



**Maharashtra Pollution Control Board**  
**महाराष्ट्र प्रदूषण नियंत्रण मंडळ**

**Request For Proposal**  
**Supply, Installation, Commissioning and Comprehensive**  
**Operation & Maintenance Services of 60 New**  
**Continuous Ambient Air Quality Monitoring Stations**  
**(CAAQMS) including Buy-Back of 07 Existing**  
**CAAQMS in the state of Maharashtra**

**RFP Reference No: MPCB/JD(APC)/2024-25**

**Date of Issue: 15/10/2024**

**Tender Fee: INR 23,600/-**

***ISSUED BY:***

*MEMBER SECRETARY*

MAHARASHTRA POLLUTION CONTROL BOARD,  
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## **Disclaimer**

This Request for Proposal (RFP) for **“Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra”** is issued by Maharashtra Pollution Control Board (MPCB).

Whilst the information in this RFP has been prepared in good faith, it is not and does not purport to be comprehensive or to have been independently verified. Neither MPCB, nor any of its officers or employees, nor any of their advisers nor consultants accept any liability or responsibility for the accuracy, reasonableness or completeness of the information contained in the RFP, or for any errors, omissions or misstatements, negligent or otherwise, relating to the proposed RFP or make any representation or warranty, express or implied, with respect to the information contained in this RFP or on which this RFP is based or with respect to any written or oral information made or to be made available to any of the recipients or their professional advisers and, so far as permitted by law and except in the case of fraudulent misrepresentation by the party concerned, and liability therefore is hereby expressly disclaimed.

The information contained in this RFP is selective and is subject to updating, expansion, revision and amendment at the sole discretion of MPCB. It does not purport to contain all the information that a recipient may require for the purposes for making a decision for participation in this process. Each Party must conduct its own analysis of the information contained in this RFP, to correct any inaccuracies therein and is advised to carry out its own investigation into the proposed MPCB Project, the regulatory regime which applies thereto and by and all matters pertinent to the MPCB Project and to seek its own professional advice on the legal, financial and regulatory consequences of entering into any agreement or arrangement relating to the MPCB Project. MPCB shall not be responsible for any direct or indirect loss or damage arising out of or for use of any content of the RFP in any manner whatsoever.

MPCB shall be the sole and final authority with respect to qualifying a bidder through this RFP. The decision of MPCB in selecting the Bidder who qualifies through this RFP shall be final and MPCB reserves the right to reject any or all the bids without assigning any reason thereof. MPCB further reserves the right to negotiate with the selected agency to enhance the value through this project and to create a more amicable environment for the smooth execution of the project.

MPCB may terminate the RFP process at any time without assigning any reason and upon such termination MPCB shall not be responsible for any direct or indirect loss or damage arising out of such a termination.

## Abbreviations

Abbreviation	Description
AQI	Air Quality Index
BTX	Balanced Technology extended
CAAQMS	Continuous Ambient Air Quality Monitoring Station ( )
CAMC	Comprehensive Annual Maintenance Contract
COD	Chemical Oxygen Demand
CoOP	Certificate of operation
CPCB	Central Pollution Control Board
DAS	Direct Attached storage
DSC	Digital Signature Certificate
EC	Evaluation Committee
EMD	Earnest Money Deposit
FY(s)	Financial Year(s)
GCC	General Contract Conditions
GIS	Geographic Information System
GOM	Government of Maharashtra
GST	Goods and Services Tax
KPI	Key Performance Indicator
LLP	Limited Liability Partnership
MAF	Manufacturer's Authorization Form
MPCB	Maharashtra Pollution Control Board
NDA	Non-Disclosure Agreement
O&M	Operation and Maintenance
OEM	Original Equipment Manufacturer
PBG	Performance Bank Guarantee
PM	Particulate Matter (PM)
RFP	Request for Proposal
RTI Act	The Right to Information Act, 2005
SCADA	Supervisory Control and Data Acquisition
SLA	Service Level Agreement
SSP	Selected Service Provider
TCS	Tax Collected at Source
TCV	Total Contract Value
TEC	Tender Evaluation Committee
UPS	Uninterruptible Power Supply
USEPA	United States Environmental Protection Agency
WO	Work Order



## Key Terms- Definition

Term	Definition
Authority/ Corporation	This means Maharashtra Pollution Control Board (MPCB).
Bid / Proposal	This means the documents in their entirety comprising of the pre- qualification Proposal, Technical and Financial Proposal, clarifications to these, technical presentation/ demo submitted by the Bidder, in response to the RFP, and accepted by MPCB.
Bidder(s)/Agency /Supplier	Business Organization/Firm who shall supply, commission, operation & maintenance of the air quality monitoring system
Bidder's Representative	The person or the persons appointed by the Bidder from time to time to act on its behalf for overall co-ordination, supervision and execution of Project.
Business Day	This means any day that is not a Sunday or a public holiday (as declared by Government of Maharashtra).
Contract/Agreement	This shall mean the deed to contract, together with its original accompaniment and those latter incorporated in it by mutual consent.
Contract / Project Period	The time period for completion of the entire project scope of work starting from signing of contract till specific duration mentioned defined in the RFP
Contractor/Selected Bidder/Successful Bidder	This shall mean the successful Bidder whose tender has been accepted, and who has been authorized to proceed with the Work mentioned in the RFP.
Day	A period of 24 hours running from midnight to midnight. It means "calendar day" unless otherwise stated. Where, because of a difference in time zone, the calendar day in one country differs from another country then the calendar day shall be deemed to be the calendar day applicable to India.
Deliverables	The services and other documentation, milestones and activities related to complete the Scope of Work for the Project, as defined in the RFP.
EMD/ Bid Security	This refers to the amount to be deposited by the Bidders to MPCB to demonstrate commitment and intention to complete the process of selection of Bidder to complete the bid process in MPCB.
Employer	This shall mean MPCB and is the party who will employ the Successful Bidder to carry out the Works through contractual engagement.
End of Contract	This refers to the time when the Contract Period has ended.
Financial Year	Shall mean a Financial Year period starting from 01 <sup>st</sup> April and ending on 31 <sup>st</sup> March of the respective year;
Letter of Intent / Letter of Award	This refers to the letter issued by MPCB to the Successful Bidder indicating its selection as the Bidder for implementation of the Project
Non- compliance	Failure / refusal to comply to the terms and conditions of the proposal / Agreement

Term	Definition
RFP Portal	The web portal <a href="https://mahatenders.gov.in/">https://mahatenders.gov.in/</a> that is official portal for all details and submissions related to this RFP process
RFP/ Tender	Refers to Request for Proposal containing the technical, functional, commercial and operational specification and including all clarifications/addendums, explanations and amendments issued by MPCB in respect thereof
Total Contract Value/ Contract Value	Value (Exclusive of all taxes, levies and duties) finally agreed between MPCB and the Bidder for the delivery of Equipment and Services mentioned in the RFP, which will be the maximum value payable to the Bidder for this Project.

## NOTICE FOR REQUEST FOR PROPOSAL

**Tender Ref No: MPCB/JD(APC)/2024-25**

**Date: - 15.10.2024**

Maharashtra Pollution Control Board (MPCB), Government of Maharashtra (GoM) invites sealed tenders from reputed experienced professional organizations for **Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra**. MPCB intends to solicit technical and financial bid from prospective Bidders. The prospective firms may download the tender document from website <https://mahatenders.gov.in> on or before date mentioned in the RFP.

For complete details & formats of e-tender can also be obtained from website <https://mahatenders.gov.in> Tender form fee payment of **INR 23,600/- (INR Twenty-Three Thousand and Six Hundred only; inclusive of all taxes and non-refundable)** by payment gateway online. No brokers/intermediaries shall be entertained. The MPCB reserves the right to reject any/all applications without assigning any reasons whatsoever.

The complete bidding document shall be published on <https://mahatenders.gov.in> for the purpose of downloading. The downloaded bidding document shall be considered valid for participation in the electronic bidding process (e-Procurement/ e-Tendering) subject to the submission of required tender/ bidding document fee and EMD in the form of Bank Guarantee.

To participate in online bidding process, Bidders must procure a Digital Signature Certificate (Class - II) as per Information Technology Act-2000 using which they can digitally sign and encrypt their electronic bids. Bidders can procure the same from any CCA approved certifying Agency such as Safecrypt, Ncode, etc. Bidders who already have a valid Digital Signature Certificate (DSC) need not procure a new DSC.

Bidders are also advised to refer “Bidders Manual Kit” available at <https://mahatenders.gov.in> for further details about the e-tendering process.

Bidder is advised to study this RFP document carefully before submitting their proposals in response to the RFP Notice. Submission of a proposal in response to this notice shall be deemed to have been done after careful study and examination of this document with full understanding of its terms, conditions.

The summary of details with regard to this invitation of bids and Tender Schedule are listed in the table below: -

S. No.	Items	Description
1.	Tender Publish	15/10/2024 11.00 IST
2.	RFP Document Download	Start Date: 15/10/2024 11.00 IST. End Date: 29/10/2024 17.00 IST
3.	Last date of submission of Pre- Bid Queries	29/10/2024 17.00 IST
4.	Last date of Bid Submission	29/10/2024 17.00 IST
5.	Pre-qualification Opening	30/10/2024 17.00 IST
6.	Technical Bid Opening	Will be informed later.
7.	Financial Bid Opening	Will be declared after technical scrutiny
8.	RFP Reference No.	<b>MPCB/JD(APC)2024-25</b>
9.	Name of the Project	RFP for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra.
10.	RFP Document Download Start / End Date & Time	Start Date: 15/10/2024 11.00 IST End Date: 29/10/2024 17.00 IST Please visit the below mentioned e-Tendering website <a href="https://mahatenders.gov.in">https://mahatenders.gov.in</a>
11.	Last date to send in requests for clarifications	All the queries should be received on or before through email only with subject line as follows: <b>“Pre-Bid queries - &lt;Agency’s Name&gt;”.</b>  The queries should be submitted as per the format prescribed in <b>Annexure 21</b> .  The Pre-Bid queries to be sent to the Email Id: <a href="mailto:jdair@mpcb.gov.in">jdair@mpcb.gov.in</a>
12.	Address	Maharashtra Pollution Control Board, 3 <sup>rd</sup> Floor, Kalpataru Point, Opp. PVR Cinema, Sion Circle, Sion, Mumbai-400 022 Tel: <b>022-2401 4701 / 2402 4068</b> Email ID: <a href="mailto:jdair@mpcb.gov.in">jdair@mpcb.gov.in</a>
13.	Pre-Bid meeting	<b>Pre-Bid Meeting</b> <b>22/10/24 @ 14:30 Hrs</b>

S. No.	Items	Description
		Pre-Bid meeting virtually link will be shared at later stage
14.	Tender Fee to be paid via Online Payment Gateway mode only.	<b>INR 23,600/-</b> (INR Twenty-Three Thousand and Six Hundred only) (inclusive of all taxes and non-refundable)
15.	Earnest Money Deposit (EMD)	<b>INR 1.50 Crore (One Crore Fifty Lakhs Only) in the form of Bank Guarantee/ NEFT/RTGS</b>
16.	Security Deposit / Performance Bank Guarantee (PBG)	10% of the contract value valid up to Three (03) months post end of contract. PBG should be only from Nationalized/ Schedule commercial banks.
17.	Last date for signing contract	Within 30 days after Letter of Award/Work Order or as intimated by MPCB. If the agreement is not signed within the time frame, MPCB shall reserve the right to revoke the offer made, at the discretion of competent authority.
18.	Bid Validity Period	180 days from the date of opening of technical bid. To be extended as per MPCB's instructions.
19.	Contract Period	Five (5) years from the date of CoOP of each CAAQMS. The contract period may be extended further based on the performance of the agency and mutual agreement between MPCB and the successful bidder
20.	Method of Selection	Least Cost base selection (L1)
<p><b>Contact Details</b></p> <p><b>Member Secretary/Administrative Officer</b></p> <p>Maharashtra Pollution Control Board, 3<sup>rd</sup> Floor, Kalpataru Point, Opp. PVR Cinema, Sion Circle, Sion, Mumbai-400 022 <b>Tel:</b> 022-2401 4701 / 2402 4068 <b>Email ID:</b> <a href="mailto:jdair@mpcb.gov.in">jdair@mpcb.gov.in</a> <b>Website:</b> <a href="https://MPCB.maharashtra.gov.in/">https://MPCB.maharashtra.gov.in/</a></p>		

**Notes:**

1. Prospective Bidders may visit MPCB Office for any further information/clarification regarding this RFP on prior appointment during working hours till the date of technical bid submission.
2. All eligible/interested Bidders are required to be enrolled on portal <https://mahatenders.gov.in> before downloading tender documents and participate in e-tendering. Bidders are requested to

contact on following telephone numbers for any doubts/information/difficulty regarding online enrolment or obtaining digital certificate M/s. NIC Technologies Ltd. Next Tender (India) Pvt. Ltd on 020-3018 7500

3. Bidders should submit the document related to tender online.
4. Cost of tender form of **INR 23,600/- (INR Twenty-Three Thousand and Six Hundred only) (inclusive of all taxes and non-refundable)**, should be credited in to MPCB by online payment gateway, otherwise Bidders cannot participate in e-tendering.
5. The electronic tendering system for MPCB will be available on separate sub-portal with URL <https://mahatenders.gov.in.as> part of the Electronic Tendering System of Government of Maharashtra which is available on the portal <https://mahatenders.gov.in>.
6. Detailed timetable for the various activities to be performed in e-tendering process by the renderer for quoting their offer is given in above table. Bidder should carefully note down the cut of dates for the carrying out each e-tendering process/activity.
7. Every effort being made to keep the website up to date and running smoothly 24 x 7 by the MPCB and the Bidder. However, MPCB takes no responsibility, and will not be liable for the website being temporarily unavailable due to any technical issue at any point of time.
8. In the event MPCB will not liable and responsible for any damages or expenses arising from any difficulty, error, imperfection or inaccuracy with this website, it includes all associate service, or due to such unavailability of the website or any part thereof or any contents or any associate services.
9. The tenders must follow the timetable of e-tendering process and get their activities of e-tendering process done well in advance so as to avoid any inconvenience due to unforeseen technical problems, if any.
10. MPCB will not be responsible for any incomplete activity of e-tendering process of the renderer due to technical error / failure of website and it cannot be challenged by way of appeal, arbitration and in the court of law.
11. Bidder must get done all the e-tendering activities well in advance.
12. Other instructions can be seen in the tender form. All or any one of the tenders may be rejected by competent authority.

## SECTION 1: LETTER OF INVITATION

### 1.1. Background

MPCB hereby invites Proposals from reputed, competent, and professional companies, who meet the minimum eligibility criteria as specified in this bidding document for the **Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra** as detailed in this RFP document.

Maharashtra Pollution Control Board (MPCB) is implementing various environmental legislations in the state of Maharashtra, mainly including Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981 and some of the provisions under Environmental (Protection) Act, 1986 and the rules framed there under like, Biomedical Waste (M&H) Rules, 1998, Hazardous Waste (M&H) Rules, 2000, Municipal Solid Waste Rules, 2000 etc. MPCB is functioning under the administrative control of Environment Department, Government of Maharashtra

Some of the important functions of MPCB are:

1. To plan comprehensive program for the prevention, control or abatement of pollution and secure executions thereof,
2. To collect and disseminate information relating to pollution and the prevention, control or abatement thereof,
3. To inspect sewage or trade effluent treatment and disposal facilities, and air pollution control systems and to review plans, specification or any other data relating to the treatment plants, disposal systems and air pollution control systems in connection with the consent granted,
4. Supporting and encouraging the developments in the fields of pollution control, waste recycle reuse, eco-friendly practices etc.
5. To educate and guide the entrepreneurs in improving environment by suggesting appropriate pollution control technologies and techniques,
6. Creation of public awareness about the clean and healthy environment and attending the public complaints regarding pollution.

### 1.2. Purpose

MPCB hereby invites proposals from reputed, competent and professional companies for a period of Five (5) years from the date of CoOP of each CAAQMS, who meet the minimum eligibility criteria as specified in this bidding document for ***“Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back***

***of 07 Existing CAAQMS in the State of Maharashtra.*** The contract period may be extended **further based on the performance of the agency and mutual agreement between MPCB and the successful bidder.**

MPCB has various existing Continuous Ambient Air Quality Monitoring Stations (CAAQMS) located across Maharashtra. The Continuous Ambient Air Quality Monitoring Station (CAAQMS) of Maharashtra Pollution Control Board (MPCB) serves as a critical tool for monitoring and managing air quality across the state. Equipped with advanced sensors, the CAAQMS continuously measures various air pollutants such as particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, and ozone in real-time. This data provides valuable insights into the state of air quality, helping authorities to assess pollution levels, identify sources, and formulate effective strategies for mitigation and regulation. Additionally, the CAAQMS aids in issuing timely alerts and advisories to the public, especially during periods of poor air quality or pollution episodes. Through its comprehensive monitoring capabilities, the CAAQMS plays a crucial role in safeguarding public health, preserving the environment, and promoting sustainable development in Maharashtra.



## **SECTION 2: INSTRUCTIONS TO BIDDERS**

### **2.1.1 Consortium/ Joint Venture**

The Bidder shall not be allowed to participate as a consortium or a joint venture.

### **2.2 Completeness of Response**

1. Bidders are advised to study all instructions, forms, terms, requirements, and other information in the RFP documents carefully. Submission of bid shall be deemed to have been done after careful study and examination of the RFP document with full understanding of its implications.
2. The response to this RFP should be full and complete in all respects. Failure to furnish all information required by the RFP document or submission of a proposal not substantially responsive to the RFP document in every respect will be at the Bidder's risk and may result in rejection of its Proposal forfeiture of the EMD.

### **2.3 Proposal Preparation Costs**

1. The bidder shall submit the bid at its cost and MPCB shall not be held responsible for any cost incurred by the bidder. Submission of a bid does not entitle the bidder to claim any cost and rights over MPCB and MPCB shall be at liberty to cancel any or all bids without giving any notice.
2. All materials submitted by the bidder shall be the absolute property of MPCB and no copyright/patent etc. shall be entertained by MPCB.

### **2.4 Bidder Inquiries**

Bidder shall e-mail their queries at above mentioned e-mail address, in the Excel format as mentioned in the **Annexure 21**. The response to the queries will be published on <https://mahatenders.gov.in>. No queries will be entertained thereafter. The response of MPCB shall become integral part of RFP document. MPCB shall not make any warranty as to the accuracy and completeness of responses.

### **2.5 Amendment of RFP Document**

1. All the amendments made in the document would be published on the e-Tendering Portal (<https://mahatenders.gov.in>) and shall be part of RFP.
2. The Bidders are advised to visit the aforementioned website/ portal on regular basis to check for necessary updates. The MPCB also reserves the right to amend the dates mentioned in this RFP.

## 2.6 Supplementary Information to the RFP

If MPCB deems it appropriate to revise any part of this RFP or to issue additional data to clarify an interpretation of provisions of this RFP, it may issue supplements to this RFP. Any such corrigendum shall be deemed to be incorporated by this reference into this RFP and shall become part of this RFP.

## 2.7 MPCB's right to terminate the process

MPCB may terminate the RFP process at any time before the award of contract without assigning any reason. MPCB reserves the right to amend/edit/add/delete any clause of this Bid Document. This will be informed to all and will become part of the bid/RFP and information for the same would be published on the e-Tendering portal.

## 2.8 MPCB's Right to accept any Bid and to reject any or All Bids

MPCB reserves the right to accept or reject any Bid, and to annul the bidding process and reject any or all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for MPCB's action.

## 2.9 Earnest Money Deposit (EMD)

1. Bidders are required to submit an Earnest Money deposit (EMD) in the form of Bank Guarantee for an amount mentioned in this RFP from any Nationalised/ Schedule commercial Bank.
2. The Bidders must provide the EMD in the form of NEFT/RTGS /Bank Guarantee (as per format given in **Annexure 44**) in the name of the "Chief Accounts Officer, Maharashtra Pollution Control Board". The Bank Guarantee shall have a validity period of 180 (one hundred and eighty) days from the Bid Due Date, inclusive of a claim period of 60 (sixty) days and may be extended as may be mutually agreed between MPCB and the Bidder from time to time.
3. Unsuccessful bidder's EMD/Bank Guarantee will be returned within 30 days from the date of finalization of the contract / tender.
4. Unsuccessful bidder's EMD/ Bank Guarantee will be returned **within 30 days** from the date of finalization of the tender. The EMD for the amount mentioned above, of the Successful Bidder would be returned upon the issue of Letter of Award.
5. No interest will be paid by MPCB on the EMD amount and EMD will be refunded to all Bidders (including the successful Bidder) without any accrued interest on it.
6. The Bid submitted without EMD, mentioned above, will be summarily rejected.
7. The EMD may be forfeited:
  - If a Bidder withdraws his bid or increases his quoted prices during the period of bid validity or its extended period, if any.

- In case of a successful bidder, if the Bidder fails to sign the contract in accordance with the terms and conditions.
- If during the bid process, a bidder indulges in any such deliberate act as would jeopardise or unnecessarily delay the process of bid evaluation and finalisation.
- If, during the bid process, any information is found false/fraudulent/malafide, and then MPCB shall reject the bid and, if necessary, initiate action.
- The decision of the MPCB regarding forfeiture of the EMD shall be final and binding upon bidders.

## **2.10 Authentication of Bid**

1. The Proposal shall be submitted through Maha Tender Website <https://mahatenders.gov.in>. The procedure for filing of e-tender is provided on the portal. For any queries or errors faced related to uploading and submission of Technical and Financial proposals, payment of Tender Fee and EMD, as part of this RFP, the Bidder(s) may contact the e-portal's 24 x 7 helpdesk at toll free number as mentioned on the Maha-Tender Website. The Bidder(s) may kindly note that MPCB shall not be responsible for any delays or errors faced in submission of Proposals, processing payment of Tender fees or EMD etc., at any stage of the Proposal submission process due to issues including but not limited to network outage and connectivity, technical errors, server downtime etc. on <https://mahatenders.gov.in>
2. The Authorized person of the bidder who signs the bid shall obtain the authority letter from the bidder, which shall be submitted with the Bid. Bid shall be submitted on official letter head of company. All pages of the bid and its annexures, etc. shall be signed and stamped by the person or persons signing the bid.
3. Notarised / irrevocable Power of Attorney executed by the Bidder in favour of the duly authorised representative, certifying him as an authorised signatory for the purpose of this bid. In the case of the Board resolution authorizing a person as the person responsible for the bid, the Board resolution shall be submitted.

## **2.11 Language of Bids**

This bid should be submitted in English language only. If any supporting documents submitted are in any language other than English, then the translation of the same in English language is to be duly attested by the bidder and submitted with the bid, and English translation shall be validated at MPCB's discretion.

## **2.12 Patent Claim**

In the event of any claim asserted by a third party of infringement of copyright, patent, trademark or industrial design rights arising from the use of the goods/services or any part thereof, the

bidder shall expeditiously extinguish such claim. If the bidder fails to comply and MPCB is required to pay compensation to a third party resulting from such infringement, the bidder shall be responsible for such compensation, including all expenses, court costs, lawyer fees etc. MPCB shall give notice to the successful bidder(s) of any such claim and recover it from the bidder.

### **2.13 Bid Submission Format**

The entire proposal shall be submitted strictly as per the format specified in this Request for Proposal. Bids with deviation from this format are liable for rejection.

### **2.14 Preparation of Proposal**

- 2.14.1 Bidders are requested to submit their Proposal in English language and strictly in the formats provided in this RFP. MPCB will evaluate only those Proposals that are received in the specified forms and complete in all respects
- 2.14.2 In preparing their Proposal, Bidders are expected to thoroughly examine the RFP
- 2.14.3 The Technical Proposal submitted by the Bidder should provide the documents as prescribed in this RFP (“**Technical Proposal**”). No information related to Financial Proposal should be provided in the Technical Proposal. In such a case, MPCB will be entitled to reject the Proposal
- 2.14.4 Any condition or qualification or any other stipulation contained in the Proposal submitted by the Bidder shall render the Proposal liable to rejection as a non-responsive Bid
- 2.14.5 Non-compliance with the instructions and conditions contained in the RFP/ Addendum(a)/ Corrigendum(a) shall render the Proposal liable to be rejected. MPCB reserves the right to further debar/ blacklist the Bidder in consequence of non-compliance of any condition of the RFP/Corrigendum(a)/Addendum(a) that impacts the Selection Process in any manner
- 2.14.6 The Proposals must be digitally signed by the Authorized Representative on each page of the Technical Proposal being submitted (the “**Authorized Representative**”) as detailed below:
  - i. by a partner, in case of a limited liability partnership/ Partnership under 1932 Act; or
  - ii. by a duly authorized person, in case of a private and public limited company or a corporation
- 2.14.7 Bidders should note the Proposal Due Date, as specified in Notice of Request for Proposal, for submission of Proposals. Except as specifically provided in this RFP, no supplementary material will be entertained by MPCB, and the evaluation will be carried out only on the basis of documents received by the closing time of Proposal Due Date as

specified in notice of RFP. Bidders will ordinarily not be asked to provide additional material information or documents subsequent to the date of submission, and unsolicited material, if submitted, will be summarily rejected. For the avoidance of doubt, MPCB reserves the right to seek clarifications in case the Proposal is non-responsive on any aspects.

2.14.8 **Financial Proposal:** While preparing the Financial Proposal, Bidders are expected to consider the various requirements and conditions stipulated in this RFP document. The Financial Proposal should be submitted as per the standard Financial Proposal submission forms prescribed in this RFP

2.14.9 While submitting the Financial Proposal, the Bidder shall ensure the following:

- a) The Bidder shall submit the Financial Proposal as per the instruction provided in this RFP
- b) The Bidder shall ensure not to submit the Financial Proposal with the Technical Proposal. Any Technical Proposal with financial details will be rejected by MPCB
- c) The Financial Proposal shall only be submitted in soft copy through Maha Tender Website <https://mahatenders.gov.in>, in the Format as provided therein (“**Financial Proposal**”) in a MS excel file clearly indicating the amount in both figures and words and up to 02 (two) decimal points. For example, amount shall be quoted as 10.12 instead of 10 or 10.1
- d) In case of any discrepancy between figures and words, in the Financial Proposal, the amount indicated in words shall prevail
- e) The Financial Proposal shall be furnished in INR (Indian Rupees) only
- f) The Financial Proposal needs to be filled in completeness based on financial submission sheet and as per the details mentioned within the sheet
- g) The Financial Proposal should be a Proposal inclusive of all the costs including but not limited to all taxes associated with the Project. The Financial Proposal should clearly indicate the price to be charged without any qualifications whatsoever and should include all taxes, duties, fees, levies, works contract tax, freight, insurance and other charges as may be applicable in relation to the activities proposed to be carried out. These shall cover manpower remuneration their statutory contributions, travel, lodging and boarding cost, etc. The Financial Proposal shall consider all the expenses and tax liabilities and cost of insurance, levies, and other impositions applicable under the prevailing law except GST.
- h) If there is a change in the applicable taxes, MPCB shall bear the cost of the same
- i) Rates quoted in the Financial Proposal must be firm and final and shall not be subject to any modifications, on any account whatsoever
- j) The total amount indicated in the Financial Proposal shall be without any condition attached or subject to any assumption and shall be final and binding. In case any assumption or condition is indicated in the Financial Proposal, it shall be considered non-responsive and would be liable to be rejected
- k) NIL value quoted against any field in the Financial Proposal sheet shall lead to rejection of Proposal

- 1) Bidders are required to note that they should necessarily submit their Financial Proposal in the format provided and no other format is acceptable. If during or subsequent to evaluation of Financial Proposal, it is discovered that the Financial Proposal submitted by a Bidder, has been modified in any unauthorized manner, the Proposal may be rejected. MPCB may first in exercise of its discretion seek clarifications from the Bidder on such an occurrence

## 2.15 Bid Submission Instructions

Complete bidding process will be online (e-Tendering) in Two stages. Submission of bids shall be in accordance with the instructions given in the Table below:

Stages	Particulars	Instructions
Stage 1	<b>Tender Fee &amp; EMD</b>	Tender Fees and Earnest Money Deposit (EMD) must be uploaded through online bid submission process.
	<b>Pre-qualification Proposal</b>	The pre-qualification proposal shall be prepared in accordance with the requirements specified in this RFP and the formats prescribed in the RFP. Each page of the pre-qualification proposal should be signed and stamped by the authorized signatory of the bidder. Pre-qualification proposal should be submitted through online e-tendering website only. Pre-Qualification Proposal shall comprise of following: <ul style="list-style-type: none"> <li>a. Checklist for Pre-Qualification Proposal</li> <li>b. Pre-Qualification documents</li> <li>c. Bidder and Bidding Firm Details</li> </ul>
	<b>Technical Proposal</b>	The technical proposal shall be prepared in accordance with the requirements specified in this RFP and the formats are prescribed in this RFP. Each page of the technical proposal should be signed and stamped by the authorized signatory of the bidder. Technical proposal should be submitted through online e-tendering website only. Technical Qualification Proposal shall comprise of following: <ul style="list-style-type: none"> <li>a. Checklist for Technical-Qualification Proposal</li> <li>b. Technical Qualification documents</li> <li>c. Project citation</li> </ul>

Stages	Particulars	Instructions
<b>Stage 2</b>	<b>Financial Proposal</b>	<p>The financial proposal shall be prepared in accordance with the requirements specified in this RFP and in the formats prescribed in the RFP. Each page of the financial proposal should be signed and stamped by the authorized signatory of the bidder. Financial proposal should be submitted through online e-tendering website only.</p> <p>In no way the bidder shall indicate its Financial Offer in <b>Financial Proposal</b> only. In case it is found, MPCB shall summarily reject the proposal of the said bidder.</p>

The following points shall be kept in mind for submission of bids:

1. MPCB shall not accept delivery of proposal in any manner other than that specified in this RFP. Proposal delivered in any other manner shall be treated as defective, invalid, and rejected.
2. The Bidder is expected to price all the items and services sought in the RFP and proposed in the proposal. The Bid should be comprehensive and inclusive of all the services to be provided by the Bidder as per the scope of his work and must cover the entire Contract Period.
3. MPCB may seek clarifications from the Bidder on the Technical proposal. Any of the clarifications by the Bidder on the Technical proposal should not have any commercial implications. The Financial proposal submitted by the Bidder should be inclusive of all the items in the technical proposal and should incorporate all the clarifications provided by the Bidder on the Technical proposal during the evaluation of the technical offer.
4. Financial Proposal shall not contain any technical information. Similarly, technical proposal with any financial cost related information shall be summarily rejected and the bidder shall be disqualified from the tender process.
5. It is required that the all the proposals submitted in response to this RFP should be unconditional in all respects, failing which MPCB reserves the right to reject the proposal.
6. Proposals sent by fax/post/courier shall be rejected.
7. It shall be the sole responsibility of the bidder to ensure that all the documents required for the Eligibility criteria and the Technical Evaluation of the bid are uploaded on the portal well within time and MPCB shall not entertain any re- presentation from any bidder, who fails to upload the requisite documents within the stipulated time and date on account of any technical issues related to low internet connectivity, size of the files to be uploaded etc. Therefore, the bidders are notified that they must read the instructions / information given on the homepage of the e-tender portal and must understand all the nuances of technology in advance.

## 2.16 Late Proposal and Proposal Validity Period

Proposals received after the due date and the specified time (including the extended period if any) for any reason whatsoever, shall not be entertained and shall not be opened in the e-Tendering system. The validity of the proposals submitted before deadline shall be till 180 (One Hundred Eighty) days from the date of opening of technical bid.

## 2.17 Modification and Withdrawal of Proposals

No Proposal shall be withdrawn in the interval between the deadline for submission of proposals and the expiration of the validity period specified by the Bidder on the Proposal form. Entire EMD shall be forfeited if any of the Bidders withdraw their proposal during the validity period.

## 2.18 Non-conforming Proposals

A Proposal may be construed as a non-conforming proposal and ineligible for consideration:

1. If it does not comply with the requirements of this RFP.
2. If the Proposal does not follow the format requested in this RFP or does not appear to address the requirements of the MPCB.

## 2.19 Acknowledgement of Understanding of Terms

By submitting a Proposal, each Bidder shall be deemed to acknowledge that he/she has carefully read and accepts all sections of this RFP, including all forms, schedules, annexure, corrigendum, and addendums (if any) hereto, and has fully informed itself as to all existing conditions and limitations.

## 2.20 Bid Opening

1. Total transparency shall be observed and ensured while opening the Proposals/Bids. All Bids shall be opened in the presence of Bidder's representatives who choose to attend the Bid opening sessions on the specified date, time, and address.
2. MPCB reserves rights at all times to postpone or cancel a scheduled Bid opening.
3. Bid opening shall be conducted in **Two stages**:
  - a) In **the first stage**, Tender fee, EMD/Bank Guarantee, Pre-Qualification and Technical proposals along with document checklist shall be opened and evaluated as per the criteria mentioned in the RFP.
  - b) In **the second stage**, Financial Proposal of only those Bidders, whose all pre-proposals (Prequalification and technical qualification) qualify, shall be opened.



