

TENDER DOCUMENT FOR

Supply of Mobile Air Quality Monitoring Laboratory under the 'Dynamic Hyper-local Source Apportionment for Real-Time Policy Action' project

Reference No.: IITK/NAF/TENDER/2022-23/21 Start Date: 14/2/2023 Closing Date: 27/2/2023



TENDER DOCUMENT

Sealed quotations are invited for the Supply of Mobile Air Quality Monitoring Laboratory under the 'Dynamic Hyper-local Source Apportionment for Real-Time Policy Action ' project in a two bid system i.e. Technical bid & Financial bid.

Both the Technical bid and the Financial bid should be enclosed in separate envelopes which must then be kept in a bigger envelop which must be superscribed by **Name of Tender, Tender Reference number and bid submission end date**. Only Technically qualified bidders will be eligible for the opening of financial bid.

The detailed specifications and address for bid submission is given below:

Name of Work	Supply of Mobile Air Quality Monitoring Laboratory under the "Dynamic Hyper-local Source Apportionment for Real-Time Policy	
	Action" project	
Date of Publishing	14/2/2023	
Pre-bid Meeting Date and Time	20/2/2023 11:00 hours	
Quoring (if any)	No queries will be entertained after	
Queries (II ally)	clarification end date and time	
Bid Submission Start Date	14/2/2023	
Last Date and time of submitting,	N/A	
EMD (Earnest money deposit).	IN/A	
Bid submission End Date	27/2/2023 17:00 hours	
Bid Opening (Date & Time)	28/2/2023 10:30 hours	

1. General statement of objectives and brief description of the project:

The National Clean Air Programme (NCAP 2019) aims to reduce PM2.5 levels in 122 cities in India by 20–30% by 2024 compared to the levels in 2017. NCAP relies critically on the mitigation of sources of pollution through data and monitoring. This means that apart from monitoring air quality levels to identify hotspots, regulatory bodies also require source apportionment (SA) so that human factors contributing to poor air quality such as vehicular pollution, road dust, and garbage burning can be accurately identified and checked via policy action.

Currently, the use of SA is not widespread given the high cost and long lag-time involved: classical SA techniques require months of data collection and processing which is incompatible with real-time policy action. Recent advances in real-time SA (RTSA) have significantly reduced this delay. RTSA uses data obtained from instruments such as mass spectrometers and metal monitors and feeds the data into algorithms that identify the relative contribution of different sources in near-real time. However, RTSA equipment costs tens of millions of rupees to set up and operate which is incompatible with the limited budgets of urban local bodies and policy makers.

The proposed project seeks to establish a novel technique called Dynamic Hyper-local Source Apportionment (DHSA) for real-time and low-cost SA. DHSA uses data from lowcost air quality (LCAQ) sensors such as gas sensors, meteorological sensors and PM sensors and employs machine-learning techniques to convert LCAQ data into SA information. LCAQ sensors cost orders of magnitude less than RTSA equipment, and therefore hundreds of DHSA stations could be established at various locations in a city at the cost of a single RTSA monitoring station. This would allow hyper-local SA data to be obtained from several locations instead of RTSA data from a single location. The widespread availability



of DHSA data from multiple locations in a city would therefore significantly increase the use of SA data in targeted policymaking.

2. Scope of work:

The supplier should handover a fully functional mobile air quality monitoring laboratory fit for on-road use at IIT-Kanpur.

a. Items specified in Table 1 will be made available at IIT-Kanpur. The supplier should fix the items at designated locations inside the mobile air quality monitoring laboratory with the help of IIT-Kanpur technical team at the time of delivery.

b. Items specified in Table 2 should be supplied by the supplier as an integral part of the mobile air quality monitoring laboratory.

