

(INVITATION FOR EXPRESSION OF INTEREST)



**NTPC Limited**

(A Government of India Enterprises)

Invites

Expression of Interest (EOI)

*For*

Identification of Interested Parties for Supply of Torrefied  
Pellet to NTPC Power Plants

## Section-I: EOI Information

### 1.0 ABOUT NTPC:

NTPC Ltd. (A Govt. of India Enterprises), a Maharatna Company, is India's largest power generation company with its 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 from hydro and renewable energy sources. The total installed capacity of the company is over 72 GW (including JVs). NTPC has an ambitious plan to become 130 GW plus company by 2032. This foray will play a major role in lowering its carbon footprint by reducing greenhouse gas emission.

### 2.0 INTRODUCTION:

Decarbonisation of existing coal power asset is one of the key portfolios for NTPC towards achieving goal of Net Zero. Replacement of coal with carbon neutral fuel such biomass is one of the cost-effective methods to achieve decarbonisation of existing coal fleet.

MOP, GOI has set up a 'National Mission on use of Biomass in coal-based thermal power plants (NBM)' in May'2021 to facilitate enhanced utilization of biomass pellets in power stations. NTPC Ltd is already engaged in the mass utilization of non-torrefied biomass for the co-firing in PC-fired boilers. NTPC have successfully achieved 10 wt.% biomass co-firing with non-torrefied pellets on sustained basis in some of its power plants. NTPC is further aiming to enhance biomass co-firing percentage in its coal fired power plants. Non- torrefied biomass pellets have high volatile matter, poor grindability and fibrous nature which limit the maximum achievable co-firing ratio up to 10 wt.% without any modification. To further enhance co-firing percentage with non-torrefied biomass pellets, certain modification is needed such as installation of separate hammer mills, dual burner, and transport air compressor etc. which leads to additional investment. However, if torrefied biomass pellets are used, this may help in achieving higher co-firing percentage without any modification. Higher co-firing percentage in plants located in biomass rich zone shall promote local utilization and reduces transport cost. Moreover, torrefaction increases GCV by at least 20% which is a further saving in transport cost per kcal of energy carried in torrefied biomass pellet.

NTPC has successfully demonstrated the 20 wt.% torrefied biomass co-firing at 110 MW Tanda plant without any modification and further planning to procure torrefied biomass to continue 20% biomass co-firing on sustained basis in its power plants.

### 3.0 ABOUT EXPRESSION OF INTEREST (EOI):

To promote torrefaction capacity in the country, NTPC invites Expression of Interest (EOI) from the interested parties to set up torrefaction pellet production capacity for manufacturing and supplying of torrefied biomass to NTPC plants under short term and long-term contracts.

## Eligibility to participate in EOI

- 1) **Developer:** Any business entity may participate as developer in collaboration with single or multiple torrefaction technology partner for installation of torrefied biomass pellet plant. Torrefaction technology partner should have an operating/ under construction/ under commissioning torrefaction reactor at any of its customers' plants
- 2) **Aggregators:** Any business entity who have experience in aggregation of biomass may participate as aggregator in collaboration with single or multiple torrefied pellet manufacturer. Also torrefied pellet manufacturer should have an operating/ under construction/ under commissioning torrefaction reactor at any of its plants.
- 3) **Consortium:** Experienced biomass pellet manufacturers may participate as lead partner in collaboration with other pellet manufacturers experienced or new in field who may form consortium together to participate in EOI. Subsequently, the consortium shall be required to be converted into the company for supplying pellet to NTPC in case of award. Also one of the partner should have an operating/ under construction/ under commissioning torrefaction reactor at any of its customers' plants.
- 4) **Individual Companies/ Firms:** Following firms having tie up with biomass collectors may participate-
  - Torrefaction technology manufacturers, who have an operating/ under construction/ under commissioning torrefaction reactor at any of its customers' plants.
  - Established torrefied pellet manufacturer having an operating torrefied pellet manufacturing facility
  - Torrefied pellet manufacturer having its plants under construction or commissioning stage

At EOI stage, participants may furnish certificate of collaboration and tie up if available. Alternatively, they may furnish letter of intent about collaboration, consortium, tie up in EOI and certificate may be furnished at later stage when collaboration or tie up gets formalised. EOI is intended to seek willingness, information and intent of participant and hence, collaboration and tie up partner shall be allowed to change at formalisation step.