4. All Bids shall be opened in the presence of Bidder's representatives who choose to attend the Bid opening sessions on the specified date, time, and address.
5. All Bids shall be opened in the presence of Bidder's representatives who choose to attend the Bid opening sessions on the specified date, time, and address.
6. The Bidder's representatives who are present shall sign a register evidencing their attendance. In the event of the specified date of Bid opening being declared a holiday for MPCB, the bids shall be opened at the same time and location on the next working day. In addition to that, if the representative of the Bidder remains absent, MPCB will continue process and open the bids of all bidders.
7. During Bid opening, preliminary scrutiny of the Bid documents shall be made to determine whether they are complete, whether required Bid Security has been furnished, whether the Documents have been properly signed, and whether the bids are generally in order. Bids not conforming to such preliminary requirements shall be prima facie rejected. MPCB has the right to reject the bid after due diligence is done.

#### **2.21 Failure to agree with the Terms & Conditions of the RFP / Contract**

Failure of the successful Bidder to agree with the Terms & Conditions of the RFP / Contract shall constitute enough grounds for the annulment of the award and forfeiture of security deposit, in which event MPCB may invite the next best bidder for negotiations or may call for fresh RFP.

#### **2.22 Non-Disclosure Agreement (NDA)**

The Successful Bidder has to sign the Non- Disclosure Agreement **Annexure 23** with MPCB.

#### **2.23 Security Deposit / Performance Bank Guarantee**

1. Security Deposit / Performance Bank Guarantee is governed for services as follows:
  - a. The bidder shall carry out the services in conformity with the requirements of the RFP, generally accepted professional and technically accepted norms relevant to such projects and to the satisfaction of MPCB.
  - b. The Earnest Money deposited at the time of bid submission would be given back to the Successful Bidders after completion of onboarding process.
2. The Successful Bidder shall deposit the Performance Bank Guarantee / Security as follows:
  - a. The Successful Bidder shall at his own expense, deposit with MPCB, and Performance Bank Guarantee from a Nationalised Bank/ Schedule Commercial Bank, of value and valid for Three (03) months after end of the project,
  - b. The Performance Bank Guarantee should be furnished within Seven (7) Working Days from the date of issue of Letter of Intent / Award OR Work Order OR CONTRACT to the empanelled agency.

- c. The Performance Bank Guarantee may be discharged/returned by MPCB upon being satisfied that there has been due performance of the obligations of the successful bidder under the contract. However, no interest shall be payable on the Performance Bank Guarantee.
3. MPCB shall also be entitled to make recoveries from the Performance Bank Guarantee on the following grounds:
  - a. Any amount imposed as a fine by MPCB for irregularities Committed by the bidder.
  - b. Any amount which MPCB becomes liable to the Government /Third party on behalf of any default of the bidder or any of his/her/their agent/ employees or staff.
  - c. Any payment/fine made under the order/judgment of any court/consumer forum or law enforcing agency or any person working on his behalf.
  - d. Any other outstanding amount.
4. Once the amount under this clause is debited, the bidder shall reimburse the Performance Bank Guarantee to the extent the amount is debited within Fifteen (15) days of such debit by MPCB failing which it will be treated as breach of agreement and may lead to termination of agreement with forfeiture of all amounts including interest free Performance Bank Guarantee in favour of MPCB.

#### **2.24 Bid Prices**

The bidder has to quote in the format given for financial bid. Validity of Bid shall be of 180 days (One Hundred and Eight Days) from date of opening of Technical / Stage 1 bids for:

- (a) **Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including warranty period of one year**
- (b) **Operation and Maintenance of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) for 5 years.**
- (c) **Buy-back of seven (07) old CAAQMS in *as-is* conditions.**

#### **2.25 Bid Currency**

The rates quoted shall be in Indian Rupees only.

#### **2.26 Correction of errors**

The bidder is advised to take adequate care in quoting the rate. No excuse for corrections in the quoted rate will be entertained afterwards. The corrections or overwriting in bid document shall lead to cancellation of Bid.

## **2.27 Corrections to Arithmetic errors**

In case of discrepancy between the amounts mentioned in figures and in words, the amount in words shall govern. The amount stated in the Bid form, adjusted in accordance with the above procedure, shall be considered as binding.

## **2.28 Disqualification**

The Bid from the bidders is liable to be disqualified in the following cases:

1. Bid not submitted in accordance with the bid document.
2. The bidder submits conditional offer.
3. Bid is received in incomplete form.
4. Bid is received after due date and time.
5. Bid is not accompanied by all requisite supporting documents.
6. Bidder enclosing Financial Bid in Technical Bid.
7. The successful bidder fails to enter into a contract within period specified by MPCB of the date of notice of award of contract or within such extended period, as fixed by MPCB.
8. Awardee of the contract has given the letter of acceptance of the contract with his conditions.
9. Non - fulfilling of any condition / term by bidder.

## **2.29 Tendering Under Different Names**

1. Firms with common proprietor/partner or connected with one another either financially or as principal and agent or as master and servant or with proprietor/partners closely related to each other as husband, wife, father, mother and minor son/daughter and brother/sister and minor brother/sister, shall not tender separately under different names for the same Contract.
2. If it is found that firms as described in (a) have tendered separately under different names for the same Contract, all such tender(s) shall stand rejected and tender deposit of each such firm / establishment shall be forfeited. In addition, such firms / establishments shall be liable, at the direction of the Managing Director, for further penal action including blacklisting.
3. If it is found that clearly related persons as in above have submitted separate tender/quotations under different names of firms/establishments but with common address for each establishment/firm, though they have different addresses, are managed, or governed by the same person/persons jointly or severally, such Bidders shall be liable for action as in para above.
4. If after the Award of Contract, it is found that the accepted tender violated for cancellation at any time during its currency in addition to penal action against the contractors as well as related firms / establishments.

## SECTION 3: PRE-QUALIFICATION CRITERIA AND TECHNICAL EVALUATION

### 3.1 Pre-Qualification Criteria

S. No.	Minimum Eligibility Criteria-Pre-Qualification Criteria	Document to be submitted
<b>PQ 1</b>	<p>The bidder as on bid date should be:</p> <p>a Company registered in India under the Companies Act 1956 or 2013</p> <p>OR</p> <p>a partnership firm under the Indian Partnership Act, 1932</p> <p>OR</p> <p>the Limited Liability Partnerships Act, 2008, (as amended from time to time)</p>	<p>a) General Information of Bidder along with Bidder's constituting documents such as MOA, AOA.</p> <p>b) Copy of Certificate of Incorporation / LLP Agreement/ Partnership deed</p> <p>c) Copy of valid PAN Card</p> <p>d) Copy of valid GST Certificate with GST Number</p> <p>e) For companies registered Limited Liability Partnership (LLP) registered under the LLP Act, 2008 or Indian Partnership Act 1932 as amended time to time, Copy of Certificate of Incorporation/ Registration of Firm (RoF)/ Partnership deed of Bidder/ LLP deed, as applicable</p> <p>f) For companies registered under companies Act, 2013 or the Companies Act, 1956, General Information of Bidder along with Bidder's constituting documents such as MOA, AOA.</p> <p>g) Copy of Power of Attorney signed by legally authorized signatories as per <b>Annexure 19</b>.</p> <p>All documents to be submitted as per applicability.</p>
<b>PQ 2</b>	<p><b>Average Annual Turnover:</b></p> <p>The average annual turnover of the bidder for the last three (03) audited financial years should be more than <b>INR 30 Crores</b>. (FY 2021-22, FY 2022-23, FY 2023-24)</p>	<p>a) Audited Financial Statements (Balance Sheet and Profit &amp; Loss Statements) from the Statutory Auditor/Chartered Accountant and</p> <p>b) Certificate duly signed by Statutory Auditor of the Bidder for total turnover as per the format. <b>Annexure 8</b></p>

S. No.	Minimum Eligibility Criteria-Pre-Qualification Criteria	Document to be submitted
		<b>Note: Audited financial statement should match with certificate of chartered accountant</b>
<b>PQ 3</b>	<p><b>Net-worth Criteria:</b></p> <p>Bidder shall have Positive Net Worth in each of the last <b>Three (03)</b> Financial Years. (FY 2021-22, FY 2022-23, FY 2023-24)</p> <p><u>[Net-Worth as defined in Companies Act 1956 / 2013 as amended from time to time.]</u></p>	<p>a) Audited Financial Statements (Balance Sheet and Profit &amp; Loss Statements) from the Statutory Auditor/Chartered Accountant and</p> <p>b) Certificate duly signed by Statutory Auditor of the Bidder for Net-worth as per the format in <b>Annexure 8</b></p> <p><b>Note: Audited financial statement should match with certificate of chartered accountant</b></p>
<b>PQ 4</b>	<p><b>Project Experience 1:</b></p> <p>The Bidder must have experience in “<b>similar works</b>” * during last <b>seven (07)</b> years in India as on last date of submission of bid as per following details</p> <p><b>One (01)</b> project worth at least <b>INR. 60 Cr.</b> OR <b>Two (02)</b> projects each costing not less than the amount equal to <b>INR. 40 Cr.</b> OR <b>Three (03)</b> projects each costing not less than the amount equal to <b>INR. 30 Cr.</b></p>	<p>a) Bidders shall submit copy of Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement mentioning the relevant scope of Work.</p> <p>b) Completion Certificate from the client mentioning the total value of completed projects OR In case of on-going project, partial completion certificate from the client on client’s letter head mentioning the relevant scope of Work, having received the payment matching the ‘Minimum Project Value’ of the partially completed project.</p> <p>c) Performance statement formats for <b>Manufacturer and for Authorized representative of manufacturer:</b> in format given in <b>Annexure 5</b></p> <p>d) Project Citation as given in <b>Annexure 4.</b> <i>For bidders submitting private work orders, GST invoice and payment receipts/statement needs to be submitted to ascertain proof of payment.</i></p>
<b>PQ 5</b>	<b>Project Experience 2:</b>	a) Bidders shall submit copy of Purchase Order (PO)/ Work Order (WO)/ Letter of Award

S. No.	Minimum Eligibility Criteria-Pre-Qualification Criteria	Document to be submitted
	<p>The Bidder should have experience of “similar works” * of supplying at least <b>15 nos.</b> of CAAQMS along with O&amp;M during the past <b>seven (07) years.</b></p>	<p>(LOA) / Contract Agreement mentioning the relevant scope of Work.</p> <p>b) Completion Certificate from the client indicating the number CAAQMS supplied along with O&amp;M OR In case of on-going project, partial completion certificate from the client on client’s letter head mentioning the relevant scope of Work, having received the payment matching the ‘Minimum Project Value’ of the partially completed project.</p> <p>c) Project Citation as given in <b>Annexure 4</b></p> <p><i>For bidders submitting private work orders, GST invoice and payment receipts/statement needs to be submitted to ascertain proof of payment.</i></p> <p><i>Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement issued only in the name of participating entity shall be considered.</i></p>
<p><b>PQ 6</b></p>	<p><b>Certifications:</b></p> <p>The bidder shall have <b>ISO 9001:2015</b> Certification <b>valid</b> as on last date of submission of bid.</p>	<p>Copy of valid certifications as on last date of submission of bid.</p>
<p><b>PQ 7</b></p>	<p>The Bidder to submit Manufacturer Authorization Form (MAF) from the OEMs.</p>	<p>For Manufacturer: Self Declaration MAF for Original Equipment Manufacturer in <b>Annexure 10.</b></p> <p>or</p> <p>For Dealers: Manufacturer’s Authorization Form (MAF) for Authorized Supplier of OEM as per format in <b>Annexure 12.</b></p> <p>AND</p>

S. No.	Minimum Eligibility Criteria-Pre-Qualification Criteria	Document to be submitted
		<b>Annexure 11</b> - Form of Certificate of Supply of Spares and Consumables by Manufacturer
<b>PQ 8</b>	<p><b>Manpower Strength</b></p> <p>The Bidder should have <b>at least 30</b> Service Engineers experienced in Comprehensive O&amp;M of CAAQMS, with either permanent Provident Fund (PF) account or professional tax account <b>on bidder's payroll</b> as on bid submission date.</p>	<p>a) Attested copy of the Employee Provident Fund registration letter / certificate.</p> <p>b) Attested copy of the Labour License under the Contract Labour (Regulation &amp; Abolition) Act.</p> <p>c) Attested copy of the Employee State Insurance registration letter / certificate.</p> <p>Bidder should provide above copies duly signed and stamped.</p> <p>HR declaration as in format given in <b>Annexure 15</b>.</p>
<b>PQ 9</b>	<p><b>Support Capability:</b></p> <p>The bidder shall have <b>fully functioning office</b> in Maharashtra or shall open office in Maharashtra <b>within 15 days</b> in case of award of contract.</p>	<p>Copy of existing office address proof like lease agreement/electricity bill in the name of the bidder</p> <p>In the absence of an existing office in Maharashtra, the bidder must submit an undertaking to setup office in Maharashtra, on letterhead of firm signed by authorized signatory as per the format provided in the RFP in <b>Annexure 14</b>.</p>
<b>PQ 10</b>	<p><b>Blacklisting criteria:</b></p> <p>The bidder should not have been debarred by any Government (State / Central) / Semi Government / Corporation / PSU/tendering department in India in last Three (03) years for unsatisfactory past performance, corrupt, fraudulent or any other unethical business practices as specified in <b>Rule 151 of GFR, as on date of bid submission</b>.</p>	<p>Self-certification signed by the Authorized Signatory, on the company letter head as per format provided in this RFP in <b>Annexure 13</b>.</p>
<b>PQ 11</b>	<p><b>Meeting Minimum Technical Specifications:</b></p> <p>The bidder must meet the <b>minimum technical specifications</b> mentioned in the Bid document</p>	<p>Self-certification signed by the Authorized Signatory, on the company letter head as per format provided in this Bid document as per</p>

S. No.	Minimum Eligibility Criteria	Criteria-Pre-Document to be submitted
	for the machines and other equipment's involved in setting up the CAAQMS.	<b>Annexure 41</b> and <b>Annexure 42</b> along with other supporting documents like brochures.

*\*“Similar works” means successful Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of Analysers / Software / Display units/ Computers, AC units for CAAQMS for any Central Government / State Government / Urban Local Body (ULB)/State-Govt Undertakings/PSUs in India or large private industries in India with annual turnover more than INR 500 crore.*

### 3.2 Evaluation of Pre-Qualification Proposal

- TEC shall review the pre-qualification proposal of the bidders to determine whether the requirements as mentioned in Section of the RFP are met. Incomplete or partial proposals are liable for disqualification. TEC reserves the right to seek clarification if required. All those bidders, whose all-pre-qualification proposal meets the requirements shall be selected for opening of the technical proposal.
- At any time during the Bid evaluation process, TEC may seek oral / written clarifications from the Bidders. The Committee may seek inputs from their professional and technical experts in the evaluation process.

### 3.3 Technical Evaluation Criteria

The Bids qualifying through the Minimum Eligibility Criteria will be graded as per the criteria mentioned in the table below.

S. No.	Criteria	Evaluation Parameters	Max. Marks	Supporting Documents
TE 1.	<b>Financial Strength (15 Marks)</b>			
TE 1.1	The average annual turnover of the bidder for the last three (03) audited financial years should be more than <b>INR 30 Crores.</b> (F.Y 2021-22, FY 2022-23, FY 2023-24)	Average Annual Turnover (Cr) 1) $\geq 30$ Cr and $< 60$ Cr : <b>10 marks</b> 2) $\geq 60$ Cr and $< 90$ Cr : <b>12 marks</b> 3) $\geq 90$ Cr: <b>15 marks</b>	15	a) Audited Financial Statements (Balance Sheet and Profit & Loss Statements) from the Statutory Auditor/ Chartered Accountant and b) Certificate duly signed by Statutory Auditor of the Bidder for total turnover as per the format in <b>Annexure 8.</b>
TE 2.	<b>Relevant Bidder Experience (50 Marks)</b>			
TE 2.1	<b>Project Experience 1:</b>	<b>Cumulative Project value</b>	20	a) Bidders shall submit copy of Purchase Order (PO)/ Work



S. No.	Criteria	Evaluation Parameters	Max. Marks	Supporting Documents
	<p>The Bidder must have experience in “<b>similar works</b>” * during last seven (07) years as on last date of submission of bid as per following details</p> <p><b>One (01)</b> project worth at least <b>INR. 60 Cr.</b> OR <b>Two (02)</b> projects each costing not less than the amount equal to <b>INR. 40 Cr.</b> OR <b>Three (03)</b> projects each costing not less than the amount equal to <b>INR. 30 Cr.</b></p> <p><b>Similar works</b>” means successful Supply, Installation, Commissioning and Comprehensive Operation &amp; Maintenance Services of Analysers / Software / Display units/ Computers, AC units for CAAQMS for any Central Government / State Government / Urban Local Body (ULB)/State-Govt Undertakings/PSUs in India or large private industries in India with annual turnover more than INR 500 crore.</p>	<p><b>of maximum any three projects submitted.</b></p> <p>1) <math>\geq</math>INR 60 Cr and <math>&lt;</math> INR 90 Cr: <b>10 Marks</b></p> <p>2) <math>\geq</math>INR 90 Cr and <math>&lt;</math> INR 120 Cr: <b>15 marks</b></p> <p>3) <math>\geq</math>INR 120 Cr.: <b>20 marks</b></p>		<p>Order (WO)/ Letter of Award (LOA) / Contract Agreement mentioning the relevant scope of Work.</p> <p>b) Completion Certificate from the client mentioning the total value of completed projects OR In case of on-going project, partial completion certificate from the client on client’s letter head mentioning the relevant scope of Work, having received the payment matching the ‘Minimum Project Value’ of the partially completed project.</p> <p>c) Performance statement formats <b>for Manufacturer and for Authorized representative of manufacturer:</b> in format given in <b>Annexure 5</b></p> <p>d) Project Citation as given in <b>Annexure 4.</b> <i>For bidders submitting private work orders, GST invoice and payment receipts/statement needs to be submitted to ascertain proof of payment. Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement issued only in the name of</i></p>

S. No.	Criteria	Evaluation Parameters	Max. Marks	Supporting Documents
				<i>participating entity shall be considered.</i>
TE 2.2	<p><b>Similar Work Project Experience</b></p> <p>The bidder should have successfully executed “similar works” ** project during last <b>seven (07)</b> years as on last date of bid submission date.</p>	<p><b>No. of “similar works”</b> projects completed in Central Government / State Government /PCB/ Large Industries in India:</p> <p>1) 01 to 03 projects: <b>05 marks</b></p> <p>2) 04 to 05 projects: <b>07 marks</b></p> <p>3) Above 05 projects: <b>10 marks</b></p>	10	
TE 2.4	<p>The Bidder should have experience of “similar works” ** of supplying at least <b>15 nos.</b> of CAAQMS along with Operation &amp; Maintenance (O&amp;M) during the past <b>seven (07)</b> years.</p>	<p><b>Supply &amp; O&amp;M of CAAQMS (cumulative)</b></p> <p>1) &gt; 15 Nos. &lt; 20: <b>10 marks</b></p> <p>2) &gt; 20 Nos. &lt; 30: <b>15 marks</b></p> <p>3) &gt; 30 Nos.: <b>20 marks</b></p>	20	<p>a) Bidders shall submit copy of Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement mentioning the relevant scope of Work.</p> <p>b) Completion Certificate from the client indicating the number CAAQMS supplied along with O&amp;M OR In case of on-going project, partial completion certificate from the client on client’s letter head mentioning the relevant scope of Work, having received the payment matching the ‘Minimum Project Value’ of the partially completed project.</p> <p>c) Project Citation as given in <b>Annexure 4</b></p>

S. No.	Criteria	Evaluation Parameters	Max. Marks	Supporting Documents
				<i>For bidders submitting private work orders, GST invoice and payment receipts/statement needs to be submitted to ascertain proof of payment. Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement issued only in the name of participating entity shall be considered.</i>
TE 3.	<b>Key Professional Experience (15 Marks)</b>			
TE 3.1	Proposed Human Resource / Manpower and experience:		15	
	Designation	Numbers	Education & Area of Expertise	
TE 3.1 (a)	Project Manager	1	Graduate/ Postgraduate in Environmental Science / Environmental Engineering / Mechanical Engineering / Electrical Engineering / Civil Engineering or PGDM/ MBA with a professional experience of minimum 10 years	Detailed CV in World Bank Format duly attested by HR and authorized bid signatory. Provide details as per following format. <b>Annexure 15.</b> Attested copy of the Employee Provident Fund registration letter / certificate
TE 3.1 (b)	Technician	10	Diploma in Electronics/ Instrumentation /C&I / Electrical with a professional experience of minimum 5 years (0.5 marks for each candidate)	
TE 3.1 (c)	Data Processor	01	Science Graduate with an experience of minimum 3 years	
TE 3.2	The Bidder should have <b>at least 30</b> Service Engineers experienced in	Number of Manpower on payroll:	5	

S. No.	Criteria	Evaluation Parameters	Max. Marks	Supporting Documents
	Comprehensive O&M of CAAQMS, with either permanent Provident Fund (PF) account or professional tax account <b>on bidder's payroll</b> as on bid submission date.	4) > 30 Nos. < 40: <b>02 marks</b> 5) > 40 Nos. < 50 : <b>03 marks</b> 6) > 50 Nos.: <b>05 marks</b>		
<b>TE 4.0</b>	<b>Technical Presentation (20 Marks)</b>			
TE 4.1	Presentation by the bidders on their understanding of the business/ functional requirements of MPCBs and proposed solution and implementation approach.	<p><b>For presentation in below categories:</b></p> <p><b>For presentation in below categories:</b></p> <ol style="list-style-type: none"> <li>1. Comprehensiveness of the project plan – <b>4 Marks</b></li> <li>2. Activities, sequencing, dependencies among activities –<b>4 Marks</b></li> <li>3. Resource planning, allocation and loading – <b>4 Marks</b></li> <li>4. Maintenance Status Reporting mechanism – <b>4 Marks</b></li> <li>5. Risk Management, Mitigation Plan – <b>4 Marks</b></li> </ol>	20	<ol style="list-style-type: none"> <li>1. Presentation delivered by the bidder should depict Bidder's understanding of the business /functional requirements of the MPCB, the proposed solution and implementation approach.</li> <li>2. Bidder has to provide clear baselines/ timelines, defined resources, roles &amp; responsibilities in MS-Project format in both soft and hard copies along with a write-up project</li> <li>3. Soft Copy and 01 (one) Hard Copy of Technical Presentation to be submitted after the technical presentation.</li> </ol>
		<b>Total</b>	100	

**\*\*\*“Similar works”** means successful Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of Analysers / Software / Display units/ Computers, AC units for CAAQMS for any Central Government / State Government / Urban Local Body (ULB)/State-Govt Undertakings/PSUs in India or large private industries in India with annual turnover more than INR 500 crore.

### 3.4 Technical Presentation

The bidders who successfully qualify the pre-qualification criteria shall be called for giving a technical presentation at the MPCB head office at a date and time that would be communicated at a later stage.

### 3.5 Bid Evaluation

#### 3.5.1 Overview of the Evaluation process

1. Tenders will be scrutinized by the committee formed by MPCB. This committee shall act as a Tender Evaluation Committee (hereinafter referred to as “TEC”) to evaluate the bids.
2. TEC shall review the prequalification proposal of the Bidders to determine whether the requirements as mentioned in Sections 3.1 and Section 3.3 of the RFP are met. Incomplete or partial Proposals are liable for disqualification. All those Bidders, whose prequalification proposal meets the requirements shall be selected for opening of the financial proposal.
3. Bids that are not substantially responsive shall be disqualified and TEC reserves the right to seek clarification if required.
4. The financial proposals of the qualified Bidders shall be opened and reviewed to determine whether the financial proposals are complete and as per requirements.
5. Evaluation and award of Contract shall be done as per provisions of Maharashtra State Government Rules and specified in this RFP.
6. The Bidders are required to quote their fee as per the commercial bid format.
7. TEC may seek inputs from their professional, external experts in the Bid evaluation process.

#### 3.5.2 Financial Evaluation

1. The Financial bid of only those bidders shall be opened who qualify against the pre-qualification criteria and score more than 70 marks in the technical qualification round as mentioned in Section 3.1 and Section 3.3 above.
2. The Bidder who quotes the lowest (L1) rate will be considered as L1 Bidder.
3. The bidders will be ranked based on their bids as per Financial bids i.e., L1 for lowest, L2 as second lowest (financial bid higher than L1), L3 as third lowest (financial bid higher than L2) and so on...
4. Bidder whose financial bid is lowest (hereby referred to as **L1 Bidder**) i.e., whose overall quote (Sum total of Part A & Part B of the financial proposal format **Annexure 17**) is the least shall be considered as eligible for benchmarking and taken forward for negotiation.

5. The **L1** bidder must agree the highest buyback cost quoted by eligible bidders.
6. In cases of discrepancy between the prices quoted in words and in figures, the lowest of the two shall be considered. For any other calculation/ summation error etc. the bid may be rejected.
  - In case there is tie between L1 Bidders, cost will be negotiated with each bidder and the one offering lowest negotiated cost and higher buyback cost, will be selected as final L1 bidder.
  - In case, either of the L1 bidder(s) refuses such allocation, L2 bidder shall be contacted to match / negotiate L1 rate, or re-tendering shall be done.
7. MPCB reserves the right to confirm the preferred bidders as successful bidders subject to negotiations and approval of competent authority.

### 3.6 Disqualification/Exclusion of Proposal

MPCB may exclude or disqualify a Proposal if:

- a. The information submitted, concerning the qualifications of the Bidder, was false or constituted a misrepresentation.
- b. The information submitted, concerning the qualifications of the Bidder, was materially in- accurate or incomplete.
- c. The Bidder is not qualified as per Qualification Criteria mentioned in the RFP document.
- d. The Proposal materially departs from the requirements specified in the Proposal or it contains false information.
- e. The Bidder submitting the Proposal, his agent or anyone acting on his behalf, gave or agreed to give to any officer or employee of the MPCB or other governmental authority a gratification in any form or any other thing of value so as to unduly influence the Selection Process.
- f. The Bidder in the opinion of the MPCB, has a Conflict of Interest materially affecting fair competition.
- g. A Proposal shall be excluded/ disqualified as soon as the cause for its exclusion/disqualification is discovered.

### 3.7 Award of Contract

Post the evaluation process indicated in Section above, MPCB will award the Contract to the Selected Agency as defined in this Bid document. The complete contract shall be awarded to the L1 bidder as mentioned in the Clause 3.5.2 of the RFP.

### **3.8 Issuance of Work Order**

1. After selection, a work order (“Work Order”) will be issued, in duplicate, by MPCB to the Selected Bidder(s). The Work Order will be handed to the Selected Bidder(s) or emailed or posted to the Selected Bidder’s address as given in the Proposal and such handing or emailing or posting shall be deemed good service of such a notice. The Selected Bidder (s) shall, within 7 (seven) working days of the receipt of the Work Order, sign and return the duplicate copy of the Work Order in acknowledgement thereof. In the event of the LOA duly signed by the Selected Bidder is not received by the stipulated date, the MPCB may, unless it consents to extension of time for submission thereof, appropriate the Bid Security of such Bidder as Damages on account of failure of the Selected Bidder to acknowledge the LOA, and the next eligible Bidder may be considered. After LoA, security deposit to be submitted as per LoI by the successful Bidder within the stipulated time mentioned in LoI failing to do so MPCB may take necessary actions.
2. After issuance of Work Order, the Successful Bidder shall have to submit Performance Bank Guarantee (PBG as Security Deposit) within Fifteen (15) days.
3. Failing to submit the PBG within stated time will either attract penalty of INR 5000 per day up to One (1) week which will be deducted from any future successful Work Order, or the Work Order may be cancelled and awarded to the other eligible agency who participated in the bid.
4. Additionally, non-acceptance of the Work order by the Selected Bidder within the time prescribed therein shall lead to forfeiture/invocation of the Earnest Money Deposit of such Selected Bidder and thereafter, MPCB shall be free to award the Project to the next Bidder in sequence, or to proceed in the manner as considered in the best interest of MPCB, at sole discretion of MPCB.

### **3.9 Signing of Contract**

1. The Successful Bidder shall enter into contract agreement with MPCB within Thirty (30) days Letter of Acceptance (LOA) issued to the successful bidder by MPCB. Upon the Successful Bidder’s furnishing of Security Deposit, MPCB will promptly notify each unsuccessful Bidder.
2. Further, INR 2000 penalty will be levied per day if the contract is not signed above mentioned time period.
3. If the signing of contract is not completed within 30 days after receiving LOA, then the offer made to the Successful Bidder shall stand annulled and will be awarded to other empanelled agency who scored better in presentation.
4. Any expenses related to registration of Agreement shall be Borne by Successful Bidder(s).

## SECTION 4: SCOPE OF WORK

### 4.1 Brief Scope of Work

#### 4.1.1 Details of the Project Structure

Successful Bidder would be awarded the project/work under a Supply and Service Agreement, which would entail:

1. Supply, installation, and Commissioning of 60 CAAQMS Equipment at each of the defined cities/ locations including one (1) year warranty.
2. Operation and Maintenance of those CAAQMS for a period of five (5) years from the date of CoOP of each CAAQMS
3. Daily reporting of data pertaining to Ambient Air Quality to MPCB/ CPCB. MPCB would make payment for CAAQMS as per schedule of requirement, for Supply, Installation and Commissioning of the system. MPCB would procure all the CAAQMS equipment on its name. MPCB will make regular payments for the O&M and Supply of Data at the end of each Quarter. The bidders therefore need to quote two prices for:
  - i. Supply, Installation and Commissioning of the Systems 60 Nos, as per invitation for bids section. (including installation of 7 new stations in place of the Buy Back stations)
  - ii. Buy Back of existing seven (07) CAAQMS in *as is* condition
  - iii. Reporting of data to MPCB. The price for the data Supply would include the Operation and Maintenance, including incidental charges, electricity, providing manpower at site, security, etc.

MPCB would provide land for installation of CAAQMS free of cost, in the identified city/location to the Successful Bidder. Along with the land, MPCB would provide letter/ documents for getting telephone and electricity connections at the proposed location. Bidder would bear the initial installation cost for these facilities and the monthly recurring cost pertaining to their usage (monthly telephone and electricity bill) would also be borne by the Successful Bidder.

One no. of Day light & Night visible data display system 8 feet x 12 Feet to be protected by rain & all-weather conditions from the top is to be supplied, installed and maintained initially for five years. MPCB would identify location for installation of Day light & Night visible data display system. The successful bidder shall also arrange telephone and electricity connections at the identified location and all the documents required for the connection shall be provided by the board. The Successful Bidder would bear the initial installation cost for these facilities and the monthly/recurring cost pertaining to their usage (monthly telephone and electricity



bill) would also be borne by the Bidder. All other installation requirement for Display System is to be arranged by the successful bidder and cost for same should be included in bid price.

#### 4.1.2 Schedule of Requirements:

The CAAQMS shall have the following schedule of requirement. The system should be completely functional. Any balance of material not specified but required for the purpose must be supplied by the bidder.

Schedule No.	Brief Description	Qty. in nos.
1.	Continuous Automatic Air Quality Monitoring Analyzers for CO, SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> +NH <sub>3</sub> , O <sub>3</sub> , and Beta Gauge PM <sub>2.5</sub> and PM <sub>10</sub> Monitors	1 unit each
2.	BTX Analyser	1 Unit
3.	Multi-calibration systems for gaseous monitors supply /generation and automated calibration	1 Unit
4.	Meteorological Instrumentation comprising Wind Direction, Wind Speed, Ambient Temperature, Relative Humidity, Solar Radiation and Rainfall mounted on telescoping crank up meteorological Mast	1 Set
5.	Computer system consisting of one PC along with Laser Printer and DAS at the monitoring station and One PC at central office with peripherals and software for data acquisition / Data display Board /transfer and system integration, telephone, Modem	1 Lot
6.	Modem	2 Units
7.	Data Display System	1 Unit
8.	Housing/Container for Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical and Gas line Fittings, Tools (electrical and mechanical).	1 Unit
9.	UPS, 10 KVA (1 hr. full load back-up)	1 Unit
10.	UPS, 5 KVA (4 hrs. full load back-up)	1 Unit
11.	Split Air Conditioners (2 Ton capacity)	2 Units
12.	Split Air Conditioners (1 Ton capacity)	1 Unit
13.	RCC foundation, pillars miscellaneous works including civil and electrical including compound wall around & beautification all around 4 sides for 60 nos. of CAAQMS sites.	1 Lot

#### 4.2 Scope of Services

The Scope of Works under the package shall include:

- a. The Supply including packing, transportation, insurance, custom clearance, port clearance and handling, inland transportation, inland transit insurance and delivery to site, installation, testing and commissioning of equipment and provision of training of MPCB officials' station wise.
- b. Operation & Maintenance of Air Monitoring Stations for a period of five (5) years from the date of CoOP of each of the station, which can be extended up to One (1) year at the mutually agreed rates and terms and conditions.
- c. Data & Report of data pertaining to CAAQMS to MPCB. Online transfer of data to MPCB and CPCB and establishing connectivity to AQI server at MPCB and CPCB

#### 4.2.1 Supply of Replaced spares/equipment at designated Locations:

**Packaging:** The replacement spares/equipment should be delivered at specified offices in new and perfect condition and no damage or repair in transit. Necessary packing, if any, shall be provided by the supplier/tenderer at his own cost.