Sl.	Item Name	Qty	Mountin	Dimensions	Weight	Power
No.			g			Requirements
1	Environmental Beta	1	Tripod	41 inch triangular	23kg	230VAC, 1.4A
	Attenuation Mass		stand	tripod footprint,		AC, 50Hz, 102W
	Monitor (EBAM) with			88inch height		
	tripod stand					
2	Xact Multi-metals	1	Rack	19inch (width) x	59kg	220VAC, 50Hz,
	monitoring system			20inch (depth) x		10A
	without rack			30inch (height)		
3	HR-ToF-AMS without	1	Rack	41 inch (width) x	150Kg	220VAC, 50Hz,
	Desktop computer and			24inch (depth) x		600W
	without rack			53inch (height)		
4	Desktop computer for	1	Rack	Standard cabinet	-	220VAC, 50Hz
	HR-ToF-AMS			+ 15.4inch		
				monitor		
5	Condensation Particle	1	Rack /	13inch (width) x	10kg	220VAC, 50Hz,
	Counter (CPC) without		Table-top	15inch (depth) x		335W
	rack			10inch (height)		
6	Classifier without rack	1	Rack/Tab	18inch (length) x	23.2kg	230VAC, 50Hz,
			le-top	16.3inch (width)		200W
				x 25.3inch		
				(height)		
7	O ₃ Analyser without	1	Rack	16.75inch (width)	25kg	220VAC, 50Hz,
	rack			x 8.62inch		150W
				(height) x 23inch		
				(depth)		
8	SO ₂ Analyser without	1	Rack	16.75inch (width)	21.8kg	220VAC, 50Hz,
	rack			x 8.62inch		165W
				(height) x 23inch		
				(depth)		
9	CO Analyser without	1	Rack	116.75inch	22.2kg	220VAC, 50Hz,
	rack			(width) x		275W
				8.62inch (height)		
				x 23inch (depth)		

Table 1



10	NOx Analyser without rack	1	Rack	16.75inch (width) x 8.62inch (height) x 23inch (depth)	25kg	220VAC, 50Hz, 275W
11	Desktop Computer (for O3 + SO2 + CO + NOx Analysers) without rack	1	Rack	Standard cabinet + 15.4inch monitor	-	220VAC, 50Hz
12	Multi-Gas Calibrator without rack	1	Rack	16.75inch (width) x 8.62inch (height) x 23inch (depth)	23kg	220VAC, 50Hz, 275W
13	Zero Air Generator	1	Rack	20inch (length) x 12inch (width) x 17inch (height)	18kg	220VAC, 165W
14	Gas Cylinders	3	Floor	10Litres x 3 quantity	-	-
15	Aethelometer without rack	1	Rack	19inch (6U Rack)	20kg	220VAC, 50Hz, 90W
16	Optical Particle Sizer (OPS) without rack	1	Table- top/Rack	5.3inch (height) x 8.5inch (width) x 8.8inch (depth)	2.5kg	220VAC, 50Hz, 15W
17	HMT 337 without probe	1	Rack	7.2inch (length) x 3inch (width) x 4.69inch (height)	-	220VAC, 50Hz
18	Probe – HMT 337	1	Roof-top (vehicle exterior)	Dia 6mm, length 130mm	-	_
19	PM + Gas sensor	2	Cage on roof-top (vehicle exterior)	25cm (height) x 16cm (width) x 10cm (depth)	3kg	220VAC, 50Hz
20	Ultrasonicator	1	Table-top	300mm (length) x 150mm (width) x 100mm (height)	3.5L	220VAC, 50Hz, 120W



Table 2

Sl.	Item Name	Quantity
No.		
1	Roof-top opening-1 for EBAM sampling inlet	1
2	Roof-top opening-2 for Xact sampling inlet	1
3	Rack-1 for Xact	1
4	Rack-2 for HR-ToF-AMS with computer	1
5	Rack(/Table-top)-3 for CPC + Classifier	1
6	Rack-4 for O3 + SO2 + CO + NOx + Desktop + Multi-Gas Calibrator	2 columns
7	Roof-top opening-3 for gas analysers sampling inlet	1
8	Rack-5 for Aethelometer	1
9	Table / rack-6 for OPS	1
10	Rack-7 for HMT 337	1
11	Cage for PM+Gas sensor	2
12	Table for ultrasonicator near wash basin	1
13	UPS (Supplier to provide specifications to run all equipments mentioned in	1
	this table)	
14	Generator set (vehicle exterior)	1
15	Working Table-1 (Near Rack-3)	1
16	Working Table-2 with overhead storage	1
17	Wash basin with overhead tank and waste disposal unit	1
18	Chairs	2
19	Space for future expansion (PTR, C2C6 etc.) 39inch (length) x 25inch	N/A
	(width)	
20	Roof-top opening-4 (above space for future expansion)	1
21	Split Air Conditioners (Supplier to suggest capacity to maintain 24°C inside	2
	the vehicle with all equipment running)	
22	Vibration dampers on the vehicle floor	N/A
23	Straps for equipment	as required
24	Power sockets for all equipment and working tables with 5 additional	_
	sockets	
25	Door alarms for all vehicle entry/exit points	as required
26	Dashcams on all sides of vehicle	as required
27	Electrical switching system (to operate at external electricity supply and	1
	generator)	
28	Retractable cable 25m at vehicle exterior for connecting to electricity	1
	supply	

3. Vehicle and parts supplied:a. The chassis and body/frames of the vehicle supplied under this tender should be new. Refurbishment and supply of pre-owned vehicles will not be accepted.

b. Items mentioned in Table 2 to be supplied by the supplier should be new. Transfer of preowned items will not be accepted.



