

DETAILED NOTICE INVITING EXPRESSION OF INTEREST (EOI)

EOI No. NTPC/PE/ET&PR/3221203

Date: 03.11.2022

NTPC is Inviting Expression of Interest to Set up Pilot Project for Long Duration Energy Storage System (LDESS)

1.0 Download and timelines for submission of EOI: -

Interested APPLICANTS may download the documents of EOI free of cost from:

<https://ntpctender.ntpc.co.in>

- Last date for submission of EOI : 06 Jan 2023
- Last date for queries/ clarifications : 27 Dec 2022
- Response Validity : 12 months from last date of EOI submission

2.0 For consideration of EOI, APPLICANTS are required to e-mail signed and scanned copy of EOI duly filled and completed in all respect, through e-mail mentioned hereunder.

Email: To: ashwinikumarverma@ntpc.co.in (Contact no. +91-9650993162)

CC: dipankarhalder@ntpc.co.in

Any clarification/ queries may be obtained from above contact details.

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

4.0 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-I: INFORMATION ABOUT EXPRESSION OF INTEREST (EOI)

1.0 ABOUT NTPC

NTPC is India's largest energy conglomerate with roots planted way back in 1975 to accelerate power development in India. Since then, it has established itself as the dominant power major with presence in the entire value chain of the power generation business. From fossil fuels it has forayed into generating electricity via hydro, nuclear and renewable energy sources. This foray will play a major role in lowering its carbon footprint by reducing greenhouse gas emissions.

The total installed capacity of the company is 70,084 MW (including JVs) own stations include 23 coal based, 7 gas based, 1 Hydro 1 Wind 18 Solar and 1 Small hydro plant. Under JV, NTPC has 9 coals based, 4 gas based, 8 hydro based and 5 renewable energy projects. The capacity will have a diversified fuel mix and by 2032, non-fossil fuel-based generation capacity shall make up nearly 30% of NTPC's portfolio.

2.0 INTENT OF THE EXPRESSION OF INTEREST (EOI)

In the recent years the load profiles have become more variable, with sharper morning and evening peak. On the supply side, the growth of Variable Renewable Energy (VREs) further enhances the intermittency in generation. The time-varying mismatch between electricity supply and demand is a growing challenge for the electricity market. This difference will be exacerbated with the fast-growing renewable energy penetration to the grid due to its inherent volatility. This imbalance in demand and supply has entailed the need of long duration and bulk energy storage system.

In view of above, NTPC is exploring various alternatives for an efficient, economical, minimal self-discharge, scalable, environment friendly, sustainable, long duration energy storage system (LDESS) (except pump hydro energy storage) for setting up a pilot project of **capacity range 1-6 MW/ 8 hours (i.e., 8-48 MWh)**.

The initiative intends to identify suitable long duration energy storage solutions (LDESS) for a particular application in-line with intent of the EOI stated above, to analyze the techno-commercial feasibility and demonstrate their capabilities, characteristics, validating performance through pilot project and subsequently, adopting the same at commercial scale if found commercially viable in long run business scenario.

Accordingly, NTPC is inviting expression of interest from the Indian/ foreign companies who may set up pilot project for long duration energy storage system (LDESS) as stated above. The response(s) received in the EOI will be utilized by NTPC for:

a) Identification for suitable technologies which fits the intended use case(s)

AND/OR

b) Formulation of specifications required for execution of demonstration/commercial project(s).

The Applicants may express their interest in respect of their offerings along with other inputs as indicated in Annexures/formats given at Section-II of this EOI.

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 and the Applicant will give due consideration to the same, while they submit their EOIs, and would 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 EOI.

4.0 SUBMISSION OF THE RESPONSE TO EOI

All the pages of the response should be duly stamped and signed by the authorized signatory. The responses to the EOI are to be submitted in soft copy via below e-mail format-

EOI No.	Dated:
Submitted to: Sr. Manager (Energy Transition and Policy Research) NTPC Engineering Office, NTPC Bhavan, Kavadi guda, Secunderabad.	
Submitted by: <i>Name, address & contact no. of the Applicant</i>	

5.0 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 with this EOI, NTPC shall not be responsible in any way for such costs.

SECTION-II: APPLICATION FORM / ANNEXURES

For consideration of EOI, APPLICANTS are required to e-mail signed and scanned copy of Application Form and Annexures given in this section, completed in all respect, through e-mail mentioned hereunder.

Email: To: ashwinikumarverma@ntpc.co.in (Contact no. +91-9650993162)
CC: dipankarhalder@ntpc.co.in

Note-Applicant must go through following before filling of Application Form / Annexures

(A) INSTRUCTION TO APPLICANTS

The Applicants should note that:

- a. Language of the responses to EOI or any query/clarifications/correspondences shall be in English only.
- b. For expression of interest, Application Form and Annexures given in Section-II shall be duly filled and sent to NTPC by the APPLICANT in soft copy.
- c. Applicants should go through Section-I thoroughly before filling and submitting the application form and annexures given in Section-II.
- 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.

(B) CONSIDERATION OF RESPONSE

The responses submitted by Applicants shall be scrutinized and may be rejected in following conditions-

- Responses that are incomplete, i.e., not accompanied by any of the applicable formats
- Responses not signed by authorized signatory and / or stamped in the manner indicated above.
- 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 1 of section-I 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 bids that shall meet the responsive 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.

APPLICATION FORM

FORMAT FOR COVERING LETTER CUM UNDERTAKING

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

To,

Sr. Manager (Energy Transition and Policy Research)
NTPC Engineering Office, NTPC Bhavan,
Kavadiguda, Secunderabad.