**Conformity to Specifications:** The product/parts supplied as replacements should be compatible with the existing equipment and preferable of same brand and make. Such compatibility shall be determined by testing the product/material. The decision of MPCB shall be final and binding in this regard. In the event the material delivered is found to be not in accordance with the specifications or desired performance, the same will be rejected, and the tenderer will be responsible for replacement of the rejected material free of cost and / or reimbursing the Employer for resultant losses sustained on this account.

**Associated cost:** All costs towards delivering of the equipment at each of the sites would be to the Successful Bidder's account and hence the Bidders are required to quote the prices inclusive all such cost heads. Such cost heads can be but not limited to transport, weather-proof packing, transit insurance, Insurance, Registration, local levies, etc.

**Buyback:** The bidder is required to buy back the existing 7 CAAQMS in *as-is condition* from the locations mentioned in the **Annexure 43**. **At the time of dismantling of the equipments from the respective site, if any damage occurs, the successful bidder to restore the foundation at his own cost. Also, the successful bidder shall be required to undertake repairs of any existing damage at the time of handing over of the station to MPCB.**

#### 4.2.2 Supply of Spares

The Successful Bidder will supply and replace spares at respective locations.

### 4.2.3 Scope Of Services of Software Application Development:

1. **Development of software application:** The selected bidder has to develop a web application integrating the existing stand-alone software applications.
2. **Data Acquisition and Integration:** The software must be capable of collecting real-time data from a network of sensors deployed across different geographical locations. It should support integration with various types of sensors measuring parameters such as particulate matter, and meteorological variables.
3. **Data Quality Assurance:** Ensuring data accuracy and reliability is critical. The software should include algorithms and protocols for data validation, calibration, and quality control to identify and rectify anomalies or sensor malfunctions.
4. **Real-time Monitoring and Visualization:** The system should provide real-time monitoring of air quality parameters through intuitive dashboards and graphical interfaces. Users should be able to visualize data trends, pollutant concentrations, and air quality indices for different locations on a map or in tabular form.
5. **Alerting and Notifications:** The software should support customizable alerting mechanisms based on predefined thresholds for pollutant concentrations. It should notify relevant stakeholders via email or push notifications in case of exceedances or deteriorating air quality conditions, enabling timely action and response.
6. **Historical Data Analysis:** In addition to real-time monitoring, the application should offer tools for analyzing historical data trends over different time scales (hours, days, months, years). This shall help in identifying seasonal patterns, long-term trends, and potential sources of pollution.
7. **Data Management and Archiving:** The system should have robust data management capabilities, including data storage, archival, and retrieval. It should comply with data privacy regulations and standards to ensure the security and confidentiality of sensitive environmental data.
8. **Predictive Modelling and Forecasting:** Advanced features like predictive modeling and forecasting can enhance the system's capabilities by providing insights into future air quality trends and potential scenarios. Machine learning algorithms can be employed to develop predictive models based on historical data and meteorological forecasts.
9. **Integration with Decision Support Systems:** Seamless integration with decision support systems to enables MPCB to make informed decisions and formulate evidence based policies for air quality management and pollution control measures.
10. **Scalability and Flexibility:** The software architecture should be scalable and flexible to accommodate future expansions, upgrades, and integration with emerging technologies. It should support interoperability with other environmental monitoring systems and standards to facilitate data exchange and collaboration.

11. **User Training and Support:** Comprehensive user training, technical support, and documentation are essential for ensuring effective utilization of the software by stakeholders of MPCB.

#### 4.2.4 Comprehensive Annual Maintenance Contract (CAMC)

The CAMC shall have the following terms and conditions:

1. **Period:** The successful Bidder will provide CAMC services for a period of Five (05) year from the date of CoOP of each of the station
2. **Shifts and Timing:** Successful bidder has to deploy resources 24 x 7 for operation and maintenance activities so that MPCB's system's uptime is maintained. **The bidder to deploy one service engineer per station during working hours and a security personnel for ensuring round the clock security of the whole system.**
3. **Emergency Situations:** During emergency situation, the Successful Bidder will be required to render services as mentioned in RFP till such time until the situation is normalized. No extra payment will be made to the Successful Bidder on account of such emergency services.
4. **Comprehensive Maintenance Schedule:** The Successful Bidder will prepare comprehensive AMC schedule for equipment detailing the Preventive Maintenance Schedule on discussion with the MPCB which shall be strictly complied during the contract period.
5. **Maintenance tools and mechanics:** The Successful Bidder will deploy trained and skilled engineers as per project requirement stated in the RFP on site to conduct all maintenance activities. All necessary tools to conduct routine maintenance activities at site will be provisioned for, at respective site defined in RFP.
6. **Preventive maintenance:** The Successful Bidder will carry out preventive maintenance basis discussion with the MPCB. The preventive maintenance shall be carried out in a required sequence for which, trained personnel shall be appointed who are fully conversant with operation and maintenance of the systems.
7. **Spares / Accessories / Consumables:**
  - All spares, accessories, filter paper, etc. shall be covered under CAMC.
  - All the spare parts supplied shall be original and from the same OEM.
  - Adequate essential parts / spares will be maintained in stock to render satisfactory services without any interruption, throughout the project period
  - In case any spare part is end of sale / end of support, bidder at its own cost shall replace the part with equivalent or better specs and compatible with the delivered machine
  - Successful bidder should provide replacement/ warranty and guarantee on all parts/ spares.

8. **Replacement of non-performing and non-repairable analyzers:** Bidders shall submit unit price for each analyzer delivered at site along with taxes and duties for non-repairable analysers required to be replaced, valid for entire period of the contract. MPCB will reimburse the cost (price with taxes and duties) to the contractor after successful installation and commissioning: subject to a maximum of 10% of the number of analyzers in each category installed during the entire Contract Period of Five Years. The cost of new analyzers shall be the differential cost: after deducting the estimated value of non-repairable analyzers as assessed by the Bidder. Non-repairable analysers will be given to the Contractor.
9. **Maintenance and Attendance Logs:** The successful Bidder will keep log of Maintenance logs. All such logs should be made available for inspection whenever called for.
10. **Safety and Security:** It is the utmost responsibility of the Successful Bidder to ensure adherence to Safety Norms in all aspects of the works especially while the equipment is onsite and while carrying repairs/maintenance activities. Any damage, repair, liability, loss of reputation, both to men and material shall be entirely responsibility of the Bidder. MPCB will not be responsible for any human accident or hazard if occurred to the person of the Successful Bidder while carrying out the work and will indemnify MPCB against any such untoward incidences / accidents.
11. **Reporting:** The Successful Bidder shall submit the computerized summary of the details of CAMC every month to the Nodal Officer. Other review and reporting parameters and frequency will be mutually decided between MPCB and the Successful Bidder and will be adhered to by the Successful Bidder.
12. **All Inclusive CAMC:** The Bidders should carefully read the CAMC scope mentioned above and quote a price inclusive of all such and other incidental costs as may be envisaged. No extra charges, other than those quoted for CAMC will be paid to the Successful Bidder.
13. **Warranty and On-site:** The warranty will be provided on comprehensive basis. The repairs will be done on site. In case of major repairs, where the equipment needs to be carried off-site to the Service Centre, the Successful Bidder will provide stand-by equipment of similar capacity and capability.

### 4.3 Minimum Technical Specifications

The minimum technical specification requirements for the CAAQMS to be installed are given in the section Technical Specifications of bid document. However, the actual technical proposal can have higher or better technical performance parameters and the minimum specifications proposed should not be taken as a constraint on the upper side. The technical specifications given in **Annexure 38** of bid document are descriptive and Selection Committee can consider technical

proposals having similar specifications. There will not be any changes in the technical specification.

#### **4.4 Data Management and Quality Checks**

Data shall be collected and validated according to USEPA standards/ National Ambient Air Quality Standards using the methodologies included in 40 Code of Federal Regulations. All analyzers shall have current USEPA reference or equivalent method designation and shall be of the latest design.

Successful bidder shall submit a Standard Operating Procedure for the air quality monitoring station to the Board before award of contract. This Standard Operating Procedure shall be approved by the Board prior to award. The Standard Operating Procedure shall contain the following:

- i. Operating procedures for all analyzers and meteorological sensors Calibration procedures
- ii. Calibration schedule
- iii. Maintenance procedures
- iv. Maintenance schedule
- v. Data validation procedures
- vi. Data reporting as per Annexures enclosed in this RFP
- vii. Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the Board along with the Air Quality Data.

Upon 3 days' notice from the Board once per year, Successful Bidder shall agree to submit to an audit of calibrations, conducted, using preapproved USEPA methodologies, by a third party. Third party audit may be arranged by the MPCB by the agency decided by them, at their cost and bidder shall provide all necessary facilities to carryout required audit. The results of these audits shall be made immediately available to both the Seller and Buyer.

#### **4.5 General Guidelines**

##### **4.5.1 Working Hours:**

The site for each CAAQMS operation should be manned by the one Instrumentation/Software Engineer. In addition, the Successful Bidder would arrange for a security of the site and equipment's through appointment for security agency (providing at least one security guards) throughout the day and Night. Deployed system engineer should be available to on-site on call or schedule decided by MPCB to the respective the regions.

#### **4.5.2 Insurance:**

The Successful Bidder would bear the cost of insuring the equipment (Comprehensive) and facilities against any theft, fire and other applicable provisions during tenure of contract period including O&M with a copy to MPCB of an appropriate amount. Board shall reimburse the same to the successful bidder on submission documentary proof. However, insurance during commissioning shall be beard by the bidder.

#### **4.5.3 Station plate form, pillars Electricity & telephone / modem arrangement:**

The successful bidder shall construct station platform pillars (corrosion free) etc. as required and shall also arrange electric and telephone connection modems etc. required for the smooth Operation of the station. The necessary documentation shall be provided by the concerned MPCB / local authority of the board. No extra item/escalation cost will be borne by MPCB.

#### **4.6 Locations**

The exact Latitudes/Longitudes locations of the Air Monitoring Station shall be provided by Successful Bidder. List of the City/ Locations where 60 no. of CAAQMS proposed to be installed is provided in **Annexure 43**.

#### **4.7 Supply of Equipment**

List of equipment in the package, quantity of equipment to be supplied, delivered and installed in enclosed as **Annexure 24**.

#### **4.8 Installation of Equipment**

All the necessary arrangements and adjustments for suitable installation and operation of the equipment shall be made by the Bidder including power supply and telephone/mobile/internet connection; however all the required document shall be arranged by the board.

#### **4.9 Inspection and Testing**

##### **4.9.1 Unpacking Inspection**

The Contractor shall inspect at Site whether all the Equipment are packed in conformity with the Equipment list and packing list without any damage immediately after arrival of the Equipment at each Location.

##### **4.9.2 Performance Test**

The Successful Bidder shall carry out the performance test for all the Equipment supplied under the scope of work of this document in presence of agency / expert / committee members appointed by the Member Secretary, MPCB.

#### 4.10 Training Provision

The Successful Bidder shall provide the training to the Board staff for minimum two (2) weeks to three (3) persons per site (maximum) after the performance test and commissioning. **If the OEM of the products supplied is from outside India, then the successful bidder shall ensure that at least 10 MPCB officials must be trained in phase wise manner, within a span of 01 year from the signing of contract at the original manufacturing facility.** Training should include but not limit to the following:

1. Inspection of the Equipment.
2. Precautions in use of the Equipment.
3. Basic measurement principle.
4. Principles of operation of the Equipment.
5. Start-up and shutdown procedure.
6. Operation of the Equipment.
7. Calibration method.
8. QA/QC.
9. Data Validation & management and software application.
10. Safety precautions.
11. Basic maintenance procedure.
12. Dos and “Don’ts” in operation of the Equipment.
13. Handling of hazardous chemicals and gas.
14. Others, which are deemed to be necessary by the Supplier.

In case the Equipment for training requires the supplemental and/or supporting Equipment, the Successful Bidder shall carry out the training including such Equipment. The Successful Bidder shall discuss and finalize the detailed contents and schedule of the training program in consultation with the Board during installation of the Equipment. The Successful Bidder shall furnish the training manual and/or CD as required for training for all the Equipment supplied under the scope of work of this document.

#### **Contents of training manual and/or CD for the Equipment are as follows:**

1. Principle of the Equipment.
2. Operation and calibration of the Equipment.
3. Maintenance and basic repair of the Equipment.
4. Safety instruction of the Equipment.



5. Others, which are deemed to be necessary by the successful bidder.
6. QA/QC, Data Validation & management and software Application

#### 4.11 Operation and maintenance

The Successful Bidder's responsibilities shall include without limitations the following works to be carried out on the Air Monitoring Stations installed under this Contract during the Operation & Maintenance of the stations:

- Operation and Maintenance of all the commissioned equipment and amenities as supplied by the Manufacturer under the Contract including services during forced and planned outages and overhauls.
- The Successful Bidder shall take over the entire Air Monitoring Station (including all equipment) for O&M after execution of Indemnity Bond as per format placed at **Annexure 20** of bid document.
- The Successful Bidder shall provide to the MPCB a monthly summary of all operation and maintenance activities performed by the Successful Bidder during each month.

#### Operation and Maintenance Obligations:

In implementing its obligations to operate and maintain the facility under this Contract, the Contractor shall:

- a. Undertake comprehensive maintenance including i.e. schedule and breakdown maintenance & repair at site and keep Board Informed regarding status of equipment and forward daily data as per **Annexure 25 to Annexure 29**.
- b. Obtain permission from the owner and inform the O&M for any assistance for which equipment is required to be sent to the works. The Successful Bidder shall arrange substitute equipment to keep CAAQM station operational.
- c. Take reasonable action to assure that the Personnel deployed at Air Monitoring Stations and any subcontractors and agents are provided with a workplace in compliance with applicable Law.
- d. Keep the Air Monitoring Stations clean, well maintained inside as well as around the sites (at all sides- 5 feet on all sides) and in good working condition.
- e. Security: It is the duty of the Successful Bidder to secure the movable, immovable and other properties of MPCB at the Air Monitoring Station. The Successful Bidder shall indemnify the loss caused to the MPCB on account of any damage, loss or theft caused to the property of the Owner.

- f. Scheduled Maintenance: Unless MPCB and Successful Bidder mutually agree otherwise, perform all required Scheduled maintenance for all equipment, auxiliaries etc., in accordance with the O&M specifications.
- g. Unscheduled Maintenance: Perform all Unscheduled Maintenance and repairs for all equipment, auxiliaries etc. within (24) hours of the occurrence of the event requiring Unscheduled Maintenance, the Successful Bidder shall provide MPCB with detailed written information on nature of the repair or replacement to be carried out, estimated down time and other necessary details as required.
- h. The Successful Bidder shall source all the spares required for maintenance & repairs of the installed equipment from O&M only.
- i. The Successful Bidder shall purchase spare parts, materials, supplies and other consumable items, and maintain an inventory thereof, for the Air Monitoring Stations. All such material supplied, and other items shall be the property of the MPCB. However, all the spares shall be sourced from OEMs only.
- j. The Successful Bidder shall review all applicable Laws and initiate and maintain such prosecution, procedures and operating plans relating to operation of the Air Monitoring Stations as are necessary to comply therewith or assist the owner in complying therewith as the case may be.
- k. The Successful Bidder shall operate the equipment as per the laid out standards in the operating manual of the equipment and providing data for ambient air to MPCB on daily basis in the suggested format. The daily monthly and yearly Reporting Formats are attached **Annexure 26 to 29.**
- l. The CAAQMS has to be in operation for a minimum of **85% of the days** in a year, 24 hours a day, and should not be inoperable for more than 7 days at a stretch.
- m. Provide data collected through operation of the equipment on daily basis in suggested output formats given in the bid document.
- n. Establish and maintain a daily and monthly and yearly reporting system to provide storage and ready retrieval of operation and maintenance data including such information necessary to verify calculations. The monthly reporting shall contain variances from targets.
- o. Provide access to the owner to the Air Monitoring Stations and its data at all reasonable times and as and when required.
- p. Provide the operational date required to all competent authorities including, Government of India or concerned State Governments.
- q. Online transfer of data to MPCB/CPCB server and AQI server.
  - The Contractor shall ensure accuracy of the data provided as per standards.
  - The Contractor shall ensure periodic re-calibration of all the equipment as per manufacturer's instructions and maintain "Protocol Calibration" as specified in this bid document.
- r. The Successful Bidder shall not:

- Make any modifications as to the Air Monitoring Stations, other than in an Emergency, without the prior written approval of MPCB, or
- Dispose of any assets, settle lawsuits or engage in transactions relating thereto on the MPCB's behalf without the prior written approval of the MPCB.

**MPCB shall arrange for the following and Successful Bidder shall guide and assist the MPCB:**

- i. The MPCB shall pay O&M charges to the Successful Bidder at the end of each quarter after submission of validated data & report by the Successful Bidder, in accordance with the payment terms detailed in Special Conditions of Contract.
- ii. MPCB shall pay only GST imposed by the Applicable Law.
- iii. MPCB shall identify and hand over the site for erection & commissioning of Air Monitoring Stations free from all encumbrances.
- iv. The Successful Bidder shall make the arrangement for electricity & telephone connection at the site. However monthly charges for both electricity and phone bill shall be borne by the Successful Bidder.
- v. The valid data capture rate should be minimum 85%. The full payment shall only be made if validated data is 85% and all the calibration protocol maintenance scheduled, and spare parts/ consumable replacement document are maintained and verified by the owner/ board. The Successful Bidder has to maintain records / Receipts/ bills paid available as and when required.

**4.12 Handing Over and Relocation of the Stations:**

On expiry/closure/termination of the Contract Agreement, stations shall be handed over to Board in working condition to the satisfaction of Board. Few or all the spares procured by the Successful Bidder and unused as on date of handing over may be purchased by the MPCB at his discretion provided Successful Bidder is able to provide reasonability of the costs of such spares. In addition, the Successful Bidder shall provide consumables equivalent to three months consumption on expiry/closure/termination of the Contract Agreement without any extra financial implication.

During contract period, if Board intends to shift CAAQM station from one location of the city to another location, due to some reason - functional or otherwise, the Successful Bidder shall shift the CAAQM station for which cost of shifting including dismantling, loading & transportation, reinstallation at new location and construction of foundation will be made by the Board at a mutual agreed cost.

#### 4.13 Timeline and delivery schedule

1. The Successful Bidder shall ensure the delivery of 60 CAAQMS (including the buyback of existing 7 CAAQMS in *as-is* condition)
2. No Service issues should be pending at the time of delivery.
3. A working demonstration will be given to the designated office / Nodal Officer.
4. All technical manuals, service books should also be delivered.

Delivery of the equipment and broad phases of Project along with their respective timelines are mentioned herewith. The successful Bidder must comply with these timelines. Failure to adhere to the timelines will attract penalties.

S. No.	Activities	No. of machinery	Project Timelines
1	Delivery of machinery complying with the specifications at locations intimated by MPCB	60	Within 120 days from the date of issue of Letter of Intent / Letter of Acceptance / Work Order (T)
2	Demonstration of respective machinery and its operations and trainings to MPCB / MPCB intimated authority and getting Certificate of Operation (CoOP) from MPCB / MPCB intimated authority		Within 120 days from the date of issue of Letter of Intent / Letter of Acceptance / Work Order (T)
3	Onsite Warranty for One (1) year including Onsite Operation and Maintenance Services		Onsite Warranty for One (1) year after CoOP.
4	Onsite CAMC services for five (5) years including Onsite Operation and Maintenance Services		Four (4) years after completion of Warranty period of One year.
	<b>CAMC &amp; O&amp;M</b>		
1	Operation and maintenance of all machines and vehicles through deployment of expert manpower onsite	60	Five (5) years from the date of CoOP of each of vehicle (i.e., O&M to be done during warranty as well as during CAMC period)

- Contractor shall carryout Operation & Maintenance of Air Monitoring Stations for a period of five (5) years from the date of commissioning of the station, which can be extended

**further** at the mutually agreed rates and terms and conditions.

- The operation and maintenance contract shall be executed by the Member Secretary, or authorized officer MPCB having jurisdiction or the area under his control. The term and condition shall be governed as per the tender document. The Member Secretary of MPCB or any person authorized by him shall be the ultimate consignee.

## SECTION 5: PAYMENT TERMS

### 5.1 Payment Terms

1. The payment will be done based on the schedule mentioned in the section 5.2 below.
2. The appointed consultant shall submit invoices to the authority approved by MPCB along with the Status Report, deliverables and Payment Certificate duly signed by authority approved by MPCB for release of payments.
3. MPCB shall be entitled to delay or withhold payment of any invoice or part of it delivered by the Service Provider where the MPCB disputes such invoice or part of it provided that such dispute is bona fide. The withheld amount shall be limited to that which is in dispute. The disputed amount shall be settled in accordance with the procedure as set out in the RFP. Any exercise by the MPCB under this section shall not entitle the Successful Bidder to delay or withhold the services.
4. All payments agreed to be made by MPCB to the Successful Bidder in accordance with the Bid shall be exclusive of all statutory levies, duties, taxes, and other charges whenever levied/ applicable.
5. The Successful Bidder shall bear all personal/income taxes levied or imposed on it and its personnel, etc. on account of payment received under this Contract.

### 5.2 Payment schedules

The contract charges shall be quoted as per following schedule:

S. No.	Activities	No. of machinery	Project Timelines	
1	Delivery of machinery complying with the specifications at locations intimated by MPCB	60	Within 120 days from the date of issue of Letter of Intent / Letter of Acceptance / Work Order (T)	80% of the cost of machinery on the opening of Letter of credit.
2	Demonstration of respective machinery and its operations and trainings to MPCB / MPCB intimated authority and getting Certificate of Operation (CoOP) from MPCB / MPCB intimated authority		Within 120 days from the date of issue of Letter of Intent / Letter of Acceptance / Work Order (T)	Remaining 20% of the cost of machinery after submission of CoOP from MPCB/ MPCB intimated authority and signed Training delivery certificate from

S. No.	Activities	No. of machinery	Project Timelines	
				respective concerned MPCB / MPCB intimated authority
3	Onsite Warranty for One (1) year including Onsite Operation and Maintenance Services		Onsite Warranty for One (1) year after CoOP.	No payment for 1 year Warranty
	<b>CAMC &amp; O&amp;M of vehicle</b>			
1	Onsite Comprehensive Annual Maintenance Contract (CAMC) services for five years Including Onsite Operation and Maintenance Services	60	<b>Five (5) years</b>	Quarterly payment after submission of invoices duly verified by the <b>concerned authority (MPCB)</b> after deduction of applicable penalties if any and absentees of deployed labors.

- i. Capital expenditure payment will be released by MPCB for the **delivery of CAAQMS** upto issuance of Certificate of Operation (CoOP) and warranty. MPCB intimated authority will release the payment during extended service period based on the extended contract if any.
- ii. Within Fifteen (15) days of MPCB issuing the LoI / LoA / Work Order, the Successful Bidder, at its cost, charges and expenses will submit a PBG for an amount equivalent to as mentioned in this document. The PBG shall be in the form of a guarantee/s of a Nationalised/scheduled Bank acceptable to MPCB and shall be valid for the tenure mentioned in document.
- iii. All payments will be made vide a crossed cheque payable in Mumbai / online **through Letter of credit**, within 30 days of submission of invoice, after deducting applicable TDS, if any.
- iv. Certificate must be provided by the successful bidder from the respective ULBs after each preventive maintenance period of respective site and the same should be attached with as part of invoice to MPCB for quarterly payment disbursement.
- v. Invoices for the operation and maintenances (during CAMC/ warranty period) to be submitted along with following supporting documents:

- a. Consolidated invoices for all 60 CAAQMS along with each CAAQMS invoice summary duly verified by respective ULBs/ Municipal Corporations/ Councils;
- b. Roster of the staff deployed at each of the stations; including service engineers and round the clock security guards
- c. Certificate from the ULBs/ Municipal Corporations/ Councils wrt Preventive maintenance undertaken;
- d. Station-wise details for non-function system
- e. Daily/ Monthly/ yearly reporting format as enclosed in Annexures in this RFP.

### 5.3 Other Terms and Conditions

- In case of a dispute on the invoice amount, or any other payment related matter; such matter shall be discussed with MPCB and/ or any other authority designated by the Nodal, MPCB. In such cases, the Selected Agency, shall produce requisite supporting documents, communications, acknowledgement of MPCB, etc. to support the disputed Invoice amount, or any other payment related matter; however, the decision of the Nodal, MPCB in this matter shall be considered as final.
- Any dispute or difference or claim arising out of or in relation to the terms of the RFP, will be settled by reaching a mutual understanding and amicable settlement between the parties.



## SECTION 6: KPI & Penalty

### 6.1 Penalties/ KPIs

- The date of delivery of the services stipulated in the acceptance of Work Order / LoI /LoA shall be the essence of the contract and delivery shall be completed no later than the dates specified therein. Extension of time shall only be granted if MPCB is convinced about the cause stated by the successful bidder, or the cause of the delay is not in the control of the successful bidder.

S. No.	Penalty Type	Penalty Description	Penalty Amount
1	Delivery of the batch of machineries	Delay in delivery of the machinery along with required civil infrastructure for each batch. (beyond permissible timelines as mentioned in the delivery schedule)	1% (One Percent) of the value of machinery with required civil infrastructure for the delay of each week applicable for each machinery of each batch defined under delivery schedule.
2	Commissioning of the machinery on-site	Delay in obtaining CoOP (beyond permissible timelines as mentioned in the delivery schedule)	INR 3,000/- (Three thousand only) per day of delay of each CAAQMS.
3	Failure of any Analyses/ system	In case any Analyses/ system fails to function as per the requirement	INR 5,000/- (Five thousand) per day per Analyzer after a grace period of five (5) continuous non-working days. The grace period of five (5) working days shall be given only once per quarter (3 months).
4	Breakdown Response (Response time to breakdown repair after Incident notification)	Repair of machine and its parts to fully working condition within 48 hours from date and time of notification. Any delay in repair beyond 48 hours will attract per day penalty	INR 3,000 /- (Three thousand only) per day of delay in repair of machine and it's Equipment.
5	Delay in attending scheduled inspection of CAAQMS during warranty/ CAMC period.	Delay in attending scheduled inspection at each quarter.	INR 1,000 /- (One thousand only) per day of delay from the pending payment or from PBG.
6	Failure of Data display	In case the equipment fails to display the desired values/ data	INR 5,000/- (Five thousand) per day after a grace period of five (5) working days. The grace period of Five (5)

S. No.	Penalty Type	Penalty Description	Penalty Amount
			working days shall be given only once per quarter (3 months).

## 2. Hardware KPI's

Sr. No.	Service Level Objective	Measurement	Service Level	Penalty
1.	24 x 7 functioning of hardware items	Uptime calculation = (Uptime (in hours) for month / Total time (in hours) of month) x 100	100% uptime	INR 1000/ day/ item
2.	Attending to calls	As a percentage of total calls/month	100%	INR 1000/ instance
3.	Resource Absence for each deployed resource	Total present days/total no of working days	100%	INR 500/ instance

## 3. Software KPI's

Sr. No.	Service Level Objective	Measurement	Service Level	Penalty
<b>Availability</b>				
1	Availability / Uptime of services resources for Web application server functioning	Uptime calculation of Web application server ranging due to application issues = (Uptime (in hours) for month / Total time (in hours) of month) x 100	Availability / Uptime of the Web application server $\geq 99.7\%$ . Monitoring shall be on monthly basis.	Availability / Uptime will attract penalty as indicated below. $< 99.7\%$ (5% of the total quarterly payment)
<b>Support Performance</b>				
2	Resolution of Level 2 (Minor) Defects: Downloading file related, access & account related, etc.	Number of defects resolved	95% of the reported Level 2 defects shall be resolved within 2 <b>days*</b> from the time of reporting the issue.	Delay of every subsequent hour will invite penalty of INR 50 for maximum of 48 hours from time of reporting the defect.

Sr. No.	Service Level Objective	Measurement	Service Level	Penalty
				Post that INR 100 for every subsequent hour`s delay.
3	Resolution of Level 1 (Major) Defects: Database level, Errors over webpage(s), security threats, page not found, etc.	Number of defects resolved	99% of the reported Level 1 defects shall be resolved within 1 day* from the time of reporting the issue.	Delay of every subsequent hour will invite penalty of INR 100 for maximum of 24 hours from time of reporting the defect. Post that INR 200 for every subsequent hour`s delay.

\*1 Day comprises of 24 hours.

**Notes:**

1. Failure due to power outage and other Force Major conditions shall not be considered for levy of penalty.
2. Total penalty per year during O&M period on account of above conditions shall be limited to 30% of total O&M charges for one year. Failing which defective/ malfunctioning Analyser / system has to be replaced. In case penalty in the year exceeds 30% as above, the Successful Bidder shall be required to replace the defective analyzer (s) or systems with new ones at his own cost failing which the MPCB shall have the right to terminate the O&M contract and forfeiture of BG.
3. Where any claim for the payment of a sum of money arises, out of or under this contract against the Agency, MPCB shall be entitled to recover such a sum by appropriating in part or whole, from the monthly payable invoice or as per payment schedule or performance bank guarantee. Penalty will be recovered along with applicable GST.
4. In the event of the Performance Bank Guarantee being insufficient, the balance of the total sub recoverable, as the case may be, shall be deducted from any sum then due or which at any time thereafter may become due to the agency under. Should this sum not be sufficient to recover the full amount recoverable, the agency shall pay to MPCB the remaining balance due.
5. MPCB will consider genuine request for extension of time, if so, made by the Successful Bidder immediately upon sensing delay of any work/assigned task, considering the reasons for such extension and grant extension of time at their discretion.
6. MPCB shall record the reason in such action with facts and figures. The grace period will not be granted if the extension is necessitated due to the default on the part of the Successful bidder.
7. All above mentioned penalties are exclusive to each other.

8. MPCB shall recover penalties/liquidated damages at first instance from the amount due to the Selected Agency in the billing month, then the invoices of the subsequent month and thereafter, from the Performance Security furnished by the Selected Agency.
9. These penalties will be monitored and deducted for the entire Contract Period on a monthly basis. KPI adherence will be monitored on monthly basis by MPCB designated Nodal or authorized officer(s) or representative and/ or any third party and, also with incorporation of feedback from the officials.
10. The maximum monthly penalty that maybe imposed on the Selected Agency shall be capped at 10% (ten per cent) of the total monthly billing amount.
11. Shortfall/Default shall refer to and include but not limited to any incidents, action, omission, wrongdoing etc. that is in contravention to the service requirements/performance parameters and any other terms and conditions to be fulfilled by the Selected Agency.

## **SECTION 7: GENERAL CONDITIONS OF THE CONTRACT**

### **7.1 General Guidelines**

1. It is presumed that the Bidder has carefully studied all condition before quoting.
2. If the Bidder has any doubts, whatsoever, as to the contents of the contract he is deemed to have in good time i.e., before submitting his tender, get his doubts clarified authoritatively from the Contact Person in writing. Once the tender is submitted by Bidder, the matter will be decided according to the tender conditions.
3. No extra claims shall be accepted as regards specifications, infrastructure, royalties etc.

### **7.2 Interpretation**

In this Contract unless a contrary intention is evident:

1. The clause headings are for convenient reference only and do not form part of this Contract.
2. Unless otherwise specified a reference to a clause number is a reference to all of its sub-clauses.
3. Unless otherwise specified a reference to a clause, sub-clause or section is a reference to a clause, sub-clause or section of this Contract including any amendments or modifications to the same from time to time.
4. A word in the singular includes the plural and a word in the plural includes the singular.
5. A word importing a gender includes any other gender.
6. A reference to a person includes a partnership and a body corporate.
7. A reference to legislation includes legislation repealing, replacing, or amending that legislation.
8. Where a word or phrase is given a particular meaning, it includes the appropriate grammatical forms of that word or phrase which have corresponding meanings.
9. In the event of an inconsistency between the terms of this Contract and the Tender and the Bid, the terms hereof shall prevail.