4. Expected minimum requirement of expertise with the agency:

a. The agency should have expertise in executing similar projects for Government and other reputed organizations.

b. The agency is required to submit a consolidated list and supporting project completion certificates/work orders issued from the Government and other reputed organizations they have worked with on similar assignments.

5. Period of performance & Insurance:

a. Supplier should provide warranty of 2 years for the vehicle as well as all items supplied in Table 2.

b. Supplier should provide insurance cover for the mobile air quality monitoring laboratory (excluding equipment supplied by IIT-Kanpur mentioned in Table 1) for 1 year from a government authorised Insurance agency.

6. Documents to be submitted at the time of handover of Mobile Air Quality Monitoring Lab at IIT-Kanpur

a. Original Invoice from Supplier.

- b. Insurance certificate.
- c. Temporary registration number.
- d. All documents required by Kanpur RTO for permanent vehicle registration.

7. Payment Terms:

SI.	Description	Percentage
No.		payment awarded
1	Purchase of chassis. Payment upon submission of	30%
	valid proof.	
2	Delivery of fully operational vehicle at IIT-Kanpur	50%
	with a temporary registration number.	
3	Submission of all documents required by Kanpur RTO	20%
	for permanent vehicle registration	

Note: The supplier on whom order will be placed by IIT-Kanpur is liable to deliver the fully functional mobile air quality monitoring laboratory fit for on-road use and documents required by Kanpur RTO for permanent vehicle registration within 90days upon receipt of Purchase Order. Failure to do so, the supplier will refund the advance payments made against this procurement within 30days to IIT-Kanpur.

8. Contact Information:

Prof. S. N. Tripathi Coordinator National Aerosol Facility (NAF) Engineering Science Building 1 (ESB-1) Indian Institute of Technology Kanpur, Kanpur – 208016, Uttar Pradesh, India

No telephonic queries will be entertained. Only written or email queries will be entertained.

Applicants will submit their bids with all relevant enclosures in sealed cover clearly marked "Bid for Supply of Mobile Air Quality Monitoring Laboratory under the 'Dynamic Hyper-local Source Apportionment for Real-Time Policy Action' project", so as to



reach **Prof. S. N. Tripathi, National Aerosol Facility, IIT Kanpur, UP – 208016**, on or before 27/02/2023 17:00 hours. Both the Technical bid and the Financial bid should be enclosed in separate envelops which must then be kept inside a bigger envelop. Any delay on account of courier/post etc. shall not be entertained by the Institute.

9. HOW TO APPLY

The documents as listed below (but not limited to) should be submitted in two respective sealed envelopes, clearly marked on the envelope its contents, as given below.

Enclosures

- a) Covering letter as well as Authority letter
- b) Affidavit for registration of firm/company
- c) An undertaking of not being black listed
- d) Organization structure
- e) Details of In-house services
- f) Details of personnel employed
- g) Brief bio-Data of Key professionals
- h) The copies of valid registration/incorporation certificate of the firm(s) along with the copies of relevant documents.
- i) 2D layout design.
- j) Electrical diagram.
- k) The supplier should attach a consolidated list and work experience certificates/work orders as per the requirement of minimum qualification criteria.
- 1) Copy of the audited balance sheets for the last three financial years.
- m) Income tax returns of last three financial years certified by a charted accountant.
- n) Declaration for Made in India products per Special Terms under sl.no.15 (9) in this tender.

10. Please note:

10.1 Incorrect, incomplete, inadequate information may lead to rejection of the application. Canvassing in any form may lead to summarily rejection of application.

10.2 Applicants shall submit self-attested copies of certificates, work orders, appointment letters, agreements, references etc. as proof of eligibility.

10.3 IIT Kanpur reserves the right to reject any application without disclosing the reasons.

10.4 IIT Kanpur also will not provide any explanation to the applicants related to the short listing and selection process. The decision of IIT Kanpur in this respect shall be final and binding on all applicants.