## 4.0 EOI TIMELINE:

Interested APPLICANTS may download the documents of EOI free of cost from [www.ntpctender.com](http://www.ntpctender.com) & <https://eprocurrentpc.nic.in>. Important dates for the EOI are given below-

Last date for queries/ seeking clarification

Date of publication of EOI + 10 Days

Last date for submission of EOI

Date of publication of EOI + 20 Days

## 5.0 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 applicant (s) 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 EOIs.

## 6.0 CONTENT OF EOI:

The application of EOI consists of the following, which be needed to be submitted for a response to be considered valid.

- a) Annexure-1: Covering Letter
- b) Annexure-3: Business-related information
- c) Annexure-2: Technical details of the existing operational torrefied pellet plant
- d) Duly notarised Power of Attorney in favour of Authorised Signatory

## 7.0 SUBMISSION OF EOI:

For consideration of EOI, applicants are required to e-mail softcopy of EOI, completed in all respect, through e-mail as well as send the hard copy of the same, which can be submitted either in person or by registered/ speed post till the last date of submission of EOI to the following address:

To                    Sh. G.S Gawra  
                          AGM (FM)  
                          EOC Complex, NTPC limited, Secor 24, NOIDA - 201301  
                          [gsgawra@ntpc.co.in](mailto:gsgawra@ntpc.co.in)

CC                    Sh. Ashwini Kumar Verma  
                          DGM (ET &PR), NTPC Limited, EOC, Hyderabad-500080  
                          [ashwinikumarverma@ntpc.co.in](mailto:ashwinikumarverma@ntpc.co.in)

## 8.0 VALIDITY OF THE RESPONSES AND FURTHER PROCESSING OF THE EOI

For the responses to be considered complete, all the required documents need to be submitted, and all the pages of the response should be **duly stamped and signed by the Authorized Signatory in whose favour the Power of Attorney is issued.**

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 a response, inter alia, for the purpose of removal of inconsistencies or infirmities in their responses.

The vendors are requested to submit all documents detailed in this EOI to facilitate expeditious evaluation of responses.

NTPC reserves the right to reject any response at its discretion and no representation of any kind will be accepted in this regard.

Further to the above, 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, the 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.

### **9.0 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, regardless of the conduct or outcome of this short-listing/ selection process.

### **10.0 SHORTLISTING METHODOLOGY**

The applications received against this EOI shall be evaluated based on the information so provided by the vendors. The evaluation shall be carried out by an expert team of NTPC, which will also include visit of the team to the manufacturing unit, technology assessment, performance analysis and its financial capability analysis. It will be mandatory for the torrefied pellet manufacturer/ technology partner of developer/ torrefaction technology manufacturer to demonstrate that the torrefaction reactor is in working condition. The expert team will evaluate the performance of the reactor based on mass conversion ratio and testing of the raw and torrefied material. The vendor may be required to demonstrate continuous operation of at least 8 hrs. The expert panel may include any other parameter for evaluation to assess the technical suitability of the reactor and capability of the vendor to supply the pellets on a sustained basis.

### **10.0 AWARD OF WORK AFTER EVALUATION**

The vendors shortlisted through this EOI will be given an opportunity to set up torrefied pellet plants in the vicinity of NTPC stations. The vendors will have the option of setting up the torrefied pellet plant on their own or through a partnership or a consortium.

NTPC may enter into an agreement with the shortlisted vendors for procurement of torrefied Biomass Pellets of specified quality and quantity on terms and conditions to be decided subsequently. The price of the Pellets may be decided based on price discovered through a limited tender issued to shortlisted vendors or a benchmark price, either issued by the Ministry of Power or decided by NTPC.

The exact period of agreement and exact terms and conditions may be finalised in consultation with the vendors shortlisted through this EOI. NTPC will strive to keep the term of the agreement of a longer duration so that vendors are able to get access to funding for the proposed project. However, the decision of NTPC in this regard shall be final.

#### **11.0 CAPACITY OF THE PELLETS PLANTS TO BE AWARDED**

The capacity of the pellet plants will be decided based on capability of the shortlisted vendors. However, NTPC shall be open to accepting torrefied plants starting with capacity of 20 TPD. The smaller sized plants will be with the objective of testing viability of such plants for widespread adoption of technology even at smaller scale. Larger reactors starting with 100 TPD capacity (single or multiple reactors together) will be with the objective of developing vendors who can serve larger consumers like NTPC. Number of projects to be awarded under each category will be decided after the enlistment.