### **7.3 Key Performance Measurements**

1. Unless specified by the bidder to the contrary, the Successful Bidder agency shall supply the machines and perform the Services and carry out the Scope of Work in accordance with the terms of this Contract, and the Service Specifications as laid down under Service Level Agreement.
2. If the Contract / Service Specification include more than one document, then unless the MPCB specifies to the contrary, the later in time shall prevail over a document of earlier date to the extent of any inconsistency.
3. The MPCB reserves the right to amend any of the terms and conditions in relation to the Contract / Services and may issue any such directions which are not necessarily stipulated therein if it deems necessary for the fulfilment of the scope of work.

## **7.4 Commencement & Progress**

The Successful Bidder shall commence the performance of its obligations in a manner as specified in the Scope of Work.

1. The Bidder shall proceed to carry out the activities / services with diligence and expedition in accordance with any stipulation as to the time, manner, mode, and method of execution contained in this Contract.
2. The Bidder shall be responsible for and shall ensure that all activities / services are performed in accordance with the Contract, Scope of Work and that the Bidder's Team complies with such specifications and all other standards, terms and other stipulations/conditions set out hereunder.
3. The Bidder shall perform the activities / services and carry out its obligations under the Contract with due diligence and efficiency. The Successful Bidder shall always act, in respect of any matter relating to this Contract, as faithful advisors to the MPCB and shall, at all times, support and safeguard the MPCB's legitimate interests in any dealings with Third parties.

## **7.5 Trademarks, Publicity**

Neither Party may use the trademarks of the other Party without the prior written consent of the other Party. Neither Party shall publish nor permit to publish either along with or in conjunction with any other person any press release, information, article, photograph, illustration, or any other material of whatever kind relating to this Agreement, the SLA, or the business of the Parties without prior reference to and approval in writing from the other Party.

## **7.6 Confidentiality**

Information relating to the examination, clarification, evaluation, and recommendation for the bidders shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising MPCB in relation to, or matters arising out of, or concerning the bidding process. MPCB will treat all information submitted as part of the bid in confidence and will require all those who have access to such material to treat the same in confidence. MPCB may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or MPCB or as may be required by law or in connection with any legal process.

## **7.7 Ethics**

Successful Bidder represents, warrants, and covenants that it has given no commitments, payments, gifts, kickbacks, lavish or expensive entertainment, or other things of value to any employee or Board, or its nominated agencies in connection with this RFP and acknowledges that the giving of

any such payment, gifts, entertainment, or other things of value is strictly in violation of MPCB's standard policies and may result in cancellation of this Agreement.

### **7.8 MPCB's Obligations**

1. MPCB nominated representative shall act as the nodal point for implementation of the Contract and for issuing necessary instructions, approvals, commissioning, acceptance certificates, payments etc. to the Bidder.
2. MPCB shall ensure that timely approval is provided to the Successful Bidder as and when required, which may include approval of project plans, implementation methodology, design documents, specifications, or any other document necessary in fulfilment of this contract.
3. MPCB's representative shall interface with the Successful Bidder, to provide the required information, clarifications, and to resolve any issues as may arise during the execution of the Contract. MPCB shall provide adequate cooperation in providing details, coordinating, and obtaining of approvals from various governmental agencies, in cases, where the intervention of the Employer is proper and necessary.
4. MPCB may provide on Successful Bidder's request, particulars/information/ or documentation that may be required by the Successful Bidder for proper planning and execution of work and for providing services covered under this contract and for which the Successful Bidder may have to coordinate with respective vendors.
5. MPCB may provide to the Successful Bidder, sitting space and basic infrastructure at their office location whenever required.

### **7.9 Default and Termination**

#### **7.10 Events of default by the Successful Bidder**

The failure on the part of the Successful Bidder to perform any of its obligations or comply with any of the terms of this Contract shall constitute an Event of Default on the part of the Successful Bidder. The events of default as mentioned above may include inter-alia the following:

1. The Successful Bidder or its team has failed to perform any instructions or directives issued by the Employer which it deems proper and necessary to execute the scope of work or provide services under the Contract, or.
2. The Successful Bidder or its team has failed to confirm / adhere to any of the key performance indicators as laid down in the Key Performance Measures / Service Level Agreements, or if the Successful Bidder has fallen short of matching such standards / benchmarks / targets as the Employer may have designated with respect to the system or any goods, task or service, necessary for the execution of the scope of work and performance of services under this Contract. The above-mentioned failure on the part of the Successful Bidder may be in terms of failure to

adhere to performance, quality, timelines, specifications, requirements, or any other criteria as defined by the Employer.

3. The Successful Bidder has failed to remedy a defect or failure to perform its obligations in accordance with the specifications issued by the Employer, despite being served with a default notice which laid down the specific deviance on the part of the Successful Bidder's team to comply with any stipulations or standards as laid down by the Employer; or
4. The Successful Bidder's team has failed to adhere to any amended direction, instruction, modification, or clarification as issued by the Employer during the term of this Contract and which the Employer deems proper and necessary for the execution of the scope of work under this Contract.
5. The Successful Bidder's Team has failed to demonstrate or sustain any representation or warranty made by it in this Contract, with respect to any of the terms of its Bid, the Tender, and this Contract.
6. There is a proceeding for bankruptcy, insolvency, winding up or there is an appointment of receiver, liquidator, assignee, or similar official against or in relation to the Successful Bidder.
7. The Successful Bidder's Team has failed to comply with or is in breach or contravention of any applicable laws.
8. The Successful Bidder's team are involved in fraud/wilful misconduct.
9. Where there has been an occurrence of such defaults inter alia as stated above, the Employer shall issue a notice of default to the Successful Bidder, setting out specific defaults / deviances / omissions / non-compliances / non-performances and providing a notice of Sixty (60) days to enable such defaulting party to remedy the default committed.
10. Where despite the issuance of a default notice to the Successful Bidder by the Employer the Successful Bidder fails to remedy the default to the satisfaction of the Successful Bidder, the Employer may, where it deems fit, issue to the defaulting party another default notice or proceed to adopt such remedies as may be available to the Employer.

#### **7.11 Consequences of Default**

Where an Event of Default subsists or remains uncured, the Employer shall be entitled to:

1. Impose any such obligations and conditions and issue any clarifications as may be necessary to inter alia ensure smooth continuation of project and the Services which the Bidder shall be obliged to comply with which may include re-determination of the consideration payable to the Successful Bidder. The Successful Bidder shall in addition take all available steps to minimize loss resulting from such event of default.
2. Suspend all payments to the Successful Bidder under the Contract by a written notice of suspension to the Successful Bidder, provided that such notice of suspension:
  - a. Shall specify the nature of the failure; and



- b. Shall request the bidder to remedy such failure within a specified period from the date of receipt of such notice of suspension by the Successful Bidder.

Any decision taken by Hon'ble Member Secretary, MPCB shall be final and binding on the Successful Bidder.

## **7.12 Audit, Access, and Reporting**

### **1. Purpose**

- a) This section details the audit, access, and reporting rights of MPCB and the respective obligations of Successful Bidder under the contractual terms of Project Implementation, Operation and SLA Management.
- b) MPCB may engage a suitable, neutral, and technically competent third-party agency or agencies for conducting audit and certification, upon intimation by the Successful Bidder that the system implementation is complete.
- c) The Bidder being notified of any deviations from the agencies nominated by Employer regarding deviations from norms, standards or guidelines shall at the earliest instance, take all corrective measures required in least possible time.
- d) All the cost for third party agencies will be borne by the Successful Bidder.

### **2. Notice and Timing**

- a) As soon as reasonably practicable after the Effective Date, the Parties shall use their best endeavours to agree to a timetable for routine audits during the Project Implementation Phase and the Operation and Management Phase in accordance with such agreed timetable and shall not be required to give the Successful Bidder any further notice of carrying out such audits. The cost of third-party audits has to be borne by the Successful Bidder.
- b) The MPCB or its nominated agencies may conduct non-timetabled audits at its own discretion if they reasonably believe that such non-timetabled audits are necessary as a result of an act of fraud by the Bidder, a security violation, or breach of confidentiality obligations by the Bidder, provided that the requirement for such an audit is notified in writing to the Bidder a reasonable period time prior to the audit (taking into account the circumstances giving rise to the reasonable belief) stating in a reasonable level of detail, the reasons for the requirement and the alleged facts on which the requirement is based. If the Bidder considers that the non-timetabled audit was not appropriate, the matter shall be referred to the escalation procedure.
- c) The frequency of audits shall be decided by MPCB.
- d) In addition to the above, there will be audits conducted by statutory bodies (e.g., CAG) as and when they are required to do it. Notwithstanding any condition given in the

contract, the Bidder will have to provide these statutory bodies access to all the facilities, infrastructure, documents, and artefacts of the Project as required by them and approved by MPCB, in writing.

- e) The audit and access rights contained shall survive the termination or expiration of the Agreement.

### 3. Access

- a) The Successful Bidder shall provide MPCB access to documents, records and systems reasonably required for audit and shall provide all such persons with routine assistance in connection with the audits and inspections.
- b) MPCB shall have the right to copy and retain copies of any relevant records. The Successful Bidder shall co- operate with MPCB in effecting the audits and providing necessary information.

### 7.13 Indemnity

The Successful Bidder shall indemnify the MPCB against the all actions, suits, claims, damages and demands brought or made against him in respect of anything done or omitted to be done by the Successful Bidder in the execution of or in the connection with the work of this Contract and against lose or damage to the MPCB in consequences of any action or suit being brought against the Successful Bidder anything done or omitted to be done in execution of the work of this contract.

### 7.14 Corrupt or Fraudulent Practices

MPCB requires that Successful Bidder under contracts, observe the highest standard of ethics during the supply and execution of such contracts. In pursuance of this policy MPCB.

Defines, for the purposes of this provision, the terms set forth below as follows:

- “Corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and
- “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract.
- Will reject a proposal for award if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.
- Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

### **7.15 Jurisdiction of Courts**

In case of any claim, dispute or difference rising in respect of the contract, the case of action there of shall be deemed to have arisen in Mumbai and all legal proceedings in respect of any such claim, dispute or difference shall be instituted in competent court in the city of Mumbai only.

### **7.16 License**

The Successful Bidder shall have to bear Hardware /Software license/Royalty cost, if any for fulfilment of the contract.

### **7.17 Risk and Cost**

- In case, the Bidder fails to deliver the quantity of resources / services as mentioned in the RFP, MPCB reserves right to procure same or similar material from alternate sources at risk, cost and responsibility of the Successful Bidder.
- If it is observed that the Successful Bidder carrying out the work fails to comply with instructions given by the MPCB authorities during execution of work twice, the work will be carried out at the risk and cost of the contract and penal action will be taken against them. The above condition will be in addition to the relevant condition in General Conditions of the Contract regarding cancellation of full or part of the work, finality of the decision of the disputes, differences or claims raised by the Successful Bidder relating to any matter arising out of the Contract.

### **7.18 Conflict of Interest**

Successful Bidder shall furnish an affirmative statement as to the absence of, actual or potential conflict of interest on the part of the Applicant or any prospective subcontractor due to prior, current, or proposed contracts, engagements, or affiliations with MPCB. Additionally, such disclosure shall address any and all potential elements (time frame for service delivery, resource, financial or other) that would adversely impact the ability of the Successful Bidder to complete the requirements as given in the application document.

### **7.19 Confidentiality**

- The Successful Bidder will be exposed, by virtue of the agreed activities as per the application document, to internal business information of MPCB and other Government Departments. The Bidder would be required to provide an undertaking that they will not use or pass to anybody the data/information derived from the project in any form. The Successful

Bidder must safeguard the confidentiality of the MPCB's and Government Department's business information, applications, and data. For this, Bidder is required to sign non-disclosure agreement with MPCB.

- Disclosure of any part of the afore mentioned information to parties not directly involved in providing the services requested, unless required to do so by the Court of Law within India or other Statutory Authorities of Indian Government, could result in premature termination of the contract. The MPCB may apart from blacklisting the Successful Bidder, initiate legal action against the Successful Bidder for breach of trust. The Successful Bidder shall also not make any news release, public announcements or any other reference on application document or contract agreement without obtaining prior written consent from the MPCB.
- Bidder shall use reasonable care to protect confidential information from unauthorised disclosure and use.

## **7.20 Arbitration**

If, due to unforeseen reasons, problems arise during the progress of the contract/project execution leading to disagreement between the MPCB and the Successful Bidder, the latter shall first try to resolve the same amicably by mutual consultation. If the parties fail to resolve the dispute through the two-Tier Committee formed by MPCB, the dispute/claim etc. relating to the contract/engagement shall be referred to the Hon'ble Member Secretary of MPCB whose decision shall be final and binding on both the parties.

## **7.21 Handling of Bidder Grievances/Dispute Resolution**

1. To look after the grievances of the Bidder, MPCB shall form a two-tier Committee comprising of:
  - Tier 1 Committee – JD Air
  - Tier 2 Committee - Member Secretary
2. All grievances, clarifications shall be addressed to Tier 1 Committee first. In case of no satisfactory resolution, it shall be passed on to Tier 2 Committee.
3. The decision of Hon'ble Member Secretary in this regard shall be final and binding.

## **7.22 Governing law and Jurisdiction**

This contract Award and any dispute arising from it, whether contractual or non-contractual, will be governed by laws of India and subject to arbitration clause, be subject to the exclusive jurisdiction of the competent courts of Mumbai, India.

### **7.23 Limitation of Liability**

1. The liability of Successful Bidder (whether in contract, tort, negligence, strict liability in tort, by statute or otherwise) for any claim in any manner related to the Agreement, including the work, deliverables or Services covered by the Agreement, shall be the payment of direct damages only which shall in no event in the aggregate exceed the total contract value (contract with the Government Department). The liability cap given under this Clause shall not be applicable to the indemnification obligations.
2. In no event shall either party be liable for any consequential, incidental, indirect, special, or punitive damage, loss, or expenses (including but not limited to business interruption, lost business, lost profits, or lost savings) even if it has been advised of their possible existence.
3. The allocations of liability in this clause represent the agreed and bargained-for understanding of the parties and compensation for the Services reflects such allocations. Each Party has a duty to mitigate the damages and any amounts payable under an indemnity that would otherwise be recoverable from the other Party pursuant to the Contract Award by taking appropriate and commercially reasonable actions to reduce or limit the amount of such damages or amounts.

### **7.24 Variation in Agreement Quantity & its Payment**

1. Modification to Contract to be in writing: In the event of any of the provisions of the Contract requiring to be modified after the contract documents have been signed, modifications shall be made in writing and signed by MPCB.
2. Powers of Modification to contract: MPCB shall be entitled by order in writing to enlarge or extend, diminish, or reduce scope.

### **7.25 Extension of timelines**

As soon as it is apparent that the Contract dates cannot be adhered to, an application shall be sent by Successful Bidder to the MPCB. If failure, on the part of Successful Bidder, to complete scope of work in proper time shall have arisen from any cause which the MPCB may admit as reasonable ground for an extension of the time, MPCB may allow such additional time as it considers to be justified by circumstances.

### **7.26 Relationships**

Nothing mentioned herein shall be construed as relationship of master and servant or of principal and agent as between the “MPCB” and the “Successful Bidder”. No partnership shall be constituted between MPCB and the Bidder by virtue of this contract nor shall either party have powers to make, vary or release their obligations on behalf of the other party or represent

that by virtue of this or any other partnership has been constituted, or that it has any such power. The Successful Bidder shall be fully responsible for the services performed by them or on their behalf.

Neither party shall use the other parties name or any service or proprietary name, mark, or logo of the other party for promotional purpose without first having obtained the other party's prior written approval.

## **7.27 Termination**

### **7.1.1 Termination by MPCB**

1. MPCB may, without prejudice to any other remedy for breach of Contract, terminate the Contract in case of the occurrence of any of the events mentioned in clause 7.23.3. In such an occurrence, MPCB shall give not less than 15 days' written notice of termination to the Successful Bidder.
2. If the Successful Bidder does not remedy a failure in the performance of its obligations under the Contract, within **Fifteen (15)** days after being notified or within any further period as MPCB may have subsequently approved in writing.
3. If the Successful Bidder becomes insolvent or goes into liquidation, or receivership whether compulsory or voluntary.
4. If the Successful Bidder, in the judgment of MPCB, has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.
5. If the Successful Bidder submits to the MPCB a false statement which has a material effect on the rights, obligations, or interests of MPCB.
6. If the Successful Bidder places itself in a position of conflict of interest or fails to disclose promptly any conflict of interest to MPCB.
7. If the Successful Bidder fails to provide the quality services as envisaged under this Contract, MPCB may make judgment regarding the poor quality of services, the reasons for which shall be recorded in writing. MPCB may decide to give one chance to the Successful Bidder to improve the quality of the services.
8. If the Successful Bidder fails to comply with any final decision reached as a result of arbitration proceedings.
9. If the Successful bidder fails to provide the quality services as envisaged under this Contract, MPCB may make judgment regarding the poor quality of services, the reasons for which shall be recorded in writing. MPCB may decide to give one chance to the Successful bidder to improve the quality of the services
10. If MPCB, in its sole discretion and for any reason whatsoever, decides to terminate this Contract.

11. In the event MPCB terminates the Contract in whole or in part, pursuant to 7.23.3, MPCB may procure, upon such terms and in such manner as it deems appropriate, services similar to those undelivered or not performed, and the Successful bidder shall be liable to MPCB for any additional costs for such similar services. However, the Successful bidder shall continue performance of the Contract to the extent not terminated.

#### **7.1.2 Termination by Bidder**

The Successful bidder may terminate this Contract, by not less than 30 days' written notice to MPCB, such notice to be given after the occurrence of any of the events specified 7.23.3:

- 1) If, as the result of Force Majeure, the Successful bidder is unable to perform a material portion of the Services for a period of not less than 60 days.
- 2) MPCB is in material breach of its obligations pursuant to this Contract and has not remedied the same within 30 days (or such longer period as the Successful bidder may have subsequently approved in writing) following the receipt by MPCB of the Successful bidder notice specifying such breach.

#### **7.1.3 Delays in bidder's performance**

- 1) If at any time during performance of the contract, the bidder may encounter conditions impeding performance of the services, the bidder shall promptly notify MPCB in writing of the facts of the delay, it's likely duration and its causes.
- 2) As soon as after receipt of bidder's notice, MPCB shall evaluate the situation and may at its discretion, extend the bidders time for performance with or without penalty in which case the extension shall be ratified by the bidders by amendment of the contract but in no case, extension shall be given more than one time. For avoidance of doubt, delay in performance for reasons beyond control of the bidder or for reasons not attributable to the bidder or for reasons attributable to MPCB, shall not attract any penalty.

#### **7.1.4 Payment upon Termination**

Upon termination of this Contract pursuant to Clauses 7.23.3 the MPCB shall make the following payments to the Successful bidder:

- 1) If the Contract is terminated pursuant to Clause 7.23.3, remuneration for Services satisfactorily performed prior to the effective date of termination.
- 2) If the agreement is terminated pursuant of Clause 7.23.3. The Successful bidder shall not be entitled to receive any agreed payments upon termination of the contract. However, the MPCB may consider making a payment for the part satisfactorily performed on the basis of Quantum Merit as assessed by it, if such part is of economic utility to the MPCB. Applicable under such circumstances, upon termination, the MPCB may also impose liquidated damages. The Successful bidder will be required to pay any such liquidated damages to MPCB within 30 days of termination date.

## **7.28 Modification in requirements**

MPCB has given broad outline of this Project. The Bidder has to ensure fulfillment of all requirements for implementation of this project. However, due to change in Govt./ Corporation policy or due to unavoidable circumstances, MPCB's requirement, the Bidder has to modify/ deliver as per business needs during the contractual period, without any additional cost or any upward revision in rates.

## **7.29 Bidder's integrity**

The bidder is responsible for oblige to conduct all contracted activities as defined in the scope of work in accordance with contract.

## **7.30 Assignment and subletting**

The Successful Bidder shall not assign/ sublet/ sub-contract, in whole or in part, their rights and obligations under this Contract to any third party, except with prior written consent of MPCB.

## **7.31 Bidder's obligation**

- 1) The bidder is obliged to work closely with MPCB's staff, act within its own authority and abide by directives issued by MPCB.
- 2) The bidder shall abide by the job safety measures prevalent in India and will free MPCB from all demand or responsibilities arising from accidents or loss of life the calls of which is the bidder's negligence. The bidder will pay all indemnities arising from such incidents and will not hold MPCB responsible or obligated.
- 3) The bidder is responsible for managing the activities of its personnel will hold itself responsible for any misdemeanor.
- 4) The bidder shall treat as confidential all data and information about MPCB, obtained in the execution of his responsibilities in strict confidence and will not reveal such information to any other party. MPCB will treat as confidential all data and information about bidder, obtained in the execution of his responsibilities in strict confidence and will not reveal such information to any other party.

## **7.32 Force Majeure**

A Force Majeure event shall mean occurrence in India of any or all of Non-Political Event, Indirect Political Event and /or Political Event.



1. Force Majeure shall not include any events caused due to acts/omissions of such Party or result from a breach/contravention of any of the terms of the Contract, Bid and/or the Tender. It shall also not include any default on the part of a Party due to its negligence or failure to implement the stipulated/proposed precautions, as were required to be taken under the Contract.
2. The failure or occurrence of a delay in performance of any of the obligations of either party shall constitute a Force Majeure event only where such failure or delay could not have reasonably been foreseen, or where despite the presence of adequate and stipulated safeguards the failure to perform obligations has occurred. In such an event, the affected party shall inform the other party in writing within Five (5) days of the occurrence of such event. The Employer will make the payments due for Services rendered / Machinery delivered till the occurrence of Force Majeure. However, any failure or lapse on the part of the Bidder's Team in performing any obligation as is necessary and proper, to negate the damage due to projected Force Majeure events or to mitigate the damage that may be caused due to the abovementioned events or the failure to provide adequate disaster management/recovery or any failure in setting up a contingency mechanism would not constitute force majeure, as set out above.
3. In case of a Force Majeure, all Parties will endeavour to agree on an alternate mode of performance in order to ensure the continuity of service and implementation of the obligations of a party under the Contract and to minimize any adverse consequences of Force Majeure.
4. The Bidder shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default, if and to the extent that it's delay in performance or other failure to perform its obligations under the contract is the result of an event of force Majeure.
5. For purposes of this Clause, "Force Majeure" means an event beyond the control of the Vendor and not involving the Bidder's fault or negligence and not foreseeable.
6. Such events may include, but are not limited to:

**(A) Non-Political Events**

A Non-Political Event shall mean one or more of the following acts or events:

- a. act of God, epidemic, extremely adverse weather conditions, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or ionising radiation, fire, or explosion (to the extent of contamination or radiation or fire or explosion originating from a source external).
- b. strikes or boycotts (other than those involving the Contractors or their respective employees/representatives, or attributable to any act or omission of any of them) interrupting supplies and services to the Project for a continuous period of [24 (Twenty-Four)] hours and an aggregate period exceeding [Seven (7)] days in an Accounting Year.

- c. any failure or delay of a Successful Bidder but only to the extent caused by another Non-Political Event and which does not result in any offsetting compensation being payable to the selected bidder by or on behalf of such Successful Bidder.
- d. any delay or failure of an overseas Contractor to deliver equipment in India if such delay or failure is caused outside India by any event specified in Sub clause (a) above and which does not result in any offsetting compensation being payable to or on behalf of such Contractor.
- e. any judgement or order of any court of competent jurisdiction or statutory authority made against the successful bidder in any proceedings for reasons other than (i) failure of the successful bidder to comply with any Applicable Law or Applicable Permit, or (ii) on account of breach of any Applicable Law or Applicable Permit or of any contract, or (iii) enforcement of this Agreement, or (iv) exercise of any of its rights by the Authority; the discovery of geological conditions, toxic contamination or archaeological remains on the Site that could not reasonably have been expected to be discovered through a site inspection;

#### **(B) Indirect Political Event**

An Indirect Political Event shall mean one or more of the following acts or events:

- a. an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion, or politically motivated sabotage.
- b. any political or economic upheaval, disturbance, movement, struggle, or similar occurrence which could not have been anticipated or foreseen by a prudent person and which causes the construction or operation of the Project to be financially unviable or otherwise not feasible.
- c. industry-wide or State-wide strikes or industrial action for a continuous period of [24(Twenty-Four)] hours and exceeding an aggregate period of [Seven (7)] days in an Accounting Year.
- d. failure of the Authority to permit the successful bidder to continue its construction works, with or without modifications, in the event of stoppage of such works after discovery of any geological or archaeological finds or for any other reason.
- e. any Indirect Political Event that causes a Non-Political Event; or
- f. Any event or circumstances of a nature analogous to any of the foregoing.

#### **(C) Political Event**

A Political Event shall mean one or more of the following acts or events by or on account of any Government Instrumentality:

- a. Change in Law, wherein the provisions mentioned in the RFP cannot be applied.

- b. compulsory acquisition in national interest or expropriation of any Project Assets or rights of the entire scheme
  - c. unlawful or unauthorised or without jurisdiction revocation of, or refusal to renew or grant without valid cause, any clearance, licence, permit, authorisation, no objection certificate, consent, approval or exemption required by successful bidder to perform their respective obligations under this Agreement and the Project Agreements; provided that such delay, modification, denial, refusal or revocation did not result from the successful bidder inability or failure to comply with any condition relating to grant, maintenance or renewal of such clearance, licence, authorisation, no objection certificate, exemption, consent, approval or permit;
  - d. Any event or circumstance of a nature analogous to any of the foregoing.
  - e. Acts of God or of public enemy, acts of Government of India in their sovereign capacity, acts of war, acts of terrorism, either in fires, floods, strikes, lockouts and freight embargoes.
7. If a Force Majeure situation arises, the Successful Bidder shall promptly notify the MPCB in writing of such conditions and the cause thereof within twenty calendar days.
  8. Unless otherwise directed by the MPCB in writing, the Bidder shall continue to perform its obligations under the Contract as far as it is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. In such a case, the time for performance shall be extended by a period(s) not less than the duration of such delay.
  9. If the duration of delay continues beyond a period of Three (3) months, Board and the Successful Bidder shall hold consultations with each other in an endeavour to find a solution to the problem. Notwithstanding above, the decision of the MPCB, shall be final and binding on the Successful Bidder.

### **7.33 Governance Schedule**

1. The Successful Bidder shall document the agreed structures in a procedural manual under the guidance and supervision of MPCB.
2. The agenda for each project review meeting shall be set to reflect the discussion items related to the scope of work and additional items may be added either with the agreement of the Parties or at the request of either Party.
3. Copies of the agenda for review meetings along with relevant pre-reading material, shall be distributed.
4. All meetings and proceedings will be documented; such documents to be distributed to both Parties and copies shall be kept as a record. All actions, responsibilities and accountabilities arising out of any meeting shall be tracked and managed.

5. The parties agree to attempt to resolve all disputes arising under the Agreement, equitably and in good faith. To this end, the parties agree to provide frank, candid and timely disclosure of all relevant facts, information, and documents to facilitate discussions between them/their representatives or senior officers.

### **7.34 Exit Management**

- a. Agency shall decommission and withdraw all hardware and software components after the completion of the contract period and formally close the project. This process will be initiated 6 months before the ending of the project contract. In order to align both the parties on transition modalities, agency will submit a detailed Exit Management Plan before Three (3) months of the ending date of the contract. Exit Management Plan will include following but not limited to:
  - i. Detailed inventory of all the machinery integrated vehicles, assets, IT Infrastructure, source code, its location, condition, licenses, documents, manuals, etc. created under this Project.
  - ii. Method of Transition including roles and responsibilities of both the parties to handover and takeover the charge of project regular activities and support system.
  - iii. Proposal for necessary setup or institution structure required at MPCB level to effectively maintain the project after contract ending.
  - iv. Training and handholding of MPCB Staff or designated officers for maintenance of project after contract ending.
- b. The Successful Bidder may be requested to give handover to the other party / new agency or bidder as per the MPCB`s discretion.
- c. MPCB will approve this plan after necessary consultation and start preparation for transition.

## SECTION 8: ANNEXURES

## **Annexure 1 Pre-Qualification Cover Letter**

(To be submitted on the letterhead of the bidder)

Place:

Date:

To

**Member Secretary**

Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> floor,  
Opp. PVR Cinema, Sion Circle, Sion,  
Mumbai-400 022

**Subject: Submission of Pre-Qualification proposal in response to the Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra**

**RFP Reference No:** MPCB/

Dear Sir,

Having examined the RFP, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to provide the professional services as required and outlined in the RFP for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra

We attach hereto our responses to Pre-Qualification proposal required by the RFP. We confirm that the information contained in these responses or any part thereof, including the exhibits, and other documents and instruments delivered or to be delivered to MPCB, is true, accurate, verifiable and complete. This response includes all information necessary to ensure that the statements therein do not in whole or in part mislead the MPCB in its short-listing process.

We fully understand and agree to comply that on verification, if any of the information provided here is found to be misleading the selection process, we are liable to be dismissed from the selection process or termination of the contract during the project, if selected to do so.

We agree for unconditional acceptance of all the terms and conditions set out in the RFP document and corrigenda, if any, and agree to abide by this tender response for a period of 180 days from the date of opening of Financial Bid and ready to extend the validity of the bid for further period as informed by MPCB. We hereby declare that in case the contract is awarded to us, we shall submit the security deposit in the form prescribed the RFP.

We agree that you are not bound to accept any tender response you may receive. We also agree that you reserve the right in absolute sense to reject all or any of the products / services specified in the tender response.

It is hereby confirmed that I/We are entitled to act on behalf of our company/ corporation/ firm/ organization and empowered to sign this document as well as such other documents, which may be required in this connection.

Signature of Authorized Signatory (with official seal)

Name:

Designation:

Address:

Telephone & Fax:

E-mail address:

**Mandatory Enclosure:**

1. Format to share Bidder's and Bidding Firm's Particulars
2. Check list for the documents to be included in the Pre-Qualification with appropriate page numbers.
3. Format of Project Citation

## Annexure 2 Checklist for documents to be included in the Pre- Qualification

(Bidder should refer pre-qualification criteria mentioned in this RFP)

S. No.	Minimum Eligibility Criteria- Pre-Qualification Criteria	Document to be submitted	Document submitted Yes/No	Pg. No.
<b>PQ 1</b>	<p>The bidder as on bid date should be:</p> <p>a Company registered in India under the Companies Act 1956 or 2013</p> <p>OR</p> <p>a partnership firm under the Indian Partnership Act, 1932</p> <p>OR</p> <p>the Limited Liability Partnerships Act, 2008, (as amended from time to time)</p>	a) General Information of Bidder along with Bidder's constituting documents such as MOA, AOA.		
		b) Copy of Certificate of Incorporation / LLP Agreement/ Partnership deed		
		c) Copy of valid PAN Card		
		d) Copy of valid GST Certificate with GST Number		
		e) For companies registered Limited Liability Partnership (LLP) registered under the LLP Act, 2008 or Indian Partnership Act 1932 as amended time to time, Copy of Certificate of Incorporation/ Registration of Firm (RoF)/ Partnership deed of Bidder/ LLP deed, as applicable		
		f) For companies registered under companies Act, 2013 or the Companies Act, 1956, General Information of Bidder along with Bidder's constituting documents such as MOA, AOA.		
		h) Copy of Power of Attorney signed by legally authorized signatories as per <b>Annexure 19.</b>  All documents to be submitted as per applicability.		
<b>PQ 2</b>	<b>Average Annual Turnover:</b>	a) Audited Financial Statements (Balance Sheet and Profit & Loss		



S. No.	Minimum Eligibility Criteria- Pre-Qualification Criteria	Document to be submitted	Document submitted Yes/No	Pg. No.
	The average annual turnover of the bidder for the last three (03) audited financial years should be more than <b>INR 30 Crores.</b> (FY 2021-22, FY 2022-23, FY 2023-24)	Statements) from the Statutory Auditor/Chartered Accountant and b) Certificate duly signed by Statutory Auditor of the Bidder for total turnover as per the format. <b>Annexure 8</b> <b>Note: Audited financial statement should match with certificate of chartered accountant</b>		
<b>PQ 3</b>	<b>Net-worth Criteria:</b> Bidder shall have Positive Net Worth in each of the last <b>Three (03)</b> Financial Years. (FY 2021-22, FY 2022-23, FY 2023-24) <u>[Net-Worth as defined in Companies Act 1956 / 2013 as amended from time to time.]</u>	a) Audited Financial Statements (Balance Sheet and Profit & Loss Statements) from the Statutory Auditor/Chartered Accountant and b) Certificate duly signed by Statutory Auditor of the Bidder for Net-worth as per the format in <b>Annexure 8</b> <b>Note: Audited financial statement should match with certificate of chartered accountant</b>		
<b>PQ 4</b>	<b>Project Experience 1:</b> The Bidder must have experience in “ <b>similar works</b> ” * during last <b>seven (07)</b> years in India as on last date of submission of bid as per following details  <b>One (01) project worth at least INR. 60 Cr.</b> <b>OR</b> <b>Two (02) projects each costing not less than the amount equal to INR. 40 Cr.</b> <b>OR</b> <b>Three (03) projects each</b>	a) Bidders shall submit copy of Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement mentioning the relevant scope of Work. b) Completion Certificate from the client mentioning the total value of completed projects <b>OR</b> In case of on-going project, partial completion certificate from the client on client’s letter head mentioning the relevant scope of Work, having received the payment matching the ‘Minimum Project Value’ of the partially completed project.		