11. Validity of Bid

The Bid should be valid for 90 days from the date of submission.

12. **Pre-Bid Meeting:** A pre-bid meeting shall be held on 20/2/2023 11:00 hours in the Conference Room, National Aerosol Facility, IIT Kanpur.

13. Opening of Tender

The tender document will be opened on **28/02/2023 10:30 hours** in the presence of the representatives of the applicant, carrying authorization letter for the purpose. A maximum of two representatives will be allowed to attend.



14. ELIGIBILTY CRITERIA 14.1. Technical criteria

(a) The applicant should be an organization engaged in the related field of work.

(e) The agency is able to submit project completion certificates issued from the Government and other reputed organizations they have worked with for projects. They must also be able to share references of 2 personnel they worked with.

14.2. Financial criteria

(a) The Financial Proposal should be inclusive of all applicable taxes, duties, fees, levies, and other charges imposed under the applicable laws.

14.3. The applicant who is barred or black listed by any Central/State Government in India will not be eligible for qualification.

14.4. Even though an applicant may satisfy the above requirements, he/she would be liable to disqualification if he/she has:

i. Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the prequalification document.

ii. Record of poor performance such as abandoning work, not properly completing the contract, or financial failures / weaknesses etc.

14.5 The institute reserves the right to shortlist the agencies, subject to thorough verification of their credentials and inspection of similar nature works carried out / in progress by them, through a Technical Committee of experts to be constituted by IIT Kanpur. Weightage will be given for 50% for technical and 50% for financial criteria.

14.6 Persons who are individually or institutionally, in any manner, involved with the selection/ screening process of the tender and employees of IIT Kanpur, are ineligible for applying.

14.7 Joint venture will not be permitted in this tender.

14.8 In case of partnership firm, the work experience, turn over and solvency shall be in the name of partnership firm only.

15. Special terms & conditions

1. For expression of interest, Acceptance letter and Annexures shall be duly filled by the BIDDER(s).

2. Bidder should note that this is Techno Commercial Tender to enlist interested parties and prepare them for future tendering process. Bidder should be sure that it is not the tender/request for proposal invitation.

3. All the pages of the Documents submitted by bidder shall be signed by the permanent



Employee/executives/Directors/managers etc., with name, Designation & seal of the Bidder Company on each page.

4. The intending bidder must read the Techno Commercial Tender and conditions carefully.

5. Bidders should only submit his expression of interest, if they consider themselves eligible in possession of all the documents required in Techno Commercial Tender.

6. Successful contractor must provide future maintenance and services & support with annual maintenance for a period of minimum 2 years. Bidder should point out all the relevant critical issues that they will be addressing while establishing this facility.

7. A scoring system for selected parameters will be used for comparative technical evaluation. The bidders will have to achieve a minimum score determined by IIT Kanpur.

- **8.** Bidder will get all benefits under Rule 153 GFR-2017.
- **9.** As per the Ministry of Commerce and Industry Order No. P-45021/2/2017-PP(BE-II) dated 04.06.2020 preference shall be given to Make in India products for which it is mandatory for bidders to declare Country of Origin of goods and percentage of Local contents in the product.

Definitions:

"Local Content" means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

"Class-I local supplier" means a supplier or service provider, whose goods, services or works offered for procurement, has local content to or more than 50%, as defined under this order.

"Class-II local supplier" means a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%, as defined under this order.

"Margin of purchase preference" means the maximum extent to which the price quoted by a Class-I local supplier may be above the L1 for the purpose of purchase preference. (shall be 20%)

16. Purchase Preference:

- (a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to 'Class-I local supplier' in procurements undertaken by procuring entities in the manner specified here under.
- (b) In the procurements of goods or works, which are covered by para 3(b) above and which are divisible in nature, the Class-1 local supplier' shall get purchase



preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is Class local supplier', the contract for full quantity will be awarded to L1.
- ii. If L1 bid is not a 'Class-1 local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-1 local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-1 local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-1 local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-1 local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-1 local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-1 local suppliers, then such balance quantity may also be ordered on the L1 bidder.
- (c) In the procurements of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-1 local supplier' shall get purchase preference over 'Class-ul local supplier' as well as 'Non-local supplier', as per following procedure:
 - i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-1 local supplier', the contract will be awarded to L1.
 - ii. If L1 is not 'Class-1 local supplier', the lowest bidder among the 'Class-1 local supplier', will be invited to match the L1 price subject to Class-1 local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-1 local supplier' subject to matching the L1 price.
 - iii. In case such lowest eligible 'Class-1 local supplier' fails to match the L1 price, the 'Class-1 local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-1 local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.
- (d) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by procuring entities.