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)**.

We confirm that neither we nor any of our Parent Company/ Affiliate/ Ultimate Parent Company has submitted response other than this response 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 to the EOI, the same have been signed & stamped by us and enclosed to 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.
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: ashwinikumarverma@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.
8. We confirm that all the terms and conditions of our response are valid for acceptance for a period of twelve (12) months from the response Deadline.
9. We confirm that we have not taken any deviation so as to be deemed "**Non-Responsive**" as stipulated in Section-I of this EOI.
10. We declare that our firm is neither put on Holiday or Black-listed by any Government / PSU / Private firm or Financial Institution.
11. We consent for sharing/ publication of information provided in this EOI by NTPC in public domain/ magazine/ journals/ to Govt. bodies as and when required.
12. We understand that you are not bound to accept any response you receive.

We remain,

Yours sincerely

(Name, Designation and Signature of Authorized Person)

Date : _____ Place : _____

ANNEXURE- 1: INFORMATION ABOUT APPLICANT

(Documents in support of following information to be attached 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) Collaborations/tie-ups with technology providers/ developer (if applicable),
- 9) Details of Indian parties, if any, for installation, supply, services, and collaboration
- 10) Financial Data of Organization (Attach Relevant document in proof of same)

	Financial year 2021-22	Financial year 2020-21	Financial year 2019-20
Turnover			
Net worth			
Profit			

ANNEXURE-2: INFORMATION ABOUT TECHNOLOGY

(Details to be submitted under following headings)

Furnish detailed technical write up containing at least following information-

1.0 About the technology: Techno-Economic Details

- Basic working principle and Process diagram
- Characteristics parameters as per data sheet in Table 1
- Scalability and modularity aspect
- Charge and Discharge Rate Control mechanism
- Performance parameters, guarantees and factors affecting performance parameters
- Details of Mechanical, Electrical, Civil and Control and Instrumentation system
- Details of accessories required for running the system
- Details of Energy Management system
- Codes and standard details
- O&M & Safety Aspects
- Details of Effluent generation if any
- Hazardous material, if any, after end of life. Disposal method after end of life
- Recycling Aspect/ encouragement to circular economy if any
- Estimated Harness Potential in India
- Details of Capex, Opex and Project Schedule
- Expected future cost reduction and justification of the same
- Cost Components of LDESS, factors affecting cost and scope of cost optimization
- Capex, Opex, LCOS projections (year wise) today and after 5-10 years
- Effect of discharge duration on Capex, space requirement and energy density (Attach Curve)
- Effect of system capacity on Capex, space requirement and energy density (Attach Curve)
- Share of Imported and local content on total project cost
- Potential for make in India utilizing majorly indigenous resources
- Expected Cost Reduction due to make in India and govt. policy support required if any
- Details of Carbon Debt for energy storage and Carbon Debt repayment duration
- Technology readiness level
- Best use case/ merits/ demerits/ limitations
- Comparison with other energy storage systems for similar application
- Details of investors, if any, for the technology and certificates
- Details of awards/ accolades, if any, given for technology/ innovation
- How is applicant seeing technology in long term perspective?
- Any other relevant details as applicable

2.0 About Pilot Project

- Propose capacity of pilot project within given range OR suggest minimal optimal size
- Parameters of the proposed pilot as per Table-1
- Components details and technical specification of components
- Guarantee Parameters, Warranty and Conditions
- Plot size, Site condition required and project layout
- Facilities required at site and Terminal points
- Execution Period from award of job till Commissioning and Guarantee Test Run
- Environmental clearance required if any
- Financial contribution by the party / proposed mode of project execution

3.0 Budgetary Cost:

3.1 Estimated total capital cost of proposed capacity of pilot project (with cost break up) of all cost component as listed below along with *scope of supply and services, inclusions, exclusions-*

- Energy storage system and associated equipment
- Civil/ Structure
- Control system
- Package BOP (As required for completion of pilot project)
- Installation and Commissioning
- Miscellaneous Items
- Safety and protection system

3.2 Estimated Annual Operation & Maintenance cost

Note-

- Applicant shall separately mention taxes, duties, freight, insurance applicable for above items/project.
- Applicant shall mention budgetary cost equipment supply for Indian item and imported item separately.

4.0 Technical Datasheet

(Table: -1)

Characteristics	Description/ Values		Remark
	Technology	Pilot Project	
Power Range (MW)			
Discharge Duration Range (hrs)			
Round Trip Efficiency (AC-AC) %			
Levelized Cost of Storage (LCOS) (Rs. /kWh)			
Energy Density (Watt hour/Litre)			
Power density (Watt/Litre)			
Space Required (M2/MWh)			
Response Time (ms-hr)			
Design Life (Years)			
Cycle Life (Nos. of charge/ discharge cycle)			
Daily Self Discharge (%)			
Depth of Discharge (%)			
Yearly Degradation (%)			
Development & Construction period (Years)			
Annual availability (%)			
Annual Down time (%)			
Fixed rate of charge or variable?			
Fixed rate of discharge or variable?			
Technology Readiness Level			
Specific Geographic Location Required (Y/N)			

5.0 Details of Reference Project

(Table- 2)

Details of Reference Plant	Description	Remark
Whether Commercial/ Demonstration/ Pilot?		
Status (Under Construction/ Commissioned)		
If commissioned, date of commissioning? OR if under construction, expected date of commissioning?		
Capacity		
Client Details (Name of client, address, and its contact details)		
Client Certificate, if any (Attach)		