S. No.	Minimum Eligibility Criteria- Pre-Qualification Criteria	Document to be submitted	Document submitted Yes/No	Pg. No.
	costing not less than the amount equal to <b>INR. 30 Cr.</b>	<p>c) Performance statement formats <b>for Manufacturer and for Authorized representative of manufacturer:</b> in format given in <b>Annexure 5</b></p> <p>d) Project Citation as given in <b>Annexure 4.</b> <i>For bidders submitting private work orders, GST invoice and payment receipts/statement needs to be submitted to ascertain proof of payment.</i></p>		
<b>PQ 5</b>	<p><b>Project Experience 2:</b></p> <p>The Bidder should have experience of “similar works” * of supplying at least <b>15 nos.</b> of CAAQMS along with O&amp;M during the past <b>seven (07) years.</b></p>	<p>a) Bidders shall submit copy of Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement mentioning the relevant scope of Work.</p> <p>b) Completion Certificate from the client indicating the number CAAQMS supplied along with O&amp;M OR In case of on-going project, partial completion certificate from the client on client’s letter head mentioning the relevant scope of Work, having received the payment matching the ‘Minimum Project Value’ of the partially completed project.</p> <p>c) Project Citation as given in <b>Annexure 4</b></p> <p><i>For bidders submitting private work orders, GST invoice and payment receipts/statement needs to be submitted to ascertain proof of payment.</i></p>		

S. No.	Minimum Eligibility Criteria- Pre-Qualification Criteria	Document to be submitted	Document submitted Yes/No	Pg. No.
		<b>Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement</b>  <i>issued only in the name of participating entity shall be considered.</i>		
<b>PQ 6</b>	<b>Certifications:</b> The bidder shall have <b>ISO 9001:2015</b> Certification <b>valid</b> as on last date of submission of bid.	Copy of valid certifications as on last date of submission of bid.		
<b>PQ 7</b>	The Bidder to submit Manufacturer Authorization Form (MAF) from the OEMs.	For Manufacturer: Self Declaration MAF for Original Equipment Manufacturer in <b>Annexure 10</b> . or For Dealers: Manufacturer's Authorization Form (MAF) for Authorized Supplier of OEM as per format in <b>Annexure 12</b> . AND <b>Annexure 11</b> - Form of Certificate of Supply of Spares and Consumables by Manufacturer		
<b>PQ 8</b>	<b>Manpower Strength</b> The Bidder should have <b>at least 30</b> Service Engineers experienced in Comprehensive O&M of CAAQMS, with either permanent Provident Fund (PF) account or professional tax account <b>on bidder's payroll</b> as on bid submission date.	a) Attested copy of the Employee Provident Fund registration letter / certificate. b) Attested copy of the Labour License under the Contract Labour (Regulation & Abolition) Act. c) Attested copy of the Employee State Insurance registration letter / certificate.  Bidder should provide above copies duly signed and stamped.  HR declaration as in format given in		

S. No.	Minimum Eligibility Criteria- Pre-Qualification Criteria	Document to be submitted	Document submitted Yes/No	Pg. No.
		<b>Annexure 15.</b>		
<b>PQ 9</b>	<p><b>Support Capability:</b></p> <p>The bidder shall have <b>fully functioning office</b> in Maharashtra or shall open office in Maharashtra <b>within 15 days</b> in case of award of contract.</p>	<p>Copy of existing office address proof like lease agreement/electricity bill in the name of the bidder</p> <p>In the absence of an existing office in Maharashtra, the bidder must submit an undertaking to setup office in Maharashtra, on letterhead of firm signed by authorized signatory as per the format provided in the RFP in <b>Annexure 14.</b></p>		
<b>PQ 10</b>	<p><b>Blacklisting criteria:</b></p> <p>The bidder should not have been debarred by any Government (State / Central) / Semi Government / Corporation / PSU/tendering department in India in last Three (03) years for unsatisfactory past performance, corrupt, fraudulent or any other unethical business practices as specified in <b>Rule 151 of GFR, as on date of bid submission.</b></p>	<p>Self-certification signed by the Authorized Signatory, on the company letter head as per format provided in this RFP in <b>Annexure 13.</b></p>		
<b>PQ 11</b>	<p><b>Meeting Minimum Technical Specifications:</b></p> <p>The bidder must meet the <b>minimum technical specifications</b> mentioned in the Bid document for the machines and other equipment's involved in setting up the CAAQMS.</p>	<p>Self-certification signed by the Authorized Signatory, on the company letter head as per format provided in this Bid document as per <b>Annexure 41</b> and <b>Annexure 42</b> along with other supporting documents like brochures.</p>		

**\*\*“Similar works” means successful Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of Analysers / Software / Display units/ Computers, AC units for CAAQMS for any Central Government / State Government / Urban Local Body (ULB)/State-Govt Undertakings/PSUs in India or large private industries in India with annual turnover more than INR 500 crore.**

## Annexure 3 Bidder's and Bidding Firms Particulars

### Bidders Profile

The Table below provides the format in which general information about the bidder must be furnished.

S. No	Description	Details/Information
1	Name of the firm	
2	Address	
3	Email	
4	Contact number/s (Tel / Mobile)	
5	Office address of Maharashtra	
6	Year of establishment	
7	Name/s of partners (Membership certificates issued by authorized body should be enclosed)	
8	Name of Office In charge of Mumbai	
9	Name, address and account number of the firm's banker(s)	
10	PAN of the firm	
11	GST registration number of the firm	
12	Number of Employees	
13	Average Turnover during last three financial years (FY 2021-22, FY 2022-23 & FY 2023-24)	
14	Details of major assignments	
15	Any other information considered relevant.	

Please submit the relevant proofs for all the details mentioned above along with your Bid response

Signature of Authorized Signatory (with official seal)

Name :  
Designation :  
Address :  
Telephone :  
E-mail address :

## Annexure 4 Project Citation (PQ & TQ)

Details of past assignments / experience

S. No	Client Name	Handling		Work related to
		From	To	

Individual Project Citation Format

S. No.	Item	Details	Attachment Pg. no.
1	Name of The Project		
2	Date of Work Order		
3	Client Details with Address and Contact Numbers		
4	Scope of Work		
5	Contract Value		
6	Start date		
7	Completion Date		
8	Current Status (Work In progress, Completed)		
9	Number of staff deployed on the assignment		
10	Narrative description of project describing the scope of work		
11	Progress of the project (Description)		
12	Payment Received till Date		

**Note:**

- The Bidder is required to use above formats for all the projects referenced by the bidder for the pre- qualification criteria.
- Documents/Proofs are required for all of the above
- Kindly provide copies of supporting documents such as Letter of award/ work order/ agreement/ contract/ MoU/ Completion certificate etc.
- The Bidder is required to use above formats for all the projects referenced by the bidder for the Qualifying technical bid evaluation.

Signature of Authorized Signatory (with official seal)

Name :  
 Designation :  
 Address :  
 Telephone :  
 E-mail address :

## Annexure 5 Performance Statement

(For a period of last five years Manufacturer's or Authorized Representative's (O&M Operator) of the Manufacturer)

Bid No. \_\_\_\_\_ Name of Equipment \_\_\_\_\_ Date of Opening  
\_\_\_\_\_ Time \_\_\_\_\_

Name of the Manufacturer \_\_\_\_\_

Order placed by (Full address Of Purchaser)	Order No. & Date	Description Of ordered equipment (Model no.)	Quantity supplied	Value of order	Date of Commissi- oning and handing over	Has the equipment been satisfactory. Functioning? <i>(Attach certificates from the Purchaser/ Consignee for each equipment)</i>
1	2	3	4	5	6	7

**NOTE:** Bidder to furnish above detail for each equipment of the quoted package on separate sheet.

Signature of the Authorized Representative Name of the Person  
Position

## **Annexure 6 Technical Proposal Bid Cover Letter**

(To be submitted on the Letterhead of the responding firm)

Date: dd/mm/yyyy

To  
Member Secretary  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> floor,  
Opp. PVR Cinema, Sion Circle, Sion,  
Mumbai-400 022

**Sub: Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra**

**Ref: RFP Notification number:**

Dear Sir,

Having examined the RFP, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to provide the professional services as required and outlined in the RFP for **“Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra.”**

We attach hereto the technical response as required by the RFP, which constitutes our proposal. We undertake, if our proposal is accepted, to adhere to the implementation plan (Project schedule) for providing Professional Services in **“Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS ”** put forward in RFP or such adjusted plan as may subsequently be mutually agreed between us and MPCB or its appointed representatives.

If our proposal is accepted, we will obtain a Performance Security Deposit (Bank Guarantee) issued by a nationalized/ schedule commercial bank in India, as mentioned in the Contract, 10% of contract value.

We agree for unconditional acceptance of all the terms and conditions set out in the RFP document and also agree to abide by this tender response for a period of 180 days from date of opening



Financial Bid and it shall remain binding upon us with full force and virtue, until within this period a formal contract is prepared and executed, this tender response, together with your written acceptance thereof in your notification of award, shall constitute a binding contract between us and MPCB.

We confirm that the information contained in this proposal or any part thereof, including its exhibits, schedules, and other documents and instruments delivered or to be delivered to MPCB is true, accurate, and complete. This proposal includes all information necessary to ensure that the statements therein do not in whole or in part mislead MPCB as to any material fact.

We agree that you are not bound to accept any tender response you may receive. We also agree that you reserve the right in absolute sense to reject all or any of the products/ services specified in the tender response.

It is hereby confirmed that I/We are entitled to act on behalf of our company/ corporation/ firm/ organization and empowered to sign this document as well as such other documents, which may be required in this connection.

Date:

(Signature)

(Name)

(In the capacity of)

[Seal / Stamp of bidder]

Witness Signature:

Witness Name:

Witness Address:

-----  
**CERTIFICATE AS TO AUTHORISED SIGNATORIES**

I \_\_\_\_\_, the Company Secretary of \_\_\_\_\_, certify that \_\_\_\_\_ who signed the above Bid is authorized to do so and bind the Company by authority of its board/ governing body.

Date:

Signature:

(Company Seal) (Name)

## Annexure 7 Checklist for the documents for Technical Proposal

Checklist as per Technical Qualification mentioned in Section 3.3: Technical Qualification Criteria

S. No.	Criteria	Evaluation Parameters	Max. Marks	Supporting Documents	Document submitted Yes/No	Pg. No.
TE 1.	<b>Financial Strength (15 Marks)</b>					
TE 1.1	The average annual turnover of the bidder for the last three (03) audited financial years should be more than <b>INR 30 Crores.</b> (F.Y 2021-22, FY 2022-23, FY 2023-24)	Average Annual Turnover (Cr) 4) $\geq 30$ Cr and $< 60$ Cr : <b>10 marks</b> 5) $\geq 60$ Cr and $< 90$ Cr : <b>12 marks</b> 6) $\geq 90$ Cr: <b>15 marks</b>	15	a. Audited Financial Statements (Balance Sheet and Profit & Loss Statements) from the Statutory Auditor/ Chartered Accountant and b. Certificate duly signed by Statutory Auditor of the Bidder for total turnover as per the format in <b>Annexure 8.</b>		
TE 2.	<b>Relevant Bidder Experience (50 Marks)</b>					
TE 2.1	<b>Project Experience 1:</b> The Bidder must have experience in “ <b>similar works</b> ” * during last seven (07) years as on last date of submission of bid as per following details  <b>One (01) project worth at least INR. 60 Cr.</b> <b>OR</b> <b>Two (02) projects each costing not less than the amount equal to INR. 40 Cr.</b> <b>OR</b> <b>Three (03) projects each costing not less than the amount equal to INR. 30 Cr.</b>	<b>Cumulative Project value of maximum any three projects submitted.</b> 4) $\geq$ INR 60 Cr and $<$ INR 90 Cr: <b>10 Marks</b> 5) $\geq$ INR 90 Cr and $<$ INR 120 Cr: <b>15 marks</b> 6) $\geq$ INR 120 Cr.: <b>20 marks</b>	20	a) Bidders shall submit copy of Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement mentioning the relevant scope of Work. b) Completion Certificate from the client mentioning the total value of completed projects OR In case of on-going project, partial completion certificate from the client on client’s letter head mentioning the relevant scope of Work, having received the payment matching the ‘Minimum Project Value’ of the partially completed project. c) Performance statement formats <b>for Manufacturer and for Authorized representative of manufacturer:</b> in format given in <b>Annexure 5</b> d) Project Citation as given in <b>Annexure 4.</b> <i>For bidders submitting private work orders, GST invoice and payment receipts/statement needs</i>		
TE 2.2	<b>Similar Work Project Experience</b> The bidder should have successfully executed “similar works” ** project during last <b>seven (07)</b> years as on last date of bid submission date.	<b>No. of “similar works” projects completed in Central Government / State Government /PCB/ Large Industries in India:</b> 4) 01 to 03 projects: <b>05 marks</b>	10			

S. No.	Criteria	Evaluation Parameters	Max. Marks	Supporting Documents	Document submitted Yes/No	Pg. No.
		5) 04 to 05 projects: <b>07 marks</b> 6) Above 05 projects: <b>10 marks</b>		<i>to be submitted to ascertain proof of payment.</i> <b>Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement</b>  <i>issued only in the name of participating entity shall be considered.</i>		
TE 2.4	The Bidder should have experience of “similar works” ** of supplying at least <b>15 nos.</b> of CAAQMS along with Operation & Maintenance (O&M) during the past <b>seven (07)</b> years.	<b>Supply &amp; O&amp;M of CAAQMS (cumulative)</b> 7) > 15 Nos. < 20 : <b>10 marks</b> 8) > 20 Nos. < 30 : <b>15 marks</b> 9) > 30 Nos.: <b>20 marks</b>	20	a) Bidders shall submit copy of Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement mentioning the relevant scope of Work. b) Completion Certificate from the client indicating the number CAAQMS supplied along with O&M OR In case of on-going project, partial completion certificate from the client on client’s letter head mentioning the relevant scope of Work, having received the payment matching the ‘Minimum Project Value’ of the partially completed project. c) Project Citation as given in <b>Annexure 4</b> <i>For bidders submitting private work orders, GST invoice and payment receipts/statement needs to be submitted to ascertain proof of payment.</i> <b>Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement</b>  <i>issued only in the name of participating entity shall be considered.</i>		
TE 3.	<b>Key Professional Experience (15 Marks)</b>					
TE 3.1	Proposed Human Resource / Manpower and experience:		15			
	<b>Designation</b>	<b>Numbers</b>				
TE 3.1 (a)	Project Manager	1	Graduate/ Postgraduate in Environmental Science /	3	Detailed CV in World Bank Format duly attested by HR and authorized bid signatory.	

S. No.	Criteria	Evaluation Parameters	Max. Marks	Supporting Documents	Document submitted Yes/No	Pg. No.
		Environmental Engineering / Mechanical Engineering / Electrical Engineering / Civil Engineering or PGDM/ MBA with a professional experience of minimum 10 years		Provide details as per following format. <b>Annexure 15.</b> Attested copy of the Employee Provident Fund registration letter / certificate		
TE 3.1 (b)	Technician	10	Diploma in Electronics / Instrumentation / C&I / Electrical with a professional experience of minimum 5 years (0.5 marks for each candidate)	5		
TE 3.1 (c)	Data Processor	01	Science Graduate with an experience of minimum 3 years	2		
TE 3.2	The Bidder should have at least 30 Service Engineers experienced in Comprehensive O&M of CAAQMS, with either permanent Provident Fund (PF) account or professional tax account on bidder's payroll as on bid submission date.	Number of Manpower on payroll: 10) > 30 Nos. < 40: <b>02 marks</b> 11) > 40 Nos. < 50 : <b>03 marks</b> 12) > 50 Nos.: <b>05 marks</b>	5			

\*\*\*“Similar works” means successful Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of Analysers / Software / Display units/ Computers, AC units for CAAQMS for any Central Government / State Government / Urban Local Body (ULB)/State-Govt Undertakings/PSUs in India or large private industries in India with annual turnover more than INR 500 crore.

## Annexure 8 Turnover and Net worth Details

(To be submitted on Letterhead of Statutory Auditor of respective Bidders)

We, ....., certify that we have verified the relevant financial statements and other records of ..... (Name of Company), having its Indian registered office at..... The financials for the past three years have been summarized below:

- Financial Declaration of Bidder

Description	Financial Year		
(All Currency in INR)	2021-22	2022-23	2023-24
<b>Annual Turnover</b>			
<b>Net Worth</b>			
<b>Average Annual Turnover</b>			

The Average Annual Turnover for ..... (Name of the Company) is INR <Insert Value> (INR<Insert Value in Words> and the ..... (Name of the Company) has Positive Net Worth during the last 3 (three) Financial Years. (FY 2021-22, FY 2022-23 & FY 2023-24)

This is to certify that the .....(insert name of Bidder) has a Positive Net Worth in each of the last three (03) (FY 2021-22, FY 2022-23 & FY 2023-24)

It is further certified that based on our review of financial statements together with the book of accounts, records and documents for the aforesaid financial years, the above-mentioned figures are true and correct to the best of our knowledge and as per information and explanations provided to our satisfaction by the .....(Name of the Company).

Signature of Authorized Signatory (with official seal)

Name:

Designation:

Address:

Telephone & Fax:

E-mail address:

Notes:

1. Numbers available in currency other than Indian Currency have been converted using the Reserve Bank of India exchange rate prevailing on the last day of respective financial year.)
2. The Financial Declaration submitted with the Bid must be certified and signed by a competent and qualified Chartered Accountant/ Statutory Auditor and should be on the Firms' letterhead; affixed with the Firm's seal.
3. Audited Balance sheet and Profit & Loss account statement of the Bidder for each of the last 3 audited financial years (FY 2021-22, FY 2022-23 & FY 2023-24) shall submitted as supporting evidence.

## Annexure 9 Format for Self-Declaration

(To be submitted on the Letterhead of the responding company)

To,  
Member Secretary  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> floor,  
Opp. PVR Cinema, Sion Circle, Sion,  
Mumbai-400 022

**Sub:** Declaration for having experience in “\*similar works” as mentioned in Section 3 of the RFP

**RFP Reference No:** MPCB/

Dear Sir,

I, authorized representative of \_\_\_\_\_, hereby confirm that the Company \_\_\_\_\_ has the experience in “similar works” as mentioned in Section 3 in India in last seven (07) years as on last date of submission of bid.

Thanking you,

Yours faithfully,

\_\_\_\_\_  
Signature of Authorized Signatory (with official seal)

Date:

Name:

Designation:

Address:

Telephone & Fax:

E-mail address:

## Annexure 10 Format for MAF for Original Equipment Manufacturer (OEM)

*<To be printed on the letterhead of the OEM and duly signed and sealed from the Authorized Signatory of the OEM.  
The OEM shall also give details about its facilities on their letterhead, duly signing and sealing it>*

To,

The Member Secretary,  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> Floor, opp. Cine  
Planet, Near Sion Circle, Sion (East), Mumbai – 400 022.

Name of Manufacturer

Subject: - Manufacturer's Authorization Form (MAF) for RFP \_\_\_\_\_

RFP Ref <RFP reference No.>

Dear Sirs,

We, (Name of Manufacturer), a manufacturer duly organized and existing under the law of (Country Name) with its principal office of business as (Address) hereby make, constitute and appoint (name of Bidder), a company duly organized and existing under the laws of (Country Name) with its principal office of business at (Address) to be our true and lawful attorney in fact to do the following sets and deeds:

To present and bind us in the for Supply and O&M of **Continuous Ambient Air Quality Monitoring Stations (CAAQMS) for Maharashtra Pollution Control Board** in the State of India, regarding the Supply and installation of the following equipment proposed in the bid which we manufacture or produce.

Sr.	Name of OEM	Name of other components	Name of Make (OEM)	Model	Version	Planned End of Sale	Planned End of Support and spare parts availability	Remark
1.								
2.								
3.								

We, as a manufacturer bind ourselves as co-worker of the bid and are jointly and severally responsible for the compliance of the said bid and once (Name of Bidder) has been selected as a successful bidder, we shall manufacture, delivery and install the equipment in accordance with the



terms and conditions of contract with (Name of Bidder) and the State Pollution Control Board.

We hereby give and grant to the said (Name of Bidder) full power and authority to do and perform all and every act and thing whatsoever, requisite necessary and proper to be done in the premises, as fully, to all intents and purposes as we might or could do with full power of submission and renovation hereby ratifying and conforming all that (Name of Bidder) or its duly authorized representative shall lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, we have hereto signed this document on -----  
ACCEPTED ON -----, 2024.

NAME OF BIDDER  
AUTHORITY  
MANUFACTURER

NAME OF ISSUING

-----  
(Name of duly authorized  
Representative to sign and signature)  
Signature)

-----  
(Name of duly authorized  
representative to sign and

-----  
(Rank of position and department)

-----  
(Rank of position and department)

## Annexure 11 Form of Certificate of Supply of Spares and Consumables by Manufacturer

<Letterhead of the Manufacturer>

Date:

To,

**The Member Secretary,  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> Floor,  
opp. Cine Planet, Near Sion Circle,  
Sion (East), Mumbai – 400 022.**

**Sub:** - Certificate of supply of Consumables and Spare Parts by Manufacturer

This is to certify that we (Name of Manufacturer) shall supply the consumables and spare parts of the equipment mentioned below during O&M period under the contract (contract detail) to the Bidders (Name of the Bidder)/ Owner.

It is hereby guaranteed that we shall maintain stocks of consumables and spare parts for the following equipment for a period of Eight (8) years after the commissioning of the equipment in India.

S. No.	Name of OEM / Dealer	Name of other components	Name of Make (OEM)	Model	Version	Planned End of Sale	Planned End of Support and spare parts availability	Remark
1.								
2.								

Signature:

Name of Person:

Position:

Name of Manufacturer:

Office Seal of Manufacturer:

Legal Address of Manufacturer:

## Annexure 12 MAF for Authorized Supplier of OEM

<To be printed on the letterhead of the OEM and duly signed and sealed from the Authorized Signatory of the OEM>

Date:

Place:

To,

**Member Secretary  
Maharashtra Pollution Control Board  
Kalpataru Point, 3<sup>rd</sup> floor,  
Opp. Cine Planet Cinema, Sion Circle,  
Sion (E), Mumbai – 400 022**

**Subject:** Request for Proposal for \_\_\_\_\_

RFP Ref <RFP reference No.>

Dear Sir,

We, who are established and reputed developers / producers of \_\_\_\_\_ having development facilities at (address of factory / facility) do hereby authorize M/s \_\_\_\_\_ (Name and address of Bidder) to submit a Bid and sign the contract with you against the above Bid Invitation.

Sr.	Name of OEM / Dealer	Name of other components	Name of Make (OEM)	Model	Version	Planned End of Sale	Planned End of Support and spare parts availability	Remark
1.								
2.								
3.								

- We hereby agree to the following with regards to the solution, products and services offered by us through the above firm against this Bid Invitation.
  - We extend full on-site guarantee and warranty

- OEM Warranty for the offered product(s), is for minimum \_\_ Years from the date of this letter.
- We have read and understood the said RFP and the functional and technical requirements and the offered product(s), as mentioned above, is complying with the respective requirements.
- Confirm that the offered product(s) is not likely to be declared as
  - End-of-sale will not be within next 24 months for machines and attachments from the date of this letter
  - End of sale for attachment not within next 60 months
- Confirm that the support including spare parts for the quoted products shall be available for the period of the Project.
- We will provide any or all of the materials, notifications, and information
  - Such Products as MPCB may opt to purchase from OEM, provided, that this option shall not relieve OEM of any warranty obligations under the Contract; and
  - in the event of termination of production of such Products:
    - advance notification to MPCB of the pending termination, in sufficient time to permit MPCB to procure needed requirements; and
    - Following such termination, furnishing at no cost to MPCB, operations manuals, standards, and specifications of the Products, if requested.
- We duly authorize the bidder <Bidder name> to act on our behalf in fulfilling all Technical support and maintenance obligations required by the contract.
- We, as OEM of \_\_\_\_< product>\_\_\_\_, agree to provide onsite delivery and support to <Bidder name> and shall physically visit as and when required & certify installation of attachments and maintenance of parts as per standards and best practices at all locations and submit our satisfactory report, which is one of the mandatory requirements for Bidder to proceed with further activities.

We also confirm that we have an existing registered service / support Centre in Maharashtra at

---

OR

We also conform we shall establish registered service / support Centre in Maharashtra within 15 days of award of contract to the Bidder \_\_<Name of the Lead Bidder>\_\_.

Yours faithfully,

For and on behalf of M/s \_\_\_\_\_ (Name of the manufacturer / OEM)

Signature :

Name :

Designation :

Address :

Date :

Company Seal

Thanking you,

(Signature, Name and Designation of the Authorized signatory of the Bidder)

## **Annexure 13 Declaration by the Bidder for not being Blacklisted /Debarred**

(To be submitted on the Letterhead of the responding company)

Date: dd/mm/yyyy

To  
Member Secretary  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> floor,  
Opp. PVR Cinema, Sion Circle, Sion,  
Mumbai-400 022

**Subject:** Declaration for not being debarred / black-listed by Central / any Government or PSU in India as on the date of submission of the bid

**RFP Reference No:** MPCB/

Dear Sir,

I, authorized representative of \_\_\_\_\_, hereby solemnly confirm that the Company \_\_\_\_\_ is not debarred /blacklisted by any Government or PSU for any reason as on last date of submission of the Bid. In the event of any deviation from the factual information/ declaration, MPCB, Government of Maharashtra reserves the right to reject the Bid or terminate the Contract without any compensation to the Company and forfeiture of Earnest Money Deposit and/or Performance Security.

Thanking you,

Yours faithfully,

\_\_\_\_\_  
Signature of Authorized Signatory (with official seal)

Date:

Name:

Designation:

Address:

Telephone &Fax:

E-mail address:

## Annexure 14 Undertaking for Opening Office in Maharashtra

(To be submitted on the Letter of lead bidder)

{Place, Date}

To,

Member Secretary

Maharashtra Pollution Control Board,

Kalpataru Point, 3<sup>rd</sup> floor, Opp. PVR Cinema,

Sion Circle, Sion, Mumbai-400 022

**Subject:** Undertaking of for Office in Maharashtra

**RFP Reference No:** MPCB/

Sir,

We, \_\_\_\_\_, (name of the Bidder) who are an established and reputed firm, having offices at \_\_\_\_\_(address) do hereby undertake to establish a fully functioning office within the jurisdiction of State of Maharashtra within 15 days of award of work for the tender referenced above. We also undertake to assure the authority that the said office in Maharashtra shall remain fully functional and operational in the duration of the contract with the Maharashtra Pollution Control Board, Mumbai.

It is understood that failure to comply with this undertaking in any manner whatsoever, Maharashtra Pollution Control Board, Mumbai shall have the right to reject my / our bid and forfeit the submitted Earnest Money Deposit (EMD), and if the bid has resulted in a contract, the contract is liable to be terminated without prejudice to any other right or remedy (including blacklisting) available to Maharashtra Pollution Control Board, Mumbai

Yours Sincerely,

\_\_\_\_\_  
Signature of Notary (with official seal)

Name:

Designation:

Seal:

Business Address:

## Annexure 15 Declaration from HR department of the Bidder

<< To be printed on Bidder Company's Letter Head and Signed by Authorized Signatory/HR Head>>

To,

**Member Secretary**

Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> floor, Opp. PVR Cinema,  
Sion Circle, Sion, Mumbai-400 022

Dear Sir,

**Subject: HR Department Declaration - \_\_\_\_\_**

**RFP Reference No: MPCB/**

With reference to the subject RFP, we hereby declare that we have \_\_\_ employees working on our payroll or associated with us through proper binding agreement having minimum qualification as graduate in any stream and having minimum experience in the domains required to execute this assignment as per the requirements of the RFP. We are attaching herewith the Bio Data of each of the proposed team member highlighting their Educational Qualification, Relevant Experience and major assignments handled in relevant field.

We also accept that, if it is found that any of the information provided by us is proved wrong/ falsified/ deviated/ incorrect/ concealed from facts, our bid will be summarily rejected along with the blacklisting of our firm and forfeiture of our EMD/ PBG, as the case may be.

S. No.	Position proposed for	Employee Name	Employee ID	Education & Area of Expertise	No. of Years with firm
1.					
2.					

\*attached CV of the resources mentioned in Technical Evaluation table of Section 3 (Clause 3.3)

Yours sincerely,

Authorized Signatory/ HR Head

(Authorized person shall attach a copy of Authorization for signing on behalf of Bidding Company)



## Annexure 16 Financial Proposal Cover Letter

**(Not to be enclosed along with Technical Cover)**

**(To be submitted on the Letterhead of the bidder)**

Date: dd/mm/yyyy

To  
Member Secretary  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> floor,  
Opp. PVR Cinema, Sion Circle, Sion,  
Mumbai-400 022

**Subject: Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra**

**RFP Reference No: MPCB/**

Dear Sir,

We, the undersigned, offer to provide the services for “**Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra.**” in accordance with your Request for Proposal dated [*Insert Date*] and our Technical Proposal. Our attached Financial Proposal for is for the sum of [*Insert amount(s) in words and figures*]. We are aware that any conditional financial offer will be outright rejected by MPCB. Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal 180 days from the date of opening of technical bid.

We hereby declare that our Tender is made in good faith, without collusion or fraud and the information contained in the Tender is true and correct to the best of our knowledge and belief.

We understand that our Tender is binding on us and that you are not bound to accept a Tender you receive. We confirm that no technical deviations are attached here with this financial offer. We remain,

Yours sincerely,

Authorized Signature [*In full and initials*]:

Name and Title of Signatory:

Date and Stamp of the signatory

Name of Firm:

## Annexure 17 Format for Financial Bid

(Not to be enclosed along with Technical Cover)

**Ref: MPCB RFP No:**

**PART A: Price breakup for total 60 CAAQMS**

S. No.	Item / Analyzer Name	Quantity Nos. / Sets	Unit Price (in INR excl. GST)	TOTAL Price (In INR excl. GST)
1	Continuous Ambient Air Quality Monitoring System having integrated set of following equipments and accessories including one (1) year warranty	60		
1.1	Automatic Ambient CO Analyzer	60		
1.2	Automatic Ambient SO2 Analyzer	60		
1.3	Automatic Ambient NOx and NH3 Analyzer	60		
1.4	Automatic Ambient O3 Analyzer	60		
1.5	PM10 Monitor	60		
1.6	PM 2.5 Monitor	60		
1.7	BTX Analyzer	60		
1.8	Multi-calibration systems for gaseous monitors comprising of gas supply/ generation and automated calibration	60		
1.9	Meteorological Instrumentation comprising Wind direction, Wind speed, Ambient temperature, Relative humidity, Solar Radiation and Rainfall mounted on telescoping crank up meteorological Mast.	60		
1.10	Computer system consisting of one PC along with Laser Printer and DAS at the monitoring station and one PC at central office with peripherals and software for data acquisition / Data display Board / transfer and system integration, telephone,	60		
1.11	Modem.	120		
1.12	Housing/ Container for Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical	60		

S. No.	Item / Analyzer Name	Quantity Nos. / Sets	Unit Price (in INR excl. GST)	TOTAL Price (In INR excl. GST)
	fittings and Gas line fittings, Tools (electrical and mechanical), Data display system			
1.13	2 Ton capacity split Air conditioner	120		
1.14	1 Ton capacity split Air conditioner	60		
1.15	Single Phase 10 kVA UPS, 1 Hour backup	60		
1.16	Single Phase 5 kVA UPS, 4 Hrs. backup	60		
1.17	RCC Foundation, pillars and miscellaneous works including civil and electrical ( compound wall and beautifications work all around)	60		
1.18	Display Board along with its foundation	60		

Strengthening of work as specified at 1.17 may be carried out buy back site depending on the structural stability.