ACCEPTANCE LETTER AND ANNEXURES



TENDER ACCEPTANCE LETTER

(To be submitted on APPLICANT's Letter Head but letter head is not required if applying as individual.)

Tender No. Date:

To, Prof. S.N. Tripathi National Aerosol Facility Indian Institute of Technology Kanpur, Kanpur – 208016, Uttar Pradesh, India

Dear Sir,

Sub: Tender is invited from the parties for **Supply of Mobile Air Quality Monitoring Laboratory under the 'Dynamic Hyper-local Source Apportionment for Real-Time Policy Action' project** of IIT-Kanpur.

We, the undersigned, express our interest for the subject tender and declare the following:

(a) We are duly authorized to represent and act on behalf of

_(name of the firm).

(b) We have examined and have no reservations to the Tender document including Amendment No(s) &Clarification No(s) (if any).

(c) With reference to your invitation for Tender dated ______ required details as per the prescribed Annexures.

(d) We hereby express our willingness to participate in RFP/ forth coming tender as and when IIT Kanpur invite the same.

(e) IIT Kanpur and /or its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents and information submitted in connection with this application and to seek clarifications from our bankers and clients. (f) This application will also serve as authorization to seek/request information as deemed

necessary from any individual or authorized representative of any institution referred in the supporting document provided by Bidder.

(g) IIT Kanpur and /or its authorized representatives may contact the following nodal persons for further information on any aspects of the application.

Name and designation of contact Person	Address for Communication	Telephone No	Email ID

(h) This application is made in the full understanding that:

 Through this tender, IIT Kanpur intends to identify interested and capable parties to supply fully functional mobile air quality monitoring laboratory fit for on-road use. This tender is not intended for empanelment of BIDDER or pre-qualification of BIDDER.
 Tender process will be subject to verification of all information submitted at the



discretion of IIT Kanpur.

3. IIT Kanpur reserves the right to reject or accept any or all applications, cancel/withdraw the Tender process without assigning any reason whatsoever and in such case, BIDDER shall not have any claim arising out of such action and security deposit shall be refunded.
(i) We declare that we have read and abide by the provisions of Fraud Prevention Policy of IIT Kanpur and submit the form of Acceptance of Fraud Prevention Policy duly filled as per IIT Kanpur's format.

(j) The undersigned declare that the statements made and the information provided in the duly completed application are complete, true and correct in every detail.

SIGNATURE (AUTHORISED SIGNATORY) (OFFICE STAMP)



ANNEXURE-1

(FORM FOR ACCEPTANCE OF FRAUD PREVENTION POLICY)

We have read the contents of Fraud Prevention Policy of IIT Kanpur displayed for the Techno Commercial Tender published on website and undertake that we shall strictly abide by the provisions of Fraud Prevention Policy of Indian Institute of Technology Kanpur.

SIGNATURE (AUTHORISED SIGNATORY)

(OFFICE STAMP)

DATE: _____NAME: _____DESIGNATION: _____

PLACE_____



ANNEXURE-2 (ANY OTHER INFORMATION)

If BIDDER desires to share any other additional Information relevant to the work / assignment like brochure, future plan or any suggestion, it may be given in this Annexure.



Frequently Asked Questions

1. Where can I find the specifications of Equipment to be housed inside Mobile Air Quality Monitoring Laboratory?

Ans. The specifications are listed in Table 1. The specification sheets are available in the google drive link:

https://drive.google.com/drive/folders/1nei_rtCcGl6uC8UG0Y92eBWyrcrZMlAm?usp=sha re link

2. How do I know the sampling inlet location for specific equipment?

Ans. The inlet locations are mentioned in the specifications sheet of each equipment. The bidder can also visit IIT-Kanpur to take measurements from the installed equipment.

3. Can I visit IIT-Kanpur to take measurements of equipment mentioned in Table 1 of tender?

Ans. Yes, interested bidders can visit National Aerosol Facility office, ground floor, Engineering Science Building-1, IIT-Kanpur for taking measurements of installed equipment.

4. Can I get photographs of the equipment mentioned in Table 1 of tender?

Ans. Yes photographs are available in google drive link:

https://drive.google.com/drive/folders/1jIZrni4qczwh13WGVot98Kh3sxw6YoOA?usp=sha re_link