## Section-III: 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 FOR SETTING UP TORREFIED PELLET PLANTS IN THE VICINITY OF NTPC STATIONS)

Ref.: EOI No. \_\_\_\_\_, dated \_\_\_\_\_ (the "EOI")

Dear Sir,

We, the undersigned ..... [Insert the 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 a 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 has 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 and all claims in respect of the 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 persons are furnished as below:

	<b>Contact person 1</b>	<b>Contact person 2</b>
Name:		
Designation:		
Address:		
Contact number:		
Email id:		

5. We are enclosing herewith the entire response containing duly signed formats in electronic format sent via email to NTPC 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 we have not taken any deviation so as to be deemed “non-responsive”.
9. We understand that you are not bound to accept any response you receive.

We remain,

Yours sincerely

**(Name, Designation and Signature of Authorized Person and seal of the company)**

## ANNEXURE-2

The following are the details of our firm which are supported by documentary evidence:

Annexure-A	Name of the Company /firm	
	Type of company/Firm	
	Registered office address and contact details	
Annexure-B	Name and designation of authorized signatory for this EOI to be submitted along with valid Power of Attorney	
	Address for communication of authorized signatory with contact details	
Annexure-C	Details of business owned by the company/firm	
Annexure-D	<b>Organization details</b> CIN GSTIN PAN PF Account No. ESI code Shareholding pattern MSME (if applicable) Udyam certificate Any other details	
Annexure-E	Location of the manufacturing units for biomass torrefied Pellet	
Annexure-E	Production capacity of the manufacturing units	
Annexure-F	Orders for torrefied pellets (Customer Name and Address, Date of order, ordered quantity) and	
	Up to date Quantity of pellets supplied against each order (Certified by the customer)	
	Mode of transportation (preferred)	
Annexure-F	Average Annual Turnover and Net worth in last three financial years (as per Audited Balance Sheet and Profit	

	& Loss account duly certified by Chartered Accountant with sign and seal).  (Attach audited financial statement of last three years)	
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It is certified that the information provided in this Annexure-2 is correct to the best of my/our knowledge. We fully understand that if any misrepresentation of information is detected, our response against the EOI shall be liable for rejection.

**(Name, Designation and Signature of Authorized Person and seal of the company)**

### ANNEXURE-3

The following are the details of our torrefied plant/s which are supported by documentary evidence:

Sl. No	DETAILS	REMARKS (Kindly enclose separate papers wherever required)
A	GENERAL DETAILS	
A.1	Developer/ Aggregator/ Consortium/ Manufacturer of equipment/Manufacturer of pellets	
A.2	In case of developer/ aggregator/ consortium/ manufacturer of equipment: Details of collaborators and their address	
	In case of torrefied pellet manufacturer: Owner and Address of Pellet Plant/s	
	In case of torrefied machinery manufacturer: Owner and Address of machinery manufacturing facility/ details of customer (name/ address and contact number).	
	Contact Details of the customer representative (Email, Phone, Fax, Mobile)	
B	TECHNOLOGY - GENERAL	
B.1	Status of Technology (of partner or owned as applicable) (Kindly indicate if you/ partner have (i) Developed & Setup pilot/ prototype plant, (ii) Complete design & engineering of the pilot plant, (iii) Pre-engineering stage etc.)	
B.2	Ownership of Technology (Kindly indicate if the technology is owned by you or it is licensed by someone else. In case, the technology is licensed, kindly indicate the technology owner, type (exclusive/ non-exclusive), duration etc. of the license. In case, the technology is owned by you, kindly indicate if it is patented / under patent.)	
B.3	Status of Plant Capacity (TPD) (Kindly indicate the pilot/ prototype plant capacity you have set up or designed thus far)	
C	TECHNOLOGY - SPECIFIC	
C.1	Type of torrefaction & palletization process	

	(Kindly indicate if it is batch process OR continuous process, type of reactor, direct/indirect heating). A brief note on the reactor and the pellet plant along with appropriate pictures will be desirable.	
C.2	Rate of production of torrefied pellets (Kindly indicate on the basis of Tons/Day)	
C.3	Type & Quantity of fuel used for torrefaction process (Kindly indicate if external fuel viz LNG, PNG, Diesel, LDO etc. OR internal fuel viz. torrefied / non-torrefied Agri-waste is batch process OR continuous process)	
C.4	Product conversion efficiency (Without considering torrefied / non-torrefied Agri-waste consumed in the process for torrefaction, in case of internal fuel consumption)	
C.5	Details of Flue gas cleaning system used (If any)	
C.6	Details / Type of binding/adhesion/compression system used for palletization	
C.7	Torrefaction Parameters: Temperature (Deg C) & holding / Cycle time (in minutes)	
C.8	Mass and Energy balance of complete process and Plant	
C.9	Gross Calorific Value (Kcal/Kg) of torrefied pellets (Kindly provide Test Lab Reports, wherever possible)	
C.10	Proximate / Ultimate Analysis of torrefied pellets (Kindly provide Test Lab Reports, wherever possible)	
C.11	Volatile matter loss after torrefaction	
C.12	Sulphur and chlorine content in pellets	
C.13	Ash content in pellets	
C. 14	Electricity consumption with break up in complete process (chipping, hammering, torrefaction, pelletising etc. as applicable)	
C. 15	Pelletising after torrefaction or before torrefaction?	
D	<b>BUSINESS INFORMATION</b>	
D.1	Which capacity of Plant are you interested in? (Kindly indicate (i) 20 TPD Plant, (ii) 100 TPD Plant or more, (III) Both)	