**PART B: Breakup for O&M including CAMC of 60 CAAQMS for Five Years:**

**O&M Cost/Station including Cost of (Incidental Charges consisting of security, Electricity, Phones/ internet, Manpower, AMCs, material including spares & consumables for Operation & maintenance and others)**

S. No.	Year of O&M	Quantity (Nos.)	Per unit rate (INR)	Total O&M Charges for the year in INR
1.	1 <sup>st</sup> year	60		
2.	2 <sup>nd</sup> year	60		
3.	3 <sup>rd</sup> year	60		
4.	4 <sup>th</sup> year	60		
5.	5 <sup>th</sup> year	60		
<b>TOTAL</b>				

**PART C: Breakup for Buy Back of the old CAAQMS**

S. No.	Buy Back price in INR	Quantity (Nos.)	Total price offered (INR)
1.		07	
	<b>TOTAL</b>		

*The above buyback cost will be considered for awarding the contract to L1 bidder. The L1 bidder must accept and offer highest buyback cost discovered through this bidding process.*

### Total Contract Value

S. No.	Part	Total Value (excl. GST)
1.	PART A	
2.	PART B	
	<b>TOTAL VALUE (excl. GST)</b>	

### Note:

1. The Bidder shall provision for all costs required for the entire duration of the contract. MPCB shall not be liable to pay any additional costs, apart from that mentioned in the table above.
2. The rate quoted by bidder shall include all costs associated with fulfilling the project deliverables, Out of Pocket Expenses including Travelling, Lodging, Food, insurance, etc. MPCB shall not pay any additional cost to bidder.
3. All costs shall remain valid for the entire duration of the contract.
4. All factor/services/components need to be taken into consideration before filling rate in the Financial Proposal Format. No changes will be entertained once the bid has been submitted. MPCB does not guarantee work order for the bids submitted.
5. All the prices are to be entered in Indian Rupees ONLY.
6. The quoted rates shall be inclusive of all taxes and excluding GST. GST shall be paid as actual at prevailing rates by MPCB after awarding the contract to successful bidder at the time of releasing the payments.
7. Bids not conforming to the formats and instructions given below, the Bids will be considered as invalid / non-responsive. MPCB's decision will be final in such case.
8. The PRICE BID has to be submitted online in the BOQ format provided.
9. Bidders *are* requested to submit online commercial bid format
10. A copy of commercial bid printed on letterhead to be uploaded on Mahatender portal.

Yours sincerely,

Authorized Signature [*In full and initials*]:

Name and Title of Signatory:

Date and Stamp of the signatory

Name of Firm:



## **Annexure 18 Format for Performance Security/ Bank Guarantee**

*(To be stamped in accordance with the Stamp Act of the Country of Issuing Bank)*

To  
Member Secretary  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> floor,  
Opp. PVR Cinema, Sion Circle, Sion,  
Mumbai-400 022

Whereas <<name of the supplier and address>> (hereinafter called “the Bidder”) has undertaken, in pursuance of contract no. <Insert Contract No.> dated. <Date> to provide Implementation services for **Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra** to Employer (hereinafter called “the beneficiary”)

And whereas it has been stipulated in the said contract that the Bidder shall furnish a bank guarantee by a recognized bank for the sum specified therein as security for compliance with its obligations in accordance with the contract.

And whereas we, <Name of Bank> a banking company incorporated and having its head /registered office at <Address of Registered Office> and having one of its offices at <Address of Local Office> have agreed to give the supplier such a bank guarantee.

Now, therefore, we hereby affirm that we are guarantors and responsible to you, on behalf of the Bidder, up to a total of Rs. <Insert Value> (Rupees <Insert Value in Words> only) and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of Rs. <Insert Value> (Rupees <Insert Value in Words> only) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Bidder before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the Bidder shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This Guarantee shall be valid until <<Insert Date>>).

Notwithstanding anything contained herein:

- Our liability under this bank guarantee shall not exceed Rs. <Insert Value> (Rupees <Insert Value in Words> only).
- This bank guarantee shall be valid up to <Insert Expiry Date>
- It is condition of our liability for payment of the guaranteed amount or any part thereof arising under this bank guarantee that we receive a valid written claim or demand for payment under this bank guarantee on or before <Insert Expiry Date>) failing which our liability under the guarantee will automatically cease.

Dated \_\_\_\_\_ Day of \_\_\_\_\_ 2024

For

\_\_\_\_\_

(Indicate the name of the Bank)

## Annexure 19 Power of Attorney

Know by all men by these presents, We \_\_\_\_\_ (Name of the Bidder and address of their registered office) do hereby constitute, appoint and authorize Mr. / Ms \_\_\_\_\_ (name and residential address of Power of attorney holder) who is presently employed with us and holding the position of \_\_\_\_\_ as our Attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our Proposal for the “**Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra .**” including signing and submission of all documents and providing information / responses to the MPCB, representing us in all matters before MPCB, and generally dealing with the MPCB in all matters in connection with our Proposal for the said Project.

We hereby agree to ratify all acts, deeds and things lawfully done by our said Attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid Attorney shall and shall always be deemed to have been done by us.

For \_\_\_\_\_

Name:

Designation:

Date:

Time:

Seal:

Business Address:

Accepted,

\_\_\_\_\_ (Signature)

(Name, Title and Address of the Attorney)

Note:

- The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.
- The Power of Attorney shall be provided on the stamp paper of appropriate value
- The Power of Attorney should be supported by a duly authorized resolution of the Board of Directors of the Bidder authorizing the person who is issuing this power of attorney on behalf of the Bidder.



## Annexure 20 Indemnity Bond

### INDEMNITY BOND FOR HANDING OVER AIR MONITORING STATIONS INCLUDING ALL EQUIPMENT TO THE O&M CONTRACTOR

This Indemnity Bond is made this ..... Day of 2024..... By.....a Company registered under the Companies Act, 1956/2013 /Partnership firm / Proprietary concern having its registered office at .....(hereinafter called as “Contractor” or “obligator” which expression

Shall include its successors and permitted assigns) in favour of Maharashtra Pollution Control Board with Office at Mumbai, which term shall include permitted assigns and successors, (hereinafter called “MPCB” which expression shall include its successors and assigns).

Whereas MPCB has awarded to the Contractor, a contract for O&M of the 60 Continuous Ambient Air Monitoring Stations (CAAQMS located at – -----, vide its Letter of Intent /Award Letter /Contract No..... dated ..... (hereinafter called the “Contract”), in the terms of which Contractor shall be responsible for the Equipments to be handed over to it by MPCB for the purpose of performance of the Contract (hereinafter called the “Equipments”).

#### Now, therefore this Indemnity Bond witnessed as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at Rs.----- (Rupees.....) to be handed over to the Contractor for the purpose of performance of the Contract, the Contractor hereby undertakes to indemnify and shall keep MPCB indemnified, for the full value of the Equipment. The Contractor hereby acknowledges receipt of the Equipment’s as per details in the Schedule appended hereto.
2. That the Contractor is obliged and shall remain absolutely responsible for The safe custody of the Equipments at Continuous Ambient Air Monitoring Stations (CAAQMS) belonging to MPCB against all risks whatsoever till the Equipments are duly used in accordance with all terms of the Contract. The Contractor undertakes to keep MPCB harmless against any loss or damage that may be caused to the Equipment.
3. The Contractor undertakes that the Equipments shall be used exclusively for the performance/ execution of the Contract strictly in accordance with its terms and conditions and no part of the Equipments shall be utilized for any other work or purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a breach of trust on the part of the Contractor for all intents and purposes including legal / penal consequences.
4. That MPCB is and shall remain the exclusive Owner of the Equipment free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall always be open to inspection and checking by Project-in-Charge MPCB shall always be free at all time to take possession of the Equipments in whatever form the equipments may be. If in its opinion, the equipments are likely to be endangered, mis utilised or converted to uses other than those specified

in the Contract, by any act of omission or commission on the part of the Contractor; he finds itself and undertakes to comply with the direction or demand of MPCB to return the Equipments without any demur or reservation.

5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipments or the same or any part thereof is misutilised in any manner whatsoever then the Contractor hereby agrees that the decision of the Project-in-Charge of MPCB as to assessment of loss or damage to the Equipments shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and / or damaged Equipments at its own or remedy that may be available to MPCB against the Contractor under the Contract and under this Indemnity Bond.

6. Now the condition of this Bond is that if the Contractor shall duly and punctually complies with the terms and conditions of this bond to the satisfaction of MPCB, then the above bond shall be void, but otherwise, it shall remain in full force and virtue. In witness whereof, the Contractor has hereby to set its hand through its authorized representative under the common seal of the company, the day month and year first above mentioned.

#### SCHEDULE NO. 1

<b>Particulars of the Equipments handed over</b>	<b>Quantity</b>	<b>Value of the Equipment</b>	<b>Signature of Authorised Person</b>

For and on behalf of  
Name  
Signature  
Designation  
Authorized representative

Witness I

1. Signature
2. Name
3. Address

Witness II

1. Signature
2. Name
3. Address

(Common Seal)  
(In case of Company)

## Annexure 21 Format of sending pre-bid queries.

All queries for the pre-bid meeting needs to be submitted in the following format (both soft copy (**editable excel format**) and **hard copy**) as mentioned in section “Invitation *for Bids*”

Ref: RFP Notification number:

Bidder's Request for Clarification				
Name and complete official address of Organization submitting query / request for clarification			Telephone, Fax, and E-mail of the organization Tel: Fax: Email:	
S. No.	Clause No.	Page No.	Content of RFP Requiring Clarification	Change Requested/ Clarification required
1				
2				

Signature:

Name of the Authorized signatory:

Company seal:

Date and Stamped

## Annexure 22 Draft Conditions of Contract

This AGREEMENT is made at \_\_\_\_\_, Maharashtra, on this \_\_\_\_ day of, \_\_\_\_ 2024,

BETWEEN

<<Insert Designation of Authorized Signatory>> Maharashtra Pollution Control Board, Government of Maharashtra, having its office at Kalpataru Point, 3<sup>rd</sup> Floor, opposite PVR Cinema, Sion Circle, Sion, Mumbai -400022, Maharashtra India hereinafter referred to as ‘MPCB’ or “First Part” which expression shall, unless the context otherwise requires, include its permitted successors and assigns.

And

<<\*\*\*>>, a Company incorporated under the *Companies Act, 1956*, having its registered office at <<\*\*\*>> (hereinafter referred to as “Party” or “Second Part” which expression shall, unless the context otherwise requires, include its permitted successors and assigns).

Each of the parties mentioned above are collectively referred to as the ‘Parties’ and individually as a ‘Party’

Whereas:

Whereas MPCB has envisaged \_\_\_\_\_ (hereinafter referred to as the “said Project”).

And whereas MPCB has published the RFP to seek services of a reputed Agency for \_\_\_\_\_.

And whereas M/s. ----- has submitted its proposal for \_\_\_\_\_.

And whereas MPCB and M/s. ----- have decided to enter into this Agreement on the terms and conditions stipulated hereinafter.

NOW, THEREFORE, THIS AGREEMENT WITNESSETH and the parties hereto hereby mutually agree as follows: -

The Agreement shall consist of this Contract Form and the following documents, hereinafter referred to as the ‘Contract Documents’, all of which by this reference are incorporated herein and made part hereof:

1. Notification of Award / Work Order

2. RFP / Tender Form
3. Scope of Work as given in the RFP / Tender Document.
4. Project & Payment schedule as given in the RFP / Tender Document.
5. Terms & Conditions of Contract as given in the RFP / Tender Document.
6. Service Level Agreement (SLA) as given in the RFP / Tender Document.
7. Technical proposal of Tenderer.
8. Financial Proposal
9. Corrigendum, if any

This Agreement sets forth the entire contract and agreement between the parties pertaining to “\_\_\_\_\_” and supersedes any and all earlier verbal or written agreements. This agreement shall prevail over all other Contract Documents. In the event of any discrepancy or inconsistency within the contract documents, then the documents shall prevail in the order listed above.

In consideration of the payments to be made by the Corporation to the Agency as hereinafter mentioned, the Agency hereby covenants with the MPCB to provide services with the provisions of the Contract. The Contract Price or such other sum as may become payable under the provisions of the agreement shall be at the times and in the manner prescribed in the Agreement.

Any notice under this agreement shall be in the form of letter, fax. Notices to either party will be given at such address/addresses as such party shall specify from time to time by written notice to the other. Notice to the MPCB shall be properly addressed to:

To,  
Member Secretary  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> floor, Opp. PVR Cinema,  
Sion Circle, Sion, Mumbai-400 022

and notice to the agency shall be properly addressed to:

\_\_\_\_\_

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

IN WITNESS WHEREOF the parties hereto have caused this agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, sealed and delivered

By -----  
Member Secretary  
For and on behalf of MPCB

Signed, sealed and delivered.  
By -----  
For and on behalf of the “Agency”,

Witnesses:

- (1)
- (2)

NOW THEREFORE, in consideration of the mutual covenants, promises, assurances, representations and provisions set forth herein, the Parties hereto agree as follows:

<< Scope of Work, Solution Overview, Project & Payment Schedule, Terms & Conditions as specified above in the RFP document>>

Note:

1. The stamp duty payable for the contract shall be borne by the Agency
2. The above Draft Master Service Agreement is only indicative description of the contract agreement. However, the actual contract agreement shall be finalized and notified by the Purchaser after final selection of the Agency

## Annexure 23 Non-Disclosure Agreement

[Company Letterhead]

This AGREEMENT (hereinafter called the “Agreement”) is made on the [day] day of the month of [month], [year], between, Maharashtra Pollution Control Board on the one, (hereinafter called the “MPCB”) and, on the other hand, [Name of the Bidder] (hereinafter called the “Bidder”) having its registered office at [Address]

WHEREAS

1. The “MPCB” has issued a public notice inviting various organizations for **Request for Proposal for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including buy-back of 07 Existing CAAQMS in the State of Maharashtra** (hereinafter called the “Project”) of the MPCB.
2. The Bidder, having represented to the “MPCB” that it is interested to bid for the proposed Project,
3. The MPCB and the Bidder agree as follows:
  - a) In connection with the “Project”, the MPCB agrees to provide to the Bidder a detailed document on the Project vide the Request for Proposal document. The Request for Proposal contains details and information of the MPCB operations that are considered confidential.
  - b) The Bidder to whom this information (Request for Proposal) is disclosed shall –
    - i. hold such information in confidence with the same degree of care with which the Bidder protects its own confidential and proprietary information.
    - ii. restrict disclosure of the information solely to its employees, other member with a need to know such information and advice those persons of their obligations hereunder with respect to such information.
    - iii. use the information only as needed for the purpose of bidding for the Project.
    - iv. except for the purpose of bidding for the Project, not copy or otherwise duplicate such information or knowingly allow anyone else to copy or otherwise duplicate such information; and
    - v. undertake to document the number of copies it makes
    - vi. on completion of the bidding process and in case unsuccessful, promptly return to the MPCB, all information in a tangible form or destroy such information
4. The Bidder shall have no obligation to preserve the confidential or proprietary nature of any information which:
  - was previously known to the Bidder free of any obligation to keep it confidential at the time of its disclosure as evidenced by the Bidder’s written records prepared prior to such disclosure; or
  - is or becomes publicly known through no wrongful act of the Bidder; or
  - is independently developed by an employee, agent or contractor of the Bidder not associated with the Project and who did not have any direct or indirect access to the information.

5. The Agreement shall apply to all information relating to the Project disclosed by the MPCB to the bidder.
6. MPCB will have the right to obtain an immediate injunction enjoining any breach of this Agreement, as well as the right to pursue any and all other rights and remedies available at law or in equity for such a breach.
7. MPCB reserves the right to share the information received from the bidder under the ambit of RTI Act.
8. Nothing contained in this Agreement shall be construed as granting or conferring rights of license or otherwise, to the Bidder, on any of the information. Notwithstanding the disclosure of any information by the MPCB to the Bidder, the MPCB shall retain title and all intellectual property and proprietary rights in the information. No license under any trademark, patent or copyright, or application for same that are now or thereafter may be obtained by the MPCB is either granted or implied by the conveying of information. The Bidder shall not alter or obliterate any trademark, trademark notice, copyright notice, confidentiality notice or any notice of any other proprietary right of the MPCB on any copy of the information and shall reproduce any such mark or notice on all copies of such information.
9. This Agreement shall be effective from the date of signing of this agreement and shall continue perpetually.
10. Upon written demand of the MPCB, the Bidder shall (i) cease using the information, (ii) return the information and all copies, notes or extracts thereof to the MPCB forthwith after receipt of notice, and (iii) upon request of the MPCB, certify in writing that the Bidder has complied with the obligations set forth in this paragraph.
11. This Agreement constitutes the entire Agreement between the MPCB and the Bidder relating to the matters discussed herein and supersedes any and all prior oral discussions and/or written correspondence or agreements between the two parties. This Agreement may be amended or modified only with the mutual written consent of the parties. Neither this Agreement nor any right granted hereunder shall be assignable or otherwise transferable.
12. Confidential information is provided “As-Is”. In no event shall the MPCB be liable for the accuracy or completeness of the confidential information.
13. This agreement shall benefit and be binding upon the MPCB and the Bidder and their respective subsidiaries, affiliate, successors and assigns.
14. This agreement shall be governed by and construed in accordance with the Indian laws.

For and on behalf of the Bidder

(Signature)

(Name of the authorized Signatory)

Designation :

Date :

Time :

Seal :



## Annexure 24 Equipment List

S. No.	Brief Description	Qty. in nos.
1	Continuous Automatic Air Quality Monitors Analyzers for CO, SO <sub>2</sub> , NO <sub>2</sub> +NH <sub>3</sub> , O <sub>3</sub> , and Beta Gauge PM <sub>2.5</sub> and PM <sub>10</sub> Monitors.	1 unit each
2.	BTX Monitor/ Analyser	1 Unit
3.	Multi-calibration systems for gaseous monitors Comprising of gas SUPPLY UNDER BUY-BACK/generation and automated calibration	1 Unit
4.	Meteorological Instrument at ion comprising Wind direction, Wind speed, Ambient temperature, Relative humidity, Solar Radiation and Rainfall mounted on telescoping crank up meteorological Mast.	1 Set
5.	Computer system consisting of one PC along with Laser Printer and DAS at the monitoring station and One PC at central office with peripherals and software for data acquisition / Data display Board /transfer and system integration, telephone, Modem.	1 Lot
6.	Modem	2 Units
7.	Data display system	1 Unit
8.	Housing/Container for Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical and Gas line Fittings, Tools (electrical and mechanical).	1 Unit
9.	UPS, 10 KVA (1 hr. full load back-up)	1 Unit
10.	UPS, 5 KVA (4 hrs. full load back-up)	1 Unit
11.	Split Air Conditioner (2 Ton capacity)	2 Nos.
12.	Split Air Conditioner (1 Ton capacity)	1 No.
13.	RCC foundation, pillars miscellaneous works including civil and electrical & beautification for 60 nos. of CAAQMS sites.	01 Lot

## Annexure 25 Station Protocol for CAAQMS Station

NAME OF CAAQM STATION

DATE:

S. No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	Post	Pre	Post	Span Source	Pre	Post	Pre	Post	
1.	CO Analyzer											
2.	SO2 Analyzer											
3.	NOx Analyzer											
	NO											
	NO2											
	NH3											
4.	O3 Analyzer											
5.	BTX Analyzer											
	Benzene											
	Toluene											
	E-benzene											
	M+P Xylene											
	O-Xylene											
6.	Dust Analyzer											
	PM2.5											
	PM10											
7.	Meteorological Parameter											
	Temperature											
	Humidity											
	Wind Speed											
	Wind Direction											
	Solar Radiation											
	Rain Fall											
8.	Computers											
9.	UPS / ACs / Others											
10.	Data Display Board											
	Maintenance Requirement	Details/										

## Annexure 26 Daily Reporting Format (Meteorological Parameters)

(To be submitted daily at 12 Noon for the previous day ending 12 midnight)

**Location:**

**Date:**

Hrs.	WIND SCREEN	WIND DIRECTION	HUMIDITY	TEMPERATURE	SOLAR RADIATION	RAINFALL	REMARKS
00-01							
01-02							
02-03							
03-04							
04-05							
05-06							
06-07							
07-08							
08-09							
09-10							
10-11							
11-12							
12-13							
13-14							
14-15							
15-16							
16-17							
17-18							
18-19							
19-20							
20-21							
21-22							
22-23							
23-24							
Min.							
Max.							
Average							



## Annexure 28 Daily Reporting Format (Main Pollutants)

(To be submitted daily at 12 Noon for the previous day ending 12 midnight)

### DAILY AMBIENT AIR QUALITY DATA

**Location:**

**Date:**

Hrs.	SO <sub>2</sub>	NO	NO <sub>2</sub>	NO <sub>X</sub>	NH <sub>3</sub>	CO	O <sub>3</sub>	PM 2.5	PM 10	Benzene	Toluene Xylene	Remarks
00-01												
01-02												
02-03												
03-04												
04-05												
05-06												
06-07												
07-08												
08-09												
09-10												
10-11												
11-12												
12-13												
13-14												
14-15												
15-16												
16-17												
17-18												
18-19												
19-20												
20-21												
21-22												
22-23												
23-24												
<b>Standards</b>												
<b>Min.</b>												
<b>Max.</b>												
<b>Average</b>												

## Annexure 29 Monthly Reporting Format (Main Pollutants)

(To be submitted monthly at 12 Noon next day ending month)

### MONTHLY AMBIENT AIR QUALITY DATA

**Location:**

**Month:**

Date	SO <sub>2</sub>	NO	NO <sub>2</sub>	NO <sub>X</sub>	NH <sub>3</sub>	CO	O <sub>3</sub>	PM 2.5	PM 10	Benzene	Toluene	Xylene	Remarks
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
Min.													
Max.													
Average													

## Annexure 30 Pre-Requisites for Installation of Equipment

To,

**The Member Secretary,  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> Floor,  
opp. Cine Planet, Near Sion Circle,  
Sion (East), Mumbai – 400 022**

Dear Sir,

Following are the pre-requisites for installations of the equipment offered by us, which are required to be provided by you prior installation of the equipment:

<b>Package no. / Item No.</b>	<b>Name of the Equipment</b>	<b>Installation &amp; commissioning pre- requisites*</b>

Signature of the Authorized Representative Name of the Person  
Position

## Annexure 31 Deviation Schedule

### Bidders Name & Address

To,

**The Member Secretary,  
Maharashtra Pollution Control Board,  
Kalpataru Point, 3<sup>rd</sup> Floor,  
opp. Cine Planet, Near Sion Circle,  
Sion (East), Mumbai – 400 022**

Dear Sir,

**Subject:-Deviation Schedule.**

We declare that the following are the only and exhaustive deviations, variations from, exceptions and exclusions to the Bidding Documents for Services as outlined in your Technical Specifications for the subject package. Except these deviations, subject to the approval and acceptance by you, the entire work shall be performed as per your specifications and documents. Further, we agree the additional conditions, if any found elsewhere in the offer other than those stated below, save that pertaining to any rebates / discount offered, shall not be given effect to:

Equipment Code No.	Vol./Clause Ref./ Page No.	As Specified in the Bid Document	Deviation and Variations to the Bid document

Date:

(Signature)

Place

.....  
(Printed Name)

.....  
(Designation)

.....  
(Common Seal)



## Annexure 32 Proforma of Certificate for Issue by the MPCB After Successful Commissioning of Equipment

No.:

Date: .....

M/s

### Sub: Certificate of Commissioning of equipment.

This is to certify that the equipment as detailed below has / have been received in good condition along with all the standard and special accessories (subject to remarks in Para No.2) and a set of spares in accordance with the Contract / specifications. The same have been installed and commissioned.

- a. Contract No..... dated .....
- b. Name of CAAQM station/ city .....
- c. Description of the equipment .....
- d. Package No. ....
- e. Quantity .....
- f. Bill of Landing ..... dated .....
- i. (for import contract)
- g. Name of the vessel/transporter .....
- h. RR No. .... dated .....
- i. Name of the consignee .....
- j. Date of commissioning and performance test .....

Details of recoveries to be made on that account:

Sl. No.	Description	Amount to the recovered

The proving/performance test has been done to our entire satisfaction and personnel have been trained to operate the equipment.

BOARD

CONTRACTOR

The contractor has fulfilled his contractual obligation satisfactorily. Explanatory notes for filling up the certificates:

He has adhered to the time schedule specified in the contract in dispatching the documents drawing pursuant to Technical Specifications.

- He has supervised the commissioning of the item in time i.e. within the period specified in the contract from the date of intimation by the Purchaser in respect of the installation of the plant.
- Training of personnel has been done by the contractor specified in the contract.
- in the event of documents/drawings having not been contractor or installation and commissioning of the plant have been delayed on act of the contractor, the extent of delay should always be mentioned.

**OR**

The contractor has failed to fulfill his contractual obligations with regard to the following i.e., instruction or training etc.

- a)
- b)
- c)
- d)

5. The amount of recovery, on account of non-Supply of accessories and spares is given under Para No. 2.
6. The amount of recovery on account of failure of the contractor to meet his contractual obligations is as indicated in endorsement of the letter.

Signature .....

Name .....

Designation with stamp.....

Member Secretary  
State Pollution Control Board

## Annexure 33 Monthly Report Format

(To be filled by MPCB officials deputed)

**MONTHLY FIELD CHECK LIST OF** (To be filled by MPCB officials deputed)

**CAAQM STATION UNDER OPERATION CONTRACT** -----(name of the city)

S. No.	Description	------(name of the Station) Station	Remarks
1.	Station Visit Date		
	(i) 1 <sup>st</sup> Week		
	(ii) 2 <sup>nd</sup> Week		
	(iii) 3 <sup>rd</sup> Week		
	(iv) 4 <sup>th</sup> Week		
2.	SOP Available at Station		
3.	Environmental Condition of Station		
4.	Protocol of Station available		
5.	Availability of Calibration Gas		
6.	Availability of Permeation Tube (NIST Traceable)		
7.	Biweekly Calibration Done (Precision check, two Point calibration check)		
8.	Full Calibration Done (Multipoint Calibration check)		
9.	Insurance Validity		
10.	Electricity Bill Paid, if any		
11.	Telephone Bill Paid, if any		
12.	Security Guard Payment, if any		
13.	Servicing of ACs Installed, if any		

## Annexure 34 Daily Report Format

### Maharashtra Pollution Control Board

### Continuous Ambient Air Quality Monitoring Report

#### (MAIN POLLUTANTS)

To be submitted daily at 06 morning for that day ending at next 06 morning

Daily Report

Station Name: ----- Month: -

Report No.: -----

Date: -----

Monitoring Location:

Data Interval: 1 Hr. Average

Monitoring Conducted By: -----

14-15 Hr.														
15-16 Hr.														
16-17Hr.														
17-18 Hr.														
18-19 Hr.														
Hrs.	NO	NO2	NOX	NH3	SO2	CO	O3	PM2.5	PM10	Benzene	Toluene	Ethyl Ben	MP Xylene	O xylene
	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	ppb	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
19-20 Hr.														
20-21 Hr.														
21-22 Hr.														
22-23 Hr.														
23-00 Hr.														
00-01 Hr.														
01-02Hr.														
02-03 Hr.														
03-04Hr.														
04-05 Hr.														
05-06 Hr.														

<b>MINIMUM</b>														
<b>MAXIMUM</b>														
<b>AVERAGE</b>														
<b>Data Captured</b>														
<b>Note:</b>														

## Annexure 35 Yearly Report Format

### Maharashtra Pollution Control Board

#### Continuous Ambient Air Quality Monitoring Report (Mean Concentration of Main Pollutants)

Year .....

Monitoring Location: .....

Months	NO	NO2	NOX	NH3	SO2	CO	O3	PM2.5	PM10	Benzene	Toluene	Ethyl Ben	MP Xylene	O xylene
	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	ppb	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
January														
February														
March														
April														
May														
June														
July														
August														
September														
October														
November														
December														
MINIMUM														
MAXIMUM														

---

<b>AVERAGE</b>														
----------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--

## Annexure 36 Format station-wise details for Non-function system

(To be prepared & submitted separately for each station)

(Ref.: Invoice no-----dated-----for the period -----)

Name of Station*	Name of non - functional system	Total period of continuous non-functioning (days)



## Annexure 37 Format for monthly data to be captured

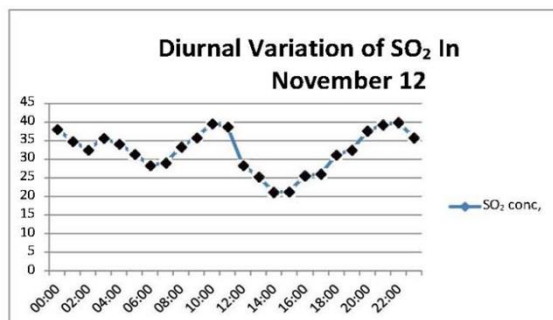
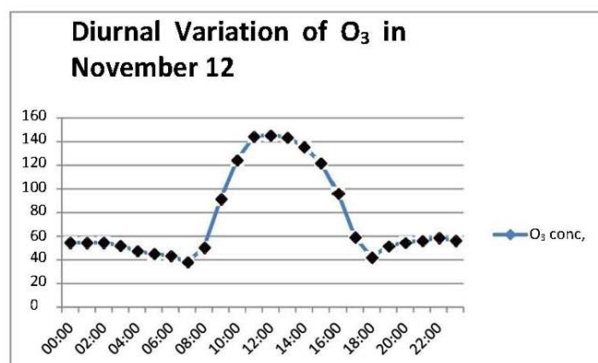
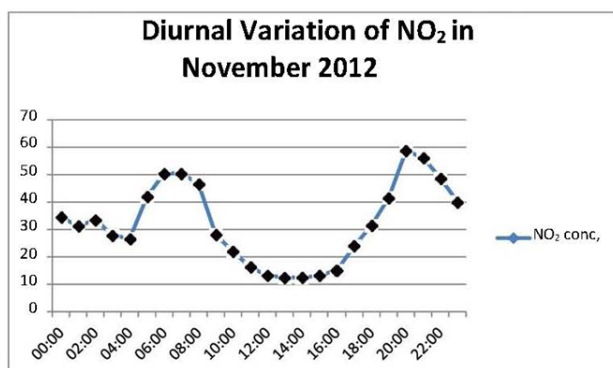
(To be prepared & submitted separately for each station)

(Ref.: Invoice no-----dated-----for the period -----)

Name of Station*	Observed Monthly Data Captured Rate														Average Percentage Data Capture Rate
	For gaseous pollutant						Dust Particles		For Mat. Parameters						
	NO2	O3	SO2	CO	NH3	BTX	PM2.5	PM10	Temp.	RH	WS	WD	SR	RF	

Note:

- The successful bidder should submit seasonal variations and yearly graphs with Annual Report



## Annexure 38 Technical Specifications

### Schedule of Requirements

The equipment's are intended for one Continuous Ambient Air Quality Monitoring Station (CAAQMS). The system should be completely functional. Any balance of material not specified but required for the purpose must be supplied by the vendors.

Schedule No.	Brief Description	Qty. in Nos.
1.	Continuous Automatic Air Quality Monitoring Analysers for CO, SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , O <sub>3</sub> and BTX	1 Unit each
2.	Automatic PM <sub>10</sub> Monitor	1 Unit
3.	Automatic PM <sub>2.5</sub> Monitor	1 unit
4.	Multi-calibration systems for gaseous monitors comprising of gas SUPPLY / generation and automated calibration	1 Unit
5.	Meteorological Instrumentation comprising Wind Direction, Wind Speed, Ambient Temperature, Relative Humidity, Solar Radiation and Rain Fall mounted on Telescoping Crank - up Meteorological Tower.	1 unit
6.	Computer System consisting of one PC and DAS at monitoring station and one high end PC (Intel core i7 8th generation processor, 32 GB RAM.2 TB HD, DVD Writer, HDMI port, COM Port, parallel port must be present on Motherboard. Windows 10 Pro 64 Bit operating system, Colour Printer, LED monitor 20 inches-900x1600 resolution) at central office with peripherals and software for data acquisition / display / transfer and system integration.	1 Lot
7.	Modem	2 Units
8.	2 Ton Capacity Split Air conditioner	2 Units
9.	1 Ton Capacity Split Air conditioner	1 Unit
10.	Single Phase 10 kVA UPS	1 Unit
11.	Single Phase 5 kVA UPS	1 Unit
12.	Housing for Continuous Automatic Monitoring Station including sampling line, internal fitting, instruments racks, electrical and gas line fittings, tools (electrical & mechanical), etc.	1 Unit
13.	Data Display System (Size 8 Feet X 12 Feet)	1 Unit

## 1. Monitoring Station

1.1. **Monitoring Station:** is designed for housing the ambient air quality monitoring instruments to protect them from dust and heat. Temperature and Humidity sensors shall be installed in the housing for checking the humidity and temperature inside the station. Three Nos. 19” racks shall be installed inside the station so that the analysers are easily accessible from front & back for calibration and maintenance.

