100 KWh (usable capacity at POI) Pilot BESS	Option-2: Applicant- Proposed Pilot BESS
1.	Proposed rated power capacity (kW)		
2.	Rated energy capacity (kWh/MWh)		
3.	Usable energy capacity at PoI (Owners 415 V LT Switchgear incoming feeder) (kWh/MWh)	100 KWh	
4.	Discharge duration at rated power		
5.	Battery chemistry and cell manufacturer		
	Battery charge/discharge efficiency and yearly degradation		
6.	Cell to Module to Rack to Battery Enclosure/Container configuration		
7.	Number and capacity of battery enclosures/containers		
8.	Battery Container Nominal, minimum and maximum voltage and current details		
	Safety standards/tests – applicable standards and major test reports/certifications.		
9.	PCS – number, rating, configuration, AC and DC nominal, minimum and maximum voltage and current details		
10.	Grid Interconnection details (Scheme and SLD)		
11.	Charging and discharging rate (C-rate)		
12.	AC-to-AC round-trip efficiency		
13.	Cycle life, with corresponding DoD/C- rate and EOL (End of Life) criterion		
14.	Calendar/design life		
15.	Expected degradation/capacity retention over life		
16.	Operating ambient temperature range		
17.	BMS/EMS and control system – brief details and interfacing arrangement		
18.	HVAC / thermal management – type, capacity and auxiliary consumption; chiller details, wherever applicable.		
19.	Fire detection, protection/suppression and other safety provisions		
20.	Applicable codes, standards, tests and certifications		

21.	Auxiliary power consumption – total and major breakup, including HVAC/chiller		
22.	Overall land/space requirement (m ²)		
23.	Broad system configuration, SLD and indicative layout (To be annexed)		
24.	O&M requirements, major spares and consumables		
25.	Process water requirement (if any)		
26.	Cooling water requirement (if any)		
27.	Warranty/Guarantee		
28.	Terminal Points and Exclusions		
29.	Inputs (if any) required from NTPC		
Guarantee Parameters			
30.	Annual Capacity Degradation (Year wise for entire design life to be provided)		
31.	Round Trip Efficiency (At PoI i.e., at Owner's 415 V LT switchgear incoming feeder)		
32.	Auxiliary Power Consumption of BESS		
33.	Plant Availability		
30.	Annual Capacity Degradation (Year wise for entire design life to be provided)		
Manufacturing and Import Content			
34.	Battery Cell – Manufacturer, manufacturing location and country of origin		
35.	Battery Module/Pack – Manufacturer/assembler, manufacturing location and country of origin		
36.	Battery Rack/Enclosure/Container – Manufacturer/integrator, manufacturing location and country of origin		
37.	BMS – Manufacturer and country of origin		
38.	Overall estimated indigenous content of equipment supply (%)		
39.	Overall estimated imported content of equipment supply (%) and source of country		
40.	Present/proposed domestic manufacturing/assembly capability for the offered technology		

(GLOBAL INVITATION OF EXPRESSION OF INTEREST)

Project Execution/Other Information			
41.	Proposed mode of execution of the pilot project		
42.	Scope of Applicant and Technology Provider/Collaborator, as applicable		
43.	In case Applicant has technology tie up/collaboration with technology owner/ developer/IP Owner, detail scope of technology support from collaborator to be indicated		
	Completion schedule of project (in month)		
44.	Financial contribution to be shared by Applicant (% of total Project cost)/proposed mode of execution		
45.	Details of clearances and approvals required prior to implementation		
46.	Any other relevant details		

(Sign & Company Seal)**Authorized Signatory**

-----End of Page-----

Annexure-5

Declaration for TRL Validation

(To be certified by the end-user/3rd party reputed organization/institute (in case of lab-scale/ own premises) where the technology was tested/ demonstrated/ witnessed)

Purpose:

This template is to be filled by the end-user/3rd party reputed organization/institute (in case of lab-scale/ own premises) that provided the testing facility and/or observed the pilot testing of the proposed technology. It confirms whether the technology, developed by M/s _____, has been **successfully validated under laboratory environment/model or prototype installed, and trial carried out at relevant environment/ full prototype installed, and trial carried out at industrial environment** as per TRL-_____ criteria.

A. General Information of End-User/Certifying Organization/Institute

Field	Details
1. Name of Organization/Institute	
2. Address of Facility	
3. Name of Contact Person	
4. Designation	
5. Email / Phone	
6. Type of Facility (e.g., Research Lab / Industrial Plant / Utility)	
7. Duration of Testing Period	From: _____ To: _____

B. Data to be certified

Sl. No.	Validation Criteria	Response	Remarks
1	a. Validation under laboratory environment OR b. Model/prototype installed, and trial carried out at relevant environment OR c. Full prototype installed, and trial carried out at industrial environment		Mark only those applicable
2.	Capacity of battery/model/prototype/BESS		kWh/MWh and kW/MW, as applicable
3.	Round-trip efficiency/energy efficiency actual/predicted (%)		
4.	Usable energy capacity of the battery/BESS actual/predicted		kWh/MWh
5.	Rated charge/discharge power and duration		kW/MW and hours
6.	Duration of Continuous operation that demonstrated		(in Hours)
7.	Operational safety and system integrity assessed and confirmed during testing	(Yes/No)	
8.	Testing witnessed or supervised by qualified personnel	(Yes/No)	
9.	Whether any major failure or unresolved technical issue observed during test	(Yes/No)	

C. Declaration

We hereby confirm that the above-mentioned technology developed by M/s _____ was successfully validated under laboratory environment/model or prototype installed, and trial carried out at relevant environment/ full prototype installed, and trial carried out at industrial environment. Based on our observation and available data, we confirm that the system has demonstrated consistent performance with **Technology Readiness Level** _____ (TRL- ____).

Signature	Designation	Date	Official Stamp

Notes:

- This document must be printed on the host organization's letterhead.
- All fields are mandatory unless marked otherwise.
- NTPC reserves the right to independently verify the claims through a technical evaluation committee.