D.2	Tentative cost of development & setup of selected Plant	
D.3	Tentative Cost of O&M of selected Plant (Kindly provide detailed breakup including (i) manpower cost, (ii) power cost, (iii) consumables & spares etc.)	
D.4	Intent to invest alone or as partnership/consortium	
D.5	Have you identified partners	
D.6	Name and address of the proposed partners	
D.7	Tentative space requirement for setting up of plant	
D.8	Tentative time for setting up for new plant	
D.9	If NTPC gives opportunity for setting up of plant near NTPC station, suitable period of agreement (3/5/7/10 years)?	
D.10	If NTPC gives opportunity for supplying torrefied pellets to NTPC stations, suitable period of agreement (1/3/5/7/10 years)?	

It is certified that the information provided in this Annexure-2 is correct to the best of my/our knowledge. We fully understand that if any misrepresentation of information is detected, our response against the EOI shall be liable for rejection.

**(Name, Designation and Signature of Authorized Person and seal of the company)**

**TABLE 1: TECHNICAL PARAMETERS OF BIOMASS PELLETS**

<b>Technical Specification for Torrefied Biomass Pellet</b>		
<b>Property class, Analysis method</b>	<b>Unit</b>	<b>Values</b>
<b>Origin and source,</b> ISO 17225-1:2014,		Agricultural Residue
<b>Diameter, <i>D</i> and length, <i>L</i>,</b> ISO17829	mm	D06 to D25, $D \pm 1$ , $3.15 < L \leq 40$ (From D06 to D10) $3.15 < L \leq 50$ (From D12 to D25)
<b>Moisture, <i>M</i>,</b> ISO 18134-1, ISO 18134-2	Mass fraction in % as received wet basis	$M \leq 10\%$
<b>Ash, <i>A</i>,</b> ISO 18122	Mass fraction in % dry	Ash $\leq 30\%$
<b>Mechanical durability, DU,</b> ISO 17831-1	Mass fraction in % asreceived	$DU \geq 95\%$
<b>Fines, <i>F</i>,</b> ISO 18846	Mass fraction in % asreceived	$F \leq 3\%$
<b>Additives</b>	Mass fraction in % dry	Additive $\leq 5\%$ (Starch, corn flour, potato flour,vegetable oil, lignin etc.)
<b>Gross calorific value, <i>Q</i>,</b> ISO 18125	kCal/Kg as received	$4800 \geq GCV \geq 3600$
<b>Volatile matter, VM,</b> ISO18123	Mass fraction in % dry	$VM < 40\%$
<b>Bulk density, BD,</b> ISO17828	kg/m <sup>3</sup> as received	$BD \geq 600$
<b>Sulfur, <i>S</i>,</b> ISO 16994	Mass fraction in % dry	To be stated by vendors based on lab report of torrefied biomass pellet
<b>Chlorine, Cl</b> ISO 16994	Mass fraction in % dry	To be stated by vendors based on lab report of torrefied biomass pellet
<b>Hard groove Grindability Index, ISO 5074 :2015</b>	HGI	$HGI \geq 55$
<ul style="list-style-type: none"> <li>-VM% and Moisture % shall be the rejection parameters.</li> <li>-HGI, S%, Cl% may be tested randomly and suitable penalties may be put for not meeting specified value.</li> <li>-Minimum specified GCV of torrefied pellet: 3600 kCal/kg. Maximum GCV: 4800 kCal/kg.</li> <li>- Press mud, poultry farm waste, municipal solid waste etc. shall not be used either base material or binder.</li> <li>- Pellet should not have any foul odor and such pellet shall be outrightly rejected at site.</li> </ul>		

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