### **Dimensions:**

Inside length: Approx. 4200 mm

Inside width: Approx. 3500 mm

Inside height: Approx. 2500 mm

1.2. **Frame:** All the material used for the construction of the floor, frame, roof frame etc., the 4 corner posts and 8 integrated, reinforced container corners should be of metal. The exterior panel of the container shall be made of pre-coated MS Sheet of approved colour shade. All other steel parts should be hot dipped galvanized having minimum rate of galvanization of 275 gram per square meter. All joints of like metal such as steel-to-steel or aluminum-to-aluminum shall be protected against corrosion by liberal application of joining compound. All joints of dissimilar metals such as steel to aluminum shall be protected against corrosion due to galvanic action by liberal application of dielectric compound as well as jointing compound on both mating surfaces. For lifting / fixing the container, International Standard eyebolts should be provided at the corners.

1.3. **Paneling:** The outer paneling will be of 1.2 mm of Pre-coated MS sheet to withstand external impacts and abrasions. Outer side of the MS Sheet i.e. exposed face of the sheet, shall be permanently colour coated with silicon modified polyester coating of dry film thickness (DFT) 20 micron (min.) of approved colour shade over primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum 7-micron off-white colour. The inner paneling will be of PVC coated 2 mm thick aluminum sheet, fixed over an inlay of 4 mm marine plywood. 100 mm thick polyurethane insulation will be used between the outer and inner walls (Pre-coated MS sheet and Marine plywood) as insulating material. Z spacers if required shall be made out of at least 2 mm thick galvanized steel sheet of grade 275 as per IS:277

1.4. **Floor:** The floor will be laid in frame of 600 x 600 mm center to center with 50 x50 x 6 mm MS angle. The floor surface will be of 19 mm marine plywood covered with robust quality Vinyl flooring; 2 mm thick of approved colour. The floor should be of acid and

alkaline resistant, waterproof, easily cleanable / washable. Bottom plate of thickness 2 mm hot dipped galvanized MS Plate shall be provided.

- 1.5. **Outer Door:** One door of size approx. 2000 x 900 mm will be provided at the front side (L = 4200 mm) of the station with isolated 3 - point locking & door handle flush fitted.
- 1.6. **Electric Power SUPPLY Box:** Single- phase (1 Ø) electrical wiring will be laid in ducts. Copper wiring of appropriate gauge will be used. The terminal board should be mounted in a central power distribution box. Over voltage protection for each phase shall be provided along with the lightning arrestor. 2 numbers Emergency cut off switch & Thermostat switch (350 C) for power disconnection, 6 free sockets and 3 fluorescent lamps for lighting will be provided. The station shall be properly grounded with chemical earthing or as per BIS Standards with proper plate and only copper strip at-least on 2 corners (diametrically opposite). One three phase energy meter (Digital Type) shall be installed. Weatherproof cubicles / enclosure for housing of MCB / TP & N Switch of main power termination (outside shelter) and weatherproof telephone junction box for terminations of telephone line are to be provided. Proper earthing for telescopic mast of meteorological system shall be provided. There should be conduction between the telescopic mast of the meteorological system and the station. The guy ropes or wires shall be provided for supporting the mast.

**List of Consumables:**

All Fuses	:	02 set
Lightning arrestor	:	02 set
Emergency Switch	:	02 pcs
Thermostat	:	01 pc

- 1.7. **Housing:** The housing will be partitioned as per drawing to create space for storing of gas cylinders, Meteorological mast & UPS. The size will be 2000 x 1400 x 2300 mm. A lockable door of size 900 x 2000 mm along-with 3 - Point locking system shall be provided on the outer wall of the housing. A 300 mm, single-phase (230 volts  $\pm$  10 volts and 50 Hz  $\pm$  3%) exhaust fan with safety grills will be provided. Mounting brackets in 2 levels for fixing of at-least 06 (six) gas bottles should be provided. The internal lights of the housing should be sensor based.

Air conditioners shall be mounted on proper rust proof supporting structures with rubber blocks to avoid vibration of structures. Proper caging / grill should also be provided for the safety of ACs. Sunshades for external AC units shall be provided with fabricated pre-coated MS sheet (same as monitoring station) with supporting arrangements. AC unit's external piping shall be placed in GI trays. Cable trays fixed on exterior wall shall be covered with pre-coated MS sheet, of same colour shade of monitoring station. Roof top

sheet to be levelled and sloped properly. Rainwater spout shall be fixed at top with rainwater down pipe at two corners. The external lights of the station should be Solar operated.

### 1.8. Station Furnishing:

- i. 19” racks - 2 Nos.
- ii. Fire extinguishers - 2 Nos.
- iii. Furniture:
  - a) Material - Furniture made of water resistant laminated board
  - b) Cupboard - As per drawing
  - c) Working table - Powdered coated MS frame size 1400 x 900 x 750 mm (w x d x h) and top 19 mm thickness
  - d) Board
  - e) Revolving tilting chair - 2 Nos.
- iv. Miscellaneous
  - a) The exhaust gases from the analyser should be collected and discharged by a common exhaust pipe and vented.
  - b) Folding aluminium ladder for roof access
  - c) Thermostat for measuring the temperature of the station
  - d) Hygro Meter for measurement of Humidity inside the station
  - e) Mounting bracket for the ladder
  - f) No smoking stickers
  - g) Vacuum cleaner of reputed make with minimum 100-watt power
  - h) Tool Kit having following tools:
    - One screwdriver set
    - One multi-meter (Philips, Mico make)
    - One box spanner set
    - One D spanner set
    - One watch maker set
    - One Hammer set
    - One precision screwdriver set
    - One pliers set
    - One Tong tester
  - i) One Emergency LED Cluster light
  - j) Sign boards along-with logo of Maharashtra Pollution Control Board, to be embedded with size 1500 x 900 mm on the front of the container and on the two side of the container, The name of the Station i.e. Continuous Ambient Air Quality Monitoring Station, ( Location) both in English and Hindi or local language to be inscribed. The Signs boards to be mounted on the station with proper spacers.

#### 1.8.1 Security Cabin (Optional)

A 4 feet x 4 feet wooden / Paneled security cabin with chair and small folding table for security guard with covered overhead selves to be provided separately with the station container.

### 1.8.2 Container Foundation (RCC)

- L X W 6000 x 6000 mm
- Height 300 mm from ground

### 1.8.3 Pillars:

Nine concrete pillars of 300 mm above the ground level and below the ground level with 200 x 200 mm beam and between pillar bricks to be used for filling the space. Outer wall of the foundation to be plastered with 1:4, Cement: Sand ratio and same has to be painted with weatherproof coat.

### 1.8.4 Top of the platform:

RCC 150 mm with concrete ratio of 1:1:2 and to plastered and painted with weatherproof paint.

### 1.8.5 Staircase:

Staircase to approach the main door of the container and the UPS / Gas room door in the side to be provided and each step should not be more than 150 mm.

## 2. Air Conditioner

- Type: 3 Nos. split type, roof mounted of 5-star rating with an automatic timer. Separate Voltage stabilizer will be provided with each unit.
- Capacity: 2.0 Ton (2 Nos.) and 1Ton (1 No.). The indoor units should be running alternately at an interval of four hours with timer control and the temperature inside the station should be maintained at 25°C inside during peak summer months.
- Nominal Cooling: Btu /hr. - 24000, Kcal / hr.: 6000
- Fan type: Propeller Fan
- Fan Motor type: Permanent Split Capacitor, 1/8 Horsepower
- Control Type: Remote
- Compressor: Reciprocating
- Refrigerant: Eco Friendly
- Power Supply: 230 volts  $\pm$  10 volts AC and 50 Hz  $\pm$  3%.

## 3. Online Uninterrupted Power Supply (UPS)

3.1. Single phase 10 kVA UPS along with Automatic Delayed Restoration Device (ADRD) with 1-hour backup in full capacity should be provided for the smooth operation of one 2 Ton capacity split AC at the station.

3.1.1 Capacity : 10.0 Kva

3.1.2 Technology : PWM using IGBT / MOSFETS

3.1.3	Crest Factor		:	More than 3: 1
3.1.4	Input	Voltage	:	230 V AC
		Voltage Range	:	± 25%
		Frequency	:	50 Hz ± 3%
3.1.5	Output	Voltage	:	230 V AC
		Voltage regulation	:	± 1%
		Frequency	:	50 Hz
		Frequency regulation	:	± 0.01%
		Waveform	:	Pure sine wave
3.1.6	Battery	Battery type	:	Sealed maintenance free
		Back up time	:	4 Hour at full load
		Battery Capacity	:	For required backup time
		Recharge time	:	5 hrs. to 90% after complete discharge
3.1.7	Distortion		:	Less than 1% on linear load
3.1.8	Power factor		:	0.9 to 1
3.1.9	Indicator		:	L.E.D. - Battery Charge, Load level, online, overload, on battery, replace battery.
3.1.10	Alarm		:	Audible alarm for battery backup, battery low, and fault
3.1.11	Protections	Surge	:	Surge suppression meets BIS or International standard
		Overload	:	Fuse & current limited
		Short circuit	:	Fuse & current limited & cut - off
		Battery low cut - off	:	No battery drains after cut - off
3.1.12	Overload Capacity		:	110% for continuous load
3.1.13	Efficiency		:	More than 90%
3.1.14	Environment	Operating Temperature	:	0 - 50 <sup>0</sup> C
		Operating Humidity	:	10% to 95% (Noncondensing)
		Audible Noise	:	Less than 45 dB (at 1 meter)

3.2. Single phase 5 kVA UPS along with Automatic Delayed Restoration Device (ADRD) with 4 hours backup in full capacity should be provided for the smooth operation of Analyzers and peripherals at the station:

3.2.1	Capacity	:	5.0 kVA
3.2.2	Technology	:	PWM using IGBT / MOSFETS
3.2.3	Crest Factor	:	More than 3: 1
3.2.4	Input		
	Voltage	:	230 V AC
	Voltage Range	:	± 25%
	Frequency	:	50 Hz ± 3%
3.2.5	Output		
	Voltage	:	230 V AC
	Voltage regulation	:	± 1%
	Frequency	:	50 Hz
3.2.6	Battery		
	Battery type	:	Sealed maintenance free
	Back up time	:	4 Hours at full load
	Battery Capacity	:	For required backup time.
	Recharge time	:	5 hrs. to 90% after complete
	Battery type	:	Sealed maintenance free
	Back up time	:	4 Hours at full load
	Battery Capacity	:	For required backup time.
	Recharge time	:	5 Hrs to 90% after complete discharge
		:	Less than 1% of linear load
		:	0.9 to 1
		:	L.E.D. - Battery Charge, Load level, online, overload, on battery, replace battery
3.2.7	Distortion	:	Audible alarm for battery backup, battery low and fault
	Surge	:	Surge Suppression meets BIS or International Standard
3.2.8	Power factor	:	Fuse and current limited
3.2.9	Indicator	:	Fuse and current limited and off
3.2.10	Alarm	:	No battery drain after cut-off
3.2.11	Protection		
3.2.12	Overload Capacity	:	110% for continuous load
3.2.13	Efficiency	:	More than 90%
3.2.14	Environment		
	Operating Temperature	:	0 - 500 C
	Operating Humidity	:	10% to 95% (Noncondensing)
	Audible Noise	:	Less than 45 dB (at 1 meter)



#### 4. Air Quality Analysis System

(CO, SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub>, BTX, PM<sub>10</sub>, PM<sub>2.5</sub> and O<sub>3</sub> Analysers)

##### (General Specifications for all Analysers)

- a) The analysers should be 19" rack mounting model with facilities for fixing the analysers from front side.
- b) The ON / OFF switch and display of the entire important status signal viz. Sample flow, temperature, concentration, range switch, manual / auto mode, zero / span mode should be on front panel.
- c) The analysers should operate at operating voltage 230 volts  $\pm$  10 volts AC and 50 Hz  $\pm$  3%. The power Supply input to be protected against spikes from and to the analyser by an LC filter. The power connection cable should be CEE type complete with 15 Amperes plug adaptable to Indian mains socket.
- d) The analysers must function properly in Indian conditions without any defect between 0 - 50o C ambient temperature, 10 - 95% relative humidity and in high ambient dust levels. The data capture rate should not be less than 90%.
- e) The Manufacturer shall provide minimum of 2 weeks of operational & preventive maintenance hands-on training for 3 persons (maximum) per State.
- f) The analysers should be complete with calibration system. The calibration system should be delivered along-with respective span gas cylinder and permeation tubes. The span gas concentration should be within 60 - 90% of first measuring range. The analyser must have zero-point internal calibration system and in agreement with minimum detection limit of each analyser. The calibration procedures are to be integrated into the software system for automatic calibration.
- g) The permeation tube and the calibration gases provided with the system shall have Traceability to NIST.
- h) The analysers shall be supplied with all ancillaries necessary for operation including external pump (if any) and any other items such as charcoal scrubber, Teflon air sample intake filter, drier, Teflon tubing suitable for connection to air sampling manifold. All such items are to be itemized. Dust filter in all the analysers should be provided before solenoid valve to protect frequent chocking of solenoid valve.
- i) The connector systems for out-going signal for recording and the computer terminals should be on back panel with screw type connecting pins. All ambient gas analysers shall conform with the USEPA automated reference / TUV / EN or equivalent method designation as required by the specification for individual equipment / parameters. Method of measurement used shall also comply with the stipulation on National Ambient Air Quality Standards (NAAQS) 2009 (Details of Methods of Measurement is available at MoEF& CC and CPCB websites). All analysers shall be micro - processor controlled with automatic calibration using an external dilution calibrator and calibration

standards. All analysers and sensors should be fully integrated in the rack cabinet, fully calibrated & tested before Supply and ready for start - up at the respective sites.

- j) Analyzer must exhibit performance equal to or better than values specified in the Calibration & test certificate provided with each analyzer.
- k) The manufacturer shall specify the cross sensitivity of measurement for all the analyzers. Each set of analyzers shall be supplied with two copies of elaborate operation manuals comprising details in three parts:
  - Parts (I): should comprise installation, operational and troubleshooting details;
  - Parts (II): should have details about preventive, routine and corrective maintenance.
  - Parts (III): should comprise details of all electrical, electronic and pneumatic circuit diagrams, details of each spare parts, Catalogue No. etc. and details of each electronic card / PCB's; and
  - Parts (IV) Schematic diagram for possible repair & maintenance.

#### **Digital Output:**

RS 232/ Ethernet port shared between Analyzers, Dust Monitor (PM2.5& PM10), Meteorological Sensors and computer for data, status and control.

#### **Quality Control and Standard**

Data shall be collected and validated according to US EPA standards, using the methodologies included in 40 Code of Federal Regulations. All analyzers shall have current US EPA reference or equivalent method designation and shall be of the latest design.

The supplier shall submit a Standard Operating Procedure for the air quality monitoring stations to the Buyer at the time of bid submission. This Standard Operating Procedure shall be approved by the Buyer prior to award. The Standard Operating Procedure shall contain the following:

- Operating procedures for all analyzers and meteorological sensors
- Calibration procedures
- Calibration schedule
- Maintenance procedures
- Maintenance schedule
- Data validation procedures
- Quality Assurance procedures
- Sample quality assurance documentation
- Sample Air Quality Report

The calibration procedures for analyzers shall conform to USEPA methodologies and shall include daily calibration checks, biweekly precision checks and linearity checks every six weeks. All analyzers shall undergo full calibration every six weeks. Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the Buyer along with the Air Quality Data.

Air Quality Data shall be submitted to the Buyer on a monthly basis in the form of an Air Quality Report. This report shall include tabular and graphic information on gas and dust concentrations as well as meteorological data for each site. The data shall be reported in the form of 15-minute averages and shall also include daily, weekly and monthly averages, minimums, maximums, standard deviations, total data captured and percent data capture. The Air Quality Report shall also include wind roses where wind speed and direction are measured. Upon 24-hour notice from the Buyer, once per year, the supplier shall agree to submit to an audit of calibrations, conducted, using pre-approved USEPA methodologies, by a third party. The results of these audits shall be made immediately available to both the supplier and Buyer.

## 5. Specifications Of Sampling System

A suitable sampling system as specified by USEPA having 10 ports manifold and fitted with a suction pump to draw ambient air. System duly equipped with moisture removal systems should be provided for sampling of ambient air separately for gaseous and dust measurement.

### Gases sampling system:

- 5.1 Height of the sampling system: Approx. 1.0 meter above the roof
- 5.2 Roof entry cut out: Stainless Steel
- 5.3 Conduit: Stainless Steel
- 5.4 Inner sampling system: Borosilicate glass
- 5.5 Sampling head: Stainless Steel
- 5.6 Manifold: 10 port for tubes 6 x 1 mm, self-tightening

## 6. Specifications Of 19" Rack

Suitable 19" Rack cabinet to accommodate all analyzers, calibrators, Zero air generators, data logger etc. The dimension of the rack without doors, with aluminum section and rear of 2 mm steel sheet, one removable roof plate, fitted with 4 filling eyebolts. Four roof fixing screws included in package to replace the lifting eyebolts. One gland plate three-part, one pair of 475 mm (19") mounting angles depth adjustable in 25 mm pitch pattern fitted on two fixing angles approximately 150 mm unit from the front standard. To accommodate panel width of 19" size:

width = 600 mm, Height = 1400 mm and Depth = 800 mm. The 19” racks should be screwed to the floor of the station with anti-vibration pads. All nuts and bolts shall be cadmium coated.

## 7. Ambient Air Quality Monitoring Analysers

### (A) AMBIENT OXIDES OF NITROGEN (NO-NO<sub>2</sub>-NO<sub>x</sub>) ANALYSER Conforming to USEPA Automated Federal Reference Method (FRM) Designation

01.	Principle	Chemiluminescence
02.	Measurement	NO / NO <sub>2</sub> / NO <sub>x</sub> in Ambient Air
03.	Display	Digital
04.	Ranges	Auto ranging 0-2000 PPB
05.	Minimum Detectable Limit	1 PPB
06.	Noise Level	0.5 PPB
07.	Zero Drift	< 1 PPB/24 Hrs.
08.	Span Drift	< 2% in 15 days of full scale
09.	Response Time	30 seconds or earlier
10.	Linearity	± 1% of full scale
11.	Calibration	Please see multi-calibration section (Sl.No. J) and also calibration section in General Specifications (4.6 & 4.7).
12.	Output Signals or Analog Output	3 Analog output 0 - 1 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA
13.	Digital Output	RS 232 port/ Ethernet

### (B) AMBIENT AMMONIA ANALYSER (NH<sub>3</sub>) Conforming to USEPA Automated Federal Reference Method (FRM) Designation

01.	Principle	Chemiluminescence NH <sub>3</sub> conversion to NO by oxidation. NO <sub>2</sub> also converted to NO. the difference obtained by measuring NO in output of two sample streams as equal to NH <sub>3</sub>
02.	Measurement	Ammonia in Ambient Air
03.	Display	Digital
04.	Ranges	Auto ranging 0-1000 PPB
05.	Minimum Detectable Limit	1 PPB
06.	Noise Level	0.2% of reading
07.	Zero Drift	< 5 PPB /24 Hrs.
08.	Span Drift	< 2% in 15 days of full scale
09.	NH <sub>3</sub> /NO converter	Quartz at approx. 10000 C
10.	Linearity	± 1% of full scale
11.	Response time	180 second
12.	Calibration	Please see multi-calibration section (Sl. No. J) and also, calibration section in General Specifications (4.6 & 4.7).
13.	Rise / fall Time 95% of the	< 30 Sec

	final value	
14.	Digital Output	RS 232 port/ Ethernet
15.	Analog Output	0 - 1 V, 0 - 10 V, 0 - 20 mA, 4 - 20 mA

**(C) AMBIENT SULPHUR DIOXIDE (SO<sub>2</sub>) ANALYSER** Conforming to USEPA Automated

Federal Equivalent Method (FEM) Designation

01.	Principle		Pulsed UV Fluorescence
02.	Measurement		Sulphur Dioxide in Ambient Air
03.	Lower Detectable Limit		1 PPB
04.	Ranges		Auto ranging 0 - 500 PPB
05.	Display		Digital
06.	Noise Level		0.50 PPB or 1% of the reading
07.	Zero Drift		< 1 PPB / 24 Hrs. With automatic zero compensation
08.	Span Drift		< 2 PPB full scale in 15 days
09.	Calibration		Please see Multi-calibration section(Sl. No. J) and also calibration section in General Specifications (4.6 & 4.7).
10.	Precision		0.5 ppb or 1% reading whichever is greater
11.	Output Signals or Analog Output		3 Analog output 0 - 1 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA
12.	Digital Output		RS 232 port/ Ethernet

**(D) AMBIENT OZONE (O<sub>3</sub>) ANALYSER** Conforming to USEPA Automated Federal Reference Method (FRM) Designation

01.	Principle		UV Photometric
02.	Measurement		Ozone in Ambient Air
03.	Display		Digital
04.	Range	:	Auto ranging 0 - 500 PPB
05.	Minimum Detectable Limit	:	2.0 PPB
06.	Noise	:	± 1.0 PPB
07.	Zero Drift	:	< ½% per month
08.	Span Drift	:	< 1% per month
09.	Calibration	:	With built in Zero and span generator and also see multi-calibration section (Sl. No. J)
10.	Linearity	:	Continuous + 1%
11.	Output Signals or Analog Output	:	3 Analog output 0 - 1 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA
12.	Digital Output	:	RS 232 port/ Ethernet

**(E) AMBIENT CARBON MONOXIDE (CO) ANALYSER** Conforming to USEPA Automated Federal Reference Method (FRM) Designation

01.	Principle	:	Non-Dispersive Infra-Red (NDIR) with Gas Filter Correlation
02.	Measurement	:	Carbon Monoxide in Ambient Air
03.	Display	:	Digital
04.	Ranges	:	At least four ranges Auto ranging 0 - 100 PPM.
05.	Minimum Detectable Limit	:	0.1 PPM
06.	Zero Noise	:	0.05 PPM with time constant ± 30 seconds
07.	Zero Drift	:	< 0.2 PPM/7 days
08.	Span Drift	:	< 1% full scale in 24 hrs.
09.	Calibration	:	Calibration gas (CO) cylinder - 10 liters capacity. A Highly polished aluminum cylinder portable filled with 40 PPM NIST traceable Calibration gas has to be provided along-with the instrument for calibration purpose. It should also have pressure gas valve for Zero and Span gas.
10.	Linearity	:	Continuous + 1%
11.	Output Signals or Analog Output	:	3 Analog output 0 - 1 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA
12.	Digital Output	:	RS 232 port/ Ethernet

**(F) PM10 MONITOR** Conforming to USEPA Automated Federal Equivalent Method (FEM)

**Designation:** Based on the principle of  $\beta$ -ray attenuation by particulate sampled through the instrument and collected on fiberglass filter tape. Before and after sampling  $\beta$ -ray radiation is measured by scintillation / G.M. counter. An internal microprocessor handles all sequences and automatically calculates the concentration of SPM.

Principle	Continuous measurement of PM10 in ambient air
Particle Size Cut Off	0-10 Microns
Measuring Range	0 to 2000 $\mu\text{g}/\text{m}^3$
Resolution	1% of the concentration
Minimum Detectable Limit	2 $\mu\text{g}/\text{m}^3$
Detector	Plastic Scintillator / GM Counter, Silicon Semiconductor Beta Detector
Air Flow Rate	At - least 1.5 $\text{m}^3$ / hrs. (Adjustable to 1 $\text{m}^3/\text{hr}$ ) Glass
Filter Material	Fibre Filter
Display	LED/ LCD
Sampling Head	Dynamic heated sampling head for measurement of PM10, with adjustable temperature 20 - 70 $^{\circ}\text{C}$

Calibration	Reference membrane facility should be provided for calibration of analyser
Compatibility	Analyser should be compatible with protocols mentioned in DAS section
Roll Length	Approximately 30 meters
Measurement Result	1 hr average or shorter

(G) **PM2.5 MONITOR** Conforming to USEPA Automated Federal Equivalent Method (FEM)

**Designation:**

Based on the principle of  $\beta$ -ray attenuation by particulate sampled through the instrument and collected on fiberglass filter tape. Before and after sampling  $\beta$ -ray radiation is measured by scintillation / G.M. counter. An internal microprocessor handles all sequences and automatically calculates the concentration of SPM.

Principle	Continuous measurement of PM2.5 in ambient air
Particle Size Cut Off	0-2.5 Microns
Measuring Range	0 to 1000 $\mu\text{g}/\text{m}^3$
Resolution	1% of the concentration
Minimum Detectable Limit	2 $\mu\text{g}/\text{m}^3$
Detector	Plastic Scintillator / GM Counter, Silicon Semiconductor Beta Detector
Air Flow Rate	At - least 1.5 $\text{m}^3$ / hrs. (Adjustable to 1 $\text{m}^3/\text{hr}$ ) Glass
Filter Material	Fibre Filter
Display	LED/ LCD
Sampling Head	Dynamic heated sampling head for measurement of PM2.5 with adjustable temperature 20 - 70 $^{\circ}\text{C}$
Calibration	Reference membrane facility should be provided for calibration of analyser
Compatibility	Analyser should be compatible with protocols mentioned in DAS section
Roll Length	Approximately 30 meters

**Measurement Result :** 1 hr average or shorter

(H) **Ambient Particulate Monitor** based on the principle “Tapered Element Oscillating Microbalance” (TEOM) Conforming to USEPA Automated Federal Equivalent Method (FEM) Designation (EQPM-0609-182)

**SPECIFICATIONS**

TEOM 1405-DF Ambient Particulate Monitor 1405DF = Dual TEOM w/ FDMS

## Regulatory Designations

- U.S. EPA approved PM-2.5 equivalent monitor (EQPM-0609-182)
- Menu-driven software for user interaction via 1/4 VGA display with touch screen
- Connecting and Interface Cables, and Vacuum Pump
- Consumables for average three year's operation (ambient)
- RPCOMM and e Port Software for Local or Remote Communication

## Instrument Performance (3 l/min, 1s, stable conditions)

- Measurement Range: 0 to 1,000,000  $\mu\text{g}/\text{m}^3$  (1  $\text{g}/\text{m}^3$ )
- Resolution: 0.5  $\mu\text{g}/\text{m}^3$
- Precision:  $\pm 2.0 \mu\text{g}/\text{m}^3$  (1-hour average),  $\pm 1.0 \mu\text{g}/\text{m}^3$  (24-hour avg.)
- Accuracy for Mass Measurement:  $\pm 1\%$

## Data Averaging and Output

- Real-time Mass Conc. Average: 1 hour rolling average updated every six minutes
- Long-Term Averaging: 1, 8, and 24 hr
- Data Output Rate: selectable from 10 sec to 24 hour

## Operating Range

The temperature of the sampled air may vary between -40 and 60 °C. The TEOM Sensor and Control Units must be weather protected within the range of 8 to 25 °C. An optional Complete Outdoor Enclosure provides complete weather protection.

## Sample Flow

- ACTi Vol flow control system uses the mass flow sensors and the measured ambient temperature and pressure to maintain constant volumetric flow rates.
- Main Flow Rate: Fine PM filter: 3.0 l/min; Coarse PM filter: 1.67 l/min
- Bypass Flow Rate: 12.0 l/min

## Data Storage

- Internal data logging of user-specified variables; capacity of 500,000 records.

## Filter Media

- Sample Filter: Pallflex TX40, 13 mm effective diameter
- Sample Conditioner Filter: 47 mm diameter housed in an FRM-style molded filter cassette, maintained at 4°C. Suitable for collecting and archiving time-integrated PM samples for subsequent laboratory analysis.

## Sample Conditioning

- Sample Equilibration System (SES) dryer lowers the main flow relative humidity and
- allows for mass transducer operation at 5°C over the peak air monitoring station



- temperature
- Purge Filter Conditioner contains a heat exchanger that maintains the
- temperature of the main flow and particle filter at 4°C to efficiently filter the
- volatile and non-volatile PM in the sample.

### **Data Output and Input**

- e Port software to view and change system operation from PC
- Touch screen user interface
- Ethernet with embedded FTP server, USB, RS232, RS485
- 8 User-Defined Analog Outputs (0-1 or 0-5 VDC)
- 2 User-Defined Contact Closure Alarm Circuits
- 4 Averaged Analog Inputs (0-5 VDC) with user-defined conversion to engineering units

## **(I) BTX MONITOR / ANALYSER**

### **1. GENERAL**

A complete monitor / analyzer system including continuous automatic sampling. (Pump etc.), sampling, analyzer, detector, calibrator, computer hardware and software for instrument control, data storage, display, acquisition, processing and for selective determination of volatile compounds in ambient air optimized for Benzene, Toluene, Ethyl Benzene and o, m, p -Xylenes. Compatible to power SUPPLY (voltage 230 volts  $\pm 10$  volts AC and 50 Hz  $\pm 3\%$ ). Continuous unattended measurement system of individual BTEX should work without cryogenic cooling. System should have protocol compatible to communicate & transfer data to main computer through modem and subsequently to CPCB/MPCB website preferably having features of security, data validation & alarms etc. Raw data storage capacity without erase minimum for three month or more. The system should be delivered with all necessary spares, consumables, tubing etc. for making it functional.

### **2. TECHNICAL SPECIFICATIONS**

**2.1 AUTOMATIC SAMPLING (MONITOR)** with Sample volume controlled by thermal mass flow controller (dust protected). Sample flow range may be 20 -100 ml/min or more (adjustable). Sample volume should be between 400 ml - one liter or more of ambient air over a 10-15 min sampling cycle. All sample transfer tubing's should be in stainless steel flow / pressure sensor to be preferred with digital display. Sample volume should be controlled by flow controller (dust protected) with volume measurement saved in memory.

### **2.2 DETECTOR**

Photo Ionization Detector (PID) as per EPA/EU/TUV approved specs, which do not require hydrogen gas. The system should have auto-clean & auto calibration facilities. PID Lamp eV should be 10.6eV. PID sensitivity sensor should be available to check sensitivity.

### 2.3 TECHNICAL SPECIFICATIONS

Lowest Detector Limit	.1 µg/m <sup>3</sup> (0.03 ppb) or less for Benzene (There should be no interferences on Methyl-cyclopentane, 2, 2 3 - trimethyl butane, 2, 4 - dimethyl pentane, Tetrachloromethane, Cyclohexane, 2,3- dimethyl pentane, 2 -methyl hexane, 3 - ethyl pentane , Trichloroethylene, n- heptane, isooctane with BTX components.)
Temperature range	5 - 35°C or more
Measuring range	1 - 1000 µg / m <sup>3</sup> or better (0.3 ppb to 270 ppb)
Repeatability	Retention Time: <0.1% RSD Amount : <1.0% RSD
Typical Cycle time	Total Cycle Time should not exceed 15/30 min. approx. i.e. Sample Collection Time - 15 min. approx. Analytical Time - 15 min. approx.

### 2.4 Calibration Unit with Span Gas / In Built Calibration With /Permeation Tubes and Gas Mixing / Dilution Facility

In Built Calibration/Permeation Tubes Facility in the analyser with the certified permeation tubes and span or calibration gas mixture (low conc. in ppb range, stable for at-least 6 months) with S.S. container/cylinder, regulators with filters should be provided. Calibration unit having gas flow (approx.): 10 ml / min (calibration gas); 1.4-2.0 lit / min (dilution gas) with auto gas selection/dilution option for automatic calibration for ppb level calibration gas (10-30 ppb of individual compound of interest). Manual and software selectable valves for sample, calibration span and blank zero air gases. Dilution factor between 1 : 50 to 150.

### 2.5 Memory And Control Facilities

Method auto load and system restart after power failure. Methods storage capacity with timed events programs for control of system parameters in permanent memory. Diagnostics & Fault status; gas SUPPLY (low press). System stability (temperature and sample flow). Detector signal (low) and communication should be in digital form on monitor by LED's & be controlled from computer. Output signals: Analog 0-1 mV, Serial RS 232 for data intermission and CP-BUS for monitor control from remote. Both digital & analog outputs should be available.

### 2.6 Hardware / Software's

Latest PC with operating system/software. Basic Window based latest software's (English version) consisting instrumental control features as well as data storage, acquisition, processing and handling in desired/customized format including sorting of data (1 / 4 / 8 / 12 / 24 hourly, days wise /date wise reporting as microgram / m3 or ppb (selectable) & averaging, data capture rate s etc.).

Data presentation / graphical & statistical processing & data transfer to Excel including time series, correlation matrix etc. is required.

Communication software with protocol compatible to communicate & transfer data from BTX monitor to central computer through modem (preferably including sample chromatogram) and from central computer to CPCB website preferably having features of security, data validation & alarms etc.

System should have remote access to BTX monitor. Resident program as well BTX control / monitor user program with monitor startup / off / status, blank / calibration and sample gas measured, fault status, carrier gas if any, and communication errors indications. Updating of response factors automatically after calibration run. Auto tune facility. Raw data storage capacity without erase minimum for three month or more

## 2.7 MULTICALIBRATION SYSTEM

Calibration system should provide for the calibration of the air quality analysers, data acquisition system, meteorological equipment, and gas calibration system.

### a) Gas Calibration System:

- The calibration system for air monitoring equipment (listed above) should incorporate an automatic gas dilution calibrator, calibration gas standards and a high performance zero air generator to calibrate all of the analysers in the system. The calibration cycles should be able to be configured through the Data Acquisition System at any specific time during the day and night. It should be mounted on standard 19" rack.
- The dilution calibrator should be able to perform mixing of source gas, from the calibration gas bottles, with zero air generator, in order to generate a wide range of calibration gas concentrations and minimizing the number of calibration gas standards required. All the calibration gases provided along-with the system MUST be NIST Traceable (certificate should be provided). The system should include at least three permeation chambers and should accept a Permeation Tube up to 11 cm in total length and 2 cm in diameter OR calibration gas mixer with SS container/cylinder regulator with filter should be provided. It should also have facility for Gas Phase titration (GPT), having Ozone generator of 6 PPM / Liters and the converter efficiency should be 100 % for conversion of NO<sub>2</sub> concentration to NO.

- The system should also include calibration of Ozone analyzer. Gas analyzer (SO<sub>2</sub>, NO<sub>x</sub>, CO, Ozone, Ammonia) and multi gas calibrator shall be of same make. Vendor should supply separate gas cylinder for each gas analyzer.

**b) Meteorological, Flow and Electronics Calibration**

The supplier should provide calibration devices or calibration check devices for all the meteorological and other electrical equipment mentioned above as per the specifications of the manufacturers.

**8. Meteorological Monitoring systems**

The meteorological instrumentation should be interfaced directly with the Data Acquisition System after passing through a lightning protection isolation box. A crank - up telescopic 10 meters tower should be erected for mounting of meteorological sensors. The relative humidity and solar radiation sensors should be mounted on the tower. All sensors should be NIST (National Institute for Standards and Technology, USA) traceable. The specifications are follows:

**(a) WIND SPEED**

Range (Operation) : 0 - 60 m/s or better  
Sustainability : Up-to 75 m/sec  
Accuracy :  $\pm 0.5$  m/sec or better  
Resolution : 0.1 m/sec  
Sensor Type : Ultrasonic  
Threshold : 0.5 m/sec or less  
Response time: 10 sec or better

**(b) WIND DIRECTION**

Range : 0 - 359 degree  
Accuracy :  $\pm 5$  degree or better  
Resolution : 1 degree  
Sensor type : Ultrasonic  
Threshold : 0.5 m/sec or less  
Response time: 10 sec or better

**(c) AMBIENT TEMPERATURE**

Range : -10 ° C to 60 ° C

Accuracy :  $\pm 0.2$  ° C or better (with radiation shield)  
Response : 10 seconds in still air  
Sensor type : Resistance type  
Response time: 10 sec or better

**(d) RELATIVE HUMIDITY**

Range : 0 to 100% RH  
Accuracy :  $\pm 3.0$  % or better  
Resolution : 1%  
Sensor type : Capacitive / Solid State  
Response Time : 10 sec or better

**(e) SOLAR RADIATION**

Range : 0 to 1500 W/m<sup>2</sup> or better  
Accuracy :  $\pm 5.0$  % or better  
Resolution : 5W/m<sup>2</sup>

**(f) RAINFALL**

Range : 0.2 mm to 100 mm /hr  
Accuracy :  $\pm 5\%$  or better  
Resolution : 0.2 mm  
Sensor type : Tipping bucket rain gauge or any other suitable sensor  
Response Time: 10 sec or better

**(g) TELESCOPIC CRANK - UP METEOROLOGICAL TOWER**

The wind speed, wind direction, temperature, relative humidity and solar radiation sensors are to be mounted on the Meteorological Tower. The tower is to be a free standing four section telescopic tower provided with a hand crank to raise and lower the instruments mounted on the tower, Specifications are as follows:

Extended Height : 10 meters  
Retracted Height : 2 metres  
Wind load Limit : 0.7896 sq. m. (8.5 sq. ft) at 50 mph  
Number of Sections : 4  
Construction material : Galvanized steel or aluminium

Note: Humidity and temperature sensors are to be supplied with weather and thermal radiation shield made of anodized aluminium and sensor should be supplied with all necessary cables, connector and mounting arrangements as required.

**(h) SPECIFICATIONS OF DATA LOGGER**

Data logger with 8 analog, 24 digital inputs and 18-bit resolution. Ability to log channels at different intervals and should have capability of averaging and displaying real time data and averaged data over a period of 1 min, 10 min, ½ hr, 1 hr, 4 hrs., 8 hrs., 24 hrs., 1 month and year. Communication between data logger and computer using standard multi drop RS 232 Connector. The data logger should have internal battery with charger. The data logger should support PSTN line or Internal GSM modem for data transfer.

**9. Specification of Software for CAAQMS.**

**A. Data Acquisition System in the Station**

**Data Acquisition**

1. Frequency of data acquisition
  - User selectable 1, 5, 30, 60, 120 second averaging duration online digitally.
2. Channel size
  - 32 Channels or more supported
  - Expandable to 64 channels, if required in future
3. Data input
  - Either Analog (0-1 volt / 0-10 volt / 2-20mA / 4-20mA)
  - Or Digital (firm will develop the protocol, if required without additional cost within project duration) to configure with the PC.
4. User configurable channels, stations and equipments with communication parameters.
5. Analyzer data channel should comprise of Name, Units, Communication Address, Validity Range, Operation and Error Status.
6. Provision to incorporate conversion factors such as PPB to µg/m<sup>3</sup> etc.
7. Software should be equipped to configure the analysers with it, irrespective of the output mode i.e. Analog or Digital (RS 232) of the instrument.
8. System should read raw data values of the analyzers and meteorological instruments and duration of averaging data should be user selectable like 10 / 20 / 30 / 40 / 50 / 60 seconds.
9. The output should be converted into realistic data in prescribed units.

**B. Data Collection**

- a) Software should collect each second data
- b) Average data over user selectable time (1, 5, 30, 60 seconds time interval) period.
- c) Operational status, Error status, calibration status and calibration values observed

from the analyzer should be captured and should be made available along with the data with a frequency of maximum five minutes.

- d) System should collect of the diagnostics of the instrument comprising actual diagnostics parameters and their values at least once in every five minutes to check the state of the health analyzer.
- e) Calibration parameters
  - i. Provision to entering calibration, span calibration values of gas cylinder/permeation to devices
  - ii. Provision for collecting zero calibration, span calibration values(pre calibration & post calibration) into the database for further analysis.
  - iii. Provisions to collect electronic system pre calibration & post calibration to ascertain the percentage deviation/ correction apply during each calibration.

### **C. Data Storage**

- i. Data along-with diagnostic, calibration, alarms should be stored at station computer at a defined path.
- ii. Interval of data dumping will be same as defined in the data collection
- iii. System should be capable to keep every second acquired data from 32 channels for a period of minimum five years.
- iv. Data stored should be plain text format
- v. No data encryption should be done at the station and if encryption is done than decryption procedure should be made available in soft file format to check the data at station at any point of time. To convert data on continuous basis for exporting to any other software, if required, procedure should be available without any licensing.

### **D. Data Display (Statistical analysis of data)**

- In 4-in-4 graphs, 4-in-1 graph and / or 16-in-1 graph formats
- In terms of 4-in-1 table format
- Real time multi - graphs over user selectable time period.
- Display of graphic & tabular display of the current data.
- Graphical form should comprise of 4-4 graphs, 4-1 graphs in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)
- Tabular form should comprise of 4 channel list in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)
- Station instruments basic configuration etc. should be visible on screen continuously.
- Main window for real time display of all measured parameters with status of all analyzers/sensors.
- Statistical analysis tools like regression analysis, co-relation analysis and other analysis as per industry standards in the field of environment should be

available and if not, the firm should develop these for MPCB within a time frame.

- The system should have procedures for normal analysis tools like calculation of data with respect to a threshold value, average, minimum, maximum, calculation of violating value with respect defined values (Air Quality Standards) for defined period for the database etc.
- Data analysis of diagnostics parameters
- Data analysis of Pre calibration and post calibration data (if facility not available can be developed)
- Data analysis of corrections applied of each calibration cycle (if facility not available can be developed)

#### **E. Data Backup**

- i. There should be defined data backup procedure through which data can be
- ii. Extracted from station computer in simple text format / excel (user Definable).
- iii. There should be defined restore procedure also to restore the data in case of data loss.
- iv. A display screen should be available to update the user about data availability.

#### **F. Data Validation automatic checks at station software**

- i. Zero level and span level checks if performed cyclically and defined results are not obtained up to +/- 5% (user definable 0-10%) then system should alarm the user of system failure and the recorded alarm should be transmitted to central software.
- ii. After instruments perform the calibration, the results obtained should be recorded and should be transmitted to central computer.

#### **G. Data validation requests generated at station computer**

At least three tier request generation and request acceptance system procedure is desired.

Details are given in the Bid document.

- Inbuilt checks capability may be provided, where if instrument throws erratic data software can check automatically and display message and send information in the form of corrected data in corrected database to be approved by the central software at central level. (facility if not available needs to be developed by the system provider)
- There should be provision of two databases one is raw database and another corrected database. (facility if not available needs to be developed by the system provider)
- Validation of data through calibration database Pre calibration & post calibration values collected.



## **H. Calibration of systems**

- Calibration window for analyzer for the calibration from computer.
- Remote Access to Calibration: Calibration exercise need to be done remotely. All necessary arrangements for it should be made in the system.
- Calibration data file may be prepared separately.
- Calibration database need to be formed, stored and transmitted to central.
- Calibration cycles to be as per the models of the instruments.
- Calibration records should store the calibration values displayed by instrument.
- Diagnostics during calibration should also be recorded.

## **I. Location of station**

- Fixed Station location to be recorded
- Moving station location to be recorded
- Latitude and longitude of stations be recorded

## **J. Data transfer to Central**

- All data captured at station computer should be transferred to central software.
- User selectable time frame for transmission of data to central server.
- Diagnostics (actual diagnostics parameter values recorded each time in the station), configurations (station channel configurations), alarms(generated alarms) should be transmitted.

## **K. Data transfer to Display Boards**

The system provider is responsible to make necessary software provisions to connect output on display boards. The formats of files may vary the formation of defined formats is the responsibility of system provider for the project duration.

- Software should be capable to transfer and display online data on display board at the station location at distance not more than 100mtrs from the station. At some location, if distance exceeds 100mtrs from the station, bidder should indicate actual cost which may include, Power connection, Net connection and any other cost, accordingly.
- The data in user defined formats (customizable) should be made available for continuous display.

## 10. Data Acquisition System at the Central station

Data communication system handles the data transmission of an ambient air quality network and receives incoming messages / signals from remote stations. The central software processes signals and data and displays it on the web and other interfaces. Detailed requirement is as below:

### 1) Software at Central Station

- a) Software should not have any restriction on number of locations and computers either technologically or in terms of licensing.
- b) Should display multiple stations on - line data (momentary values) in tabular text and graphic format.
- c) Data should be received by the central from all locations within 5minutes duration or at user defined time intervals.
- d) Data along-with diagnostics and calibration details should be transmitted at central from all connected locations.
- e) Should support dialup systems, broadband connectivity, wireless connectivity, 2G or 3G or any new technology which shall be in place during project time should be compatible and if not need to develop by the system provider up-to project duration without additional charges.
- f) Should have the remote-control facilities for calibrations (Zero & Span) of instruments and measuring range modifications.
- g) Should have facility for displaying data communication error reports, image management which should be recorded and should be available for display.

### 2) Data Display at Central

- a) In 4-in-4 graphs, 4-in-1 graph and/or 16-in-1 graph formats
- b) In terms of 4-in-1 table format
- c) Real time multi - graphs over user selectable time period.
- d) Display of graphic & tabular display of the current data like simple 3D line and column chart, polar diagnostics and 3D perspective column chart.
- e) Graphical form should comprise of 4-4 graphs, 4-1 graphs in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)
- f) Tabular form should comprise of 4 channel list in user defined format i.e. 1, 5,10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable timeseries)
- g) Display of data using selectable name of different stations.
- h) Generation of Wind Roses, Pollution Roses (12 & 16 directional i.e. 0degree, 22.5, 45, 67.5, 90 and 360 degree) with user defined time limits.
- i) Calculate vector mean of wind direction.

- j) Programmable downloading of data.
- k) Comparison of data w.r.t. Standards in Graphical form and tabular form with information of values exceeds the Standards. l) Specific data zooming facility
- l) Database correction procedure
- m) Separate user ID and Password for correction of database so that all regional level users if authorized can validate their regions data and the events be recorded along-with ID and time.
- n) Data validation trail recording.

### 3) Data Export

- a) Customizable data format developing capability required.
- b) Possibility to export the data files in Excel, Text and other formats Tabular form should be in user defined format i.e., 1, 5, 10, 15, 30 min, 1 hour, 4, 8, 24 hour, 30 days and yearly.

### 4) Data Import

- a) In case of communication medium phase there should a mechanism to shift the data into Pen drive (Physical medium for data collection) physically and a procedure to import the same on central software.

### 5) Printing

- a) Possibility to connect different types of printers and auto printing facility for all displays generated throughout the analysis of data at any point of time.

### 6. Data Validation automatic checks at Central software

- a) Zero level and span level checks if performed cyclically and defined results are not obtained up to +/- 5% (user definable 0-10%) then system should generate alarm the user of system failure and the recorded alarm should be transmitted to central software and stored. There should be provisions to read these alarms in a database for corrective actions and for comparison of data for acceptability or rejection.
- b) After instruments perform the calibration the results obtained should be recorded and should be transmitted to central computer and stored.
- c) There should be provisions to configure at least 08 alarms for any given instrument auto check.

Data validation requests management at central computer (if not available facility may be developed by the firm)

- a) Data validation requests sent by station computer should be recorded and the system should provide a window to user to accept or reject the reasons mentioned by the user end.
- b) Inbuilt checks capability should be provided, which can be configured by the administrator at central to put alarms according to requirement on data, errors generated or on diagnostics of systems.
- c) The software at central should have facility to log in data validation requests. These requests will carry the erroneous data for user selected period and for which user at station will request to change the data due to environmental or instrumental operation conditions. These requests will reside in central location and whenever user at central agrees the data will be changed in the validated database. Hence, system will have two types of databases 1) Raw database which can never be touched 2) which has to be modified and corrected as per agreed conditions. The detail of user requesting or applying changes in corrected database should be recorded with time.

**7) Data Display at Web (if not available facility may be developed by the firm)**

- a) Bidder should integrate CAAQMS station analysers API with the centralized available software in place.
- b) Central software should be capable to show the data in predefined formats at website on a physical map. Dashboards should be able to show real time data, alerts and notification. Simultaneously it should optimize the views on mobile phones.
- c) The data from Corrected database shall be displayed on the web.
- d) Current data should be displayed on web page.
- e) There should be provisions to show no. of violations occurred, percentage of violation occurred at stations parameters comparing hourly, 8 hourly, 24 hourly and yearly standards
- f) Provision is required to change standard value, since standard values do change after certain period of time as per Govt. policy.
- g) Displayed web page should have facility of providing information to all with respect to environment as well as to provide specific files for downloading.
- h) The logo of MPCB should be displayed on webpage.
- i) The disclaimer has to be provided on the webpage
- j) Some predefined queries have to be developed to display the data on webpage. A search page needs to be developed for converting data into meaningful format for the general public.

- k) The current data displayed on the web should have comment inserting facility at individual data and for running data as well like if any station instrument out of order then station official should be able to display message “Instrument under maintenance”.
- l) Similarly, when data goes beyond a defined limit it should automatically display a predefined message as comment on webpage as “Data under Scrutiny”.
- m) Automatic e-mail messages to be generated for the identified end users to start a corrective action.
- n) Station photos to be uploaded for the display along-with the data.
- o) User defined 05 pages may be developed additionally, if required by MPCB designs for which may be decided mutually.

**8) Data display at display board outside the office at central location also**

Data display is also required at regional and central locations for which software provision has to be made at each location.

**9) Remote Procedures (if not available facility may be developed by the firm)**

- a) Central software should have capability to allow to connect any station instrument through remote.
- b) Central software administrator should be able to go for remote calibration of any of the systems.
- c) Software should be capable to operate remote stations configurations.
- d) Control panel window should be available for controlling each analyzer.
- e) Alarm window for valid alarms of all analyzers and sensors.
- f) It should have transparent data - connection to each analyzer from remote.
- g) System should be capable to remotely configure all stations through remote location using configuration file to maintain the uniformity. The configuration command from central or from regional location should be active.

**10) Data Reports Generation**

- a) To prepare reports hourly, weekly, monthly, yearly in user defined interval and formats.
- b) Mean, Median, Percentile, Maximum, Standard deviation, Frequency analysis and Maximum Frequency analysis.
- c) System should have predefined user selectable procedures through which reports of any specific station or multi stations reports upto four parameters can be generated as per user selected time frame.
- d) Data Comparison
  - Software should be able to compare any of the four channels irrespective of type of data in the system with respect to each other on a single time scale user selectable.

- Data Comparison on different time scale
- Software should be able to compare data on the basis of different time scales like one station (x) parameter (y) of one given date is compared with other station (z) parameter (y) on any other date in a single graph.
- Data reports, calibration reports and status reports with user time periods.
- Historic multi - curves / graphs over user selectable time period.
- Report generation over user selectable time period (instantaneous or averaged over a period of 1, 15, 30 min, 1 hr, 4, 8, 12, 16 and 24 hrs etc.).
- Diurnal variation, standard deviation, regression and other statistical parameter reporting possibilities with various available mathematical methods.
- If required separate report generation procedures have to be developed for which firm will be responsible for project duration.

## 11. COMPATIBILITY

Should have compatibility with the latest Operating System with a contract of 05 (five) years from the date of Supply of software for providing assistance to operate system at MPCB and all the new patches developed for the software during these 05 years without additional cost. Software should have capability of data transmission with the presently available PROTOCOL (list attached).

## 12. SECURITY

- a) System should have the facility to have it Password protected or without password as decided by MPCB at the time of implementation.
- b) System software should be totally secured, and any antivirus software required to run the system for the complete project duration has to be managed by the system provider.

## 13. OTHER TECHNICAL CONDITIONS

- a) Hardware required for data transmission has to be made available by the firm and there should not be non-compatibility.
- b) Firm should have the capability to develop the Software PROTOCOL for data transmission from any system available in the field in future during next 05 years or up-to the project period.
- c) Should support the latest formats of Windows 32 bit or 64 bit or any other available platform like Linux etc.
- d) Manual of complete system should be provided.
- e) Firm should provide the hardware required for data acquisition along with all the software's required like OS, MS. Office, Networking software, Remote functionality software, Data uploading software on website, Data display

software if required, and should maintain hardware for project duration.

- f) Since, system has to be placed in NIC domain for which the web software developed along-with the database and web server software should be certified by CERT-IN empanelled vendors for vulnerability. The system provider is responsible for fulfilling all criteria required to place the system at NIC domain. The firm will be responsible for entire duration of the project for any vulnerability if noticed by NIC.

## **Annexure 39 Details of Desired Data Validation System**

At least three tier request generation and requests acceptance procedure are desired in the system. It is presumed that level 1 is station, level 2 is Central location at regional level and level 3 at Central level. The regional and central levels will have central station computers and software installed and stations will have station computer installed with station data acquisition software and data transmission software. s

The flow of data has to be from station to Regional Level and then to Central level. It is desired that environmental database has to be corrected for instrumentation issues as well as for the environmental issues. Hence, officials available at stations will communicate with central and state levels through system itself by commenting on the data. The respective data can be picked up from the database at station itself, corrected to the desired numbers and then transmitted to regional level central computer where, the administrator of system if agrees to the changes desired then data flows to the next level else request is rejected. If request will come to Central server for accepting or rejecting, then central level should have authority of accepting or rejecting the data. If central level agrees to the changes than data should be changed in the corrected database else request should be rejected. Hence, there should be provisions for accepting or rejecting data at all three levels accordingly. Here, whenever such requests are generated, concerned administrators need to be sent email alerts.



## Annexure 40 Other Technical Conditions

### I. List of protocols for which CAAQM software should support

Bayern-Hessen	Intercomp5	FH62 Konf.	ChemPro 100
Intercomp 6	Intercomp 1	PVM100	MultiPD II
LabCom	Metek USA-1	VC820	X am 7000
Unor, Oxor	AK R+P	TSI 30222/25	HG Monitor 3000
Defor	MBF	Blendmaster	ESM FH40G
Multor	Gemi	Klimet	Travelpilot DX-V
Adam Module	Uras 14 Modbus	Thygan	AK Conf.
CLD700	Binos1000	USA Turbulence	Thermo Instr.
FH62	HP34970A	Thies DL14/15	PR820R
Hygrowin	Almemo	Innova1312	PAC3
Gesytec II	Modbus	Multiwarn II	Data Collect SDR
RFM433	DGH Module	MeteoBus	VDO Navigation
NMEA183	BH/Timo 9600	Windobserver	

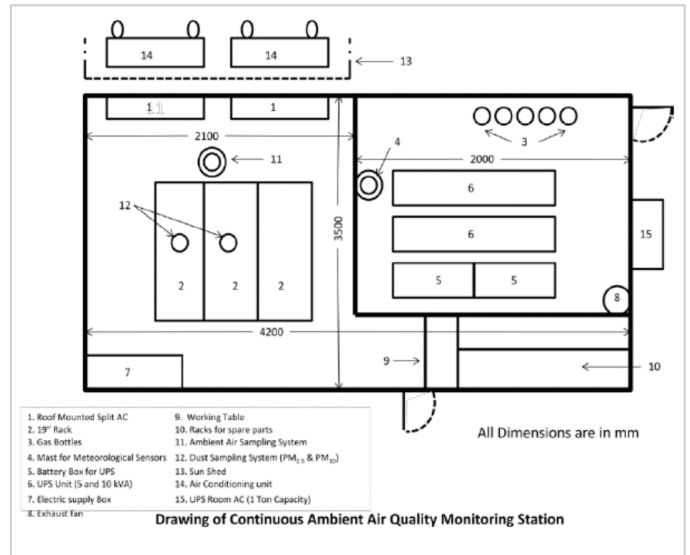
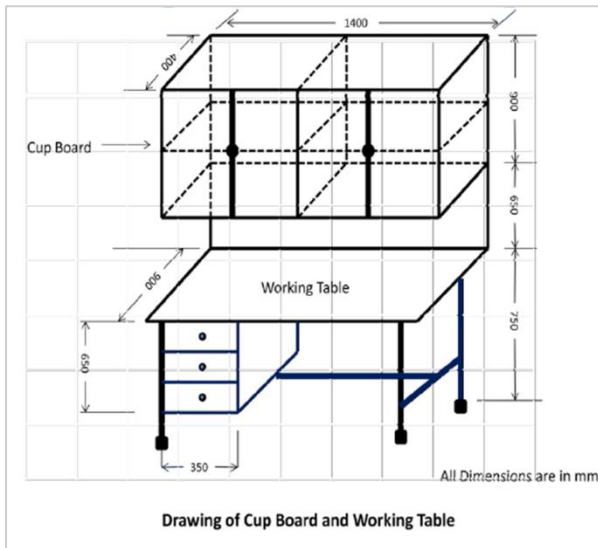
### II. Checklist to compare Firm's Technical capability table for specifications of Software

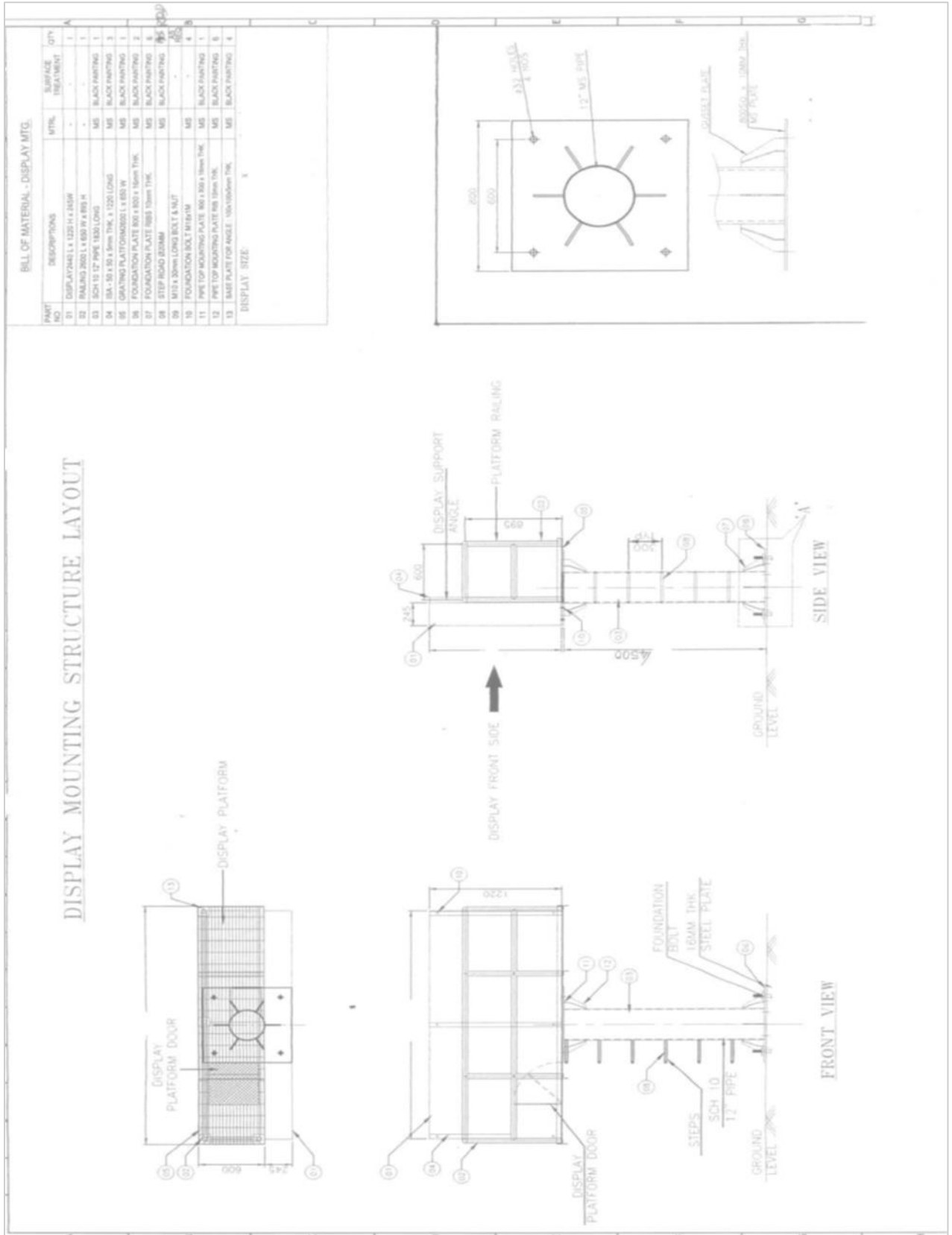
S. No.	Details	Capability of firm software as on date	Firm agree or disagree to develop software in future	If firm agrees to Develop application the time frame for individual activity
1.	Data transfer interval Max.5 minutes from all locations?			
2.	System will transmit data along with diagnostics. If yes, then how many channels diagnostics values shall be transmitted to central and at what duration?			
3.	System will transmit data along with Calibration values (Pre cal and Post Cal)?			
4.	System has remote calibration procedures in place for Regional level and central level both?			
5.	System has remote configuration facility for regional and central level both?			
6.	System has database validation procedure in place?			
7.	Web software already developed or not?			
8.	If Web software is available, is it modifiable as per CPCB need by the firm?			
9.	Whether agree to develop five web pages as per mutual discussion			
10.	Web software with password and or without password			
11.	Password providing facility available at regional levels			
12.	Statistical tools available at web software or not?			

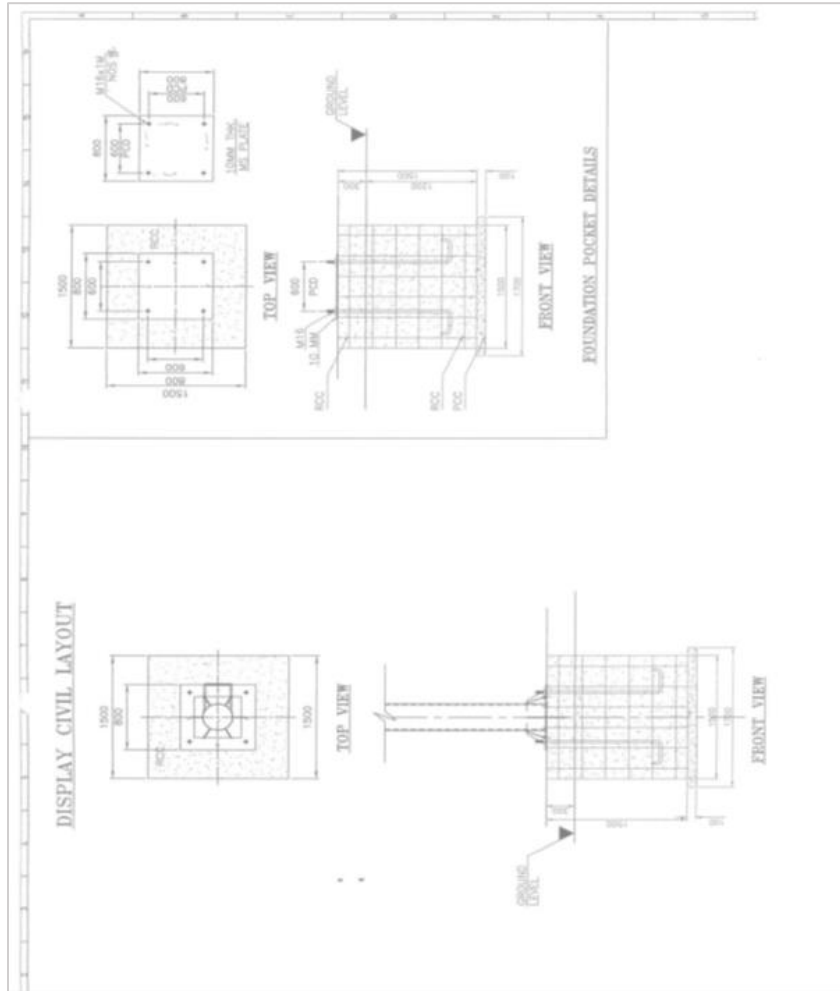
S. No.	Details	Capability of firm software as on date	Firm agree or disagree to develop software in future	If firm agrees to Develop application the time frame for individual activity
13.	System provider is capable of placing system in NIC domain			
14.	System provider will provide certification from CERT-IN empaneled firms			
15	Data import from other files			
16	Data export to other files			
17	Pre-defined queries to be inbuilt for providing data to public whether these are already available or to be developed if yes, then time frame?			
18	Standards comparison and exceedances be reported on web			
19	Different types of predefined formats of report preparation available or not?			
20	support various protocols available till date as listed provided or not?			
21	If new protocol-based software is to be developed whether firm will			
22	Unlimited Number of stations supported by Central Server software or not? If not, then support for how many stations will be provided			
23	System compatibility with Dialup/BB/2G/3G/Wireless available or not? If not, then what technologies supported as on date? What time frame if other to be develop.			
24	Software has Wind rose reports generating capability			
25	Software has pollution rose generating facility			
26	Software has diurnal variation facility			
27	Software has mathematical tools			
28	Software has 16 channels display			
29	Software has data communication error reports			
30	System has error correction procedure			
31	Software has parallel data display reports			
32	Software has virtual channel deployment capacity			
33	Software has data encrypting procedures at stations or not? If yes, then data can be retrieved from station or not?			
34	Software compatible for ANDROID technology			
35	System Provider will provide all Hardware required at station and Central			
36	System Provider all necessary software required for data acquisition, display, Analysis, website uploading etc.			

### III. Specifications of Day Light & Night Visible Data Display Systems

Size of display System	:	4' x 12'
Visibility range	:	200 Meters (Day Time)
Nos. of display Line	:	4
Display of colour elements	:	Multi Colour (Red, Green and Blue)
Minimum life span of the system	:	10 Years
Smallest Character Size	:	260 mm x 190 mm (approx.)
Operating and Non-Operating	:	0 - 50 °C Temperature
Humidity Tolerance Range	:	0 - 100%
Languages supported by the Color Gradient	:	Marathi, English & Hindi display
	:	Cluster LED based







Note : All diagrams and layouts should be submitted prior to the execution by the successful Bidder to MPCB for seeking approval.

## Annexure 41 Technical Data Sheet

### Technical Data Sheet for Supply and O & M of Continuous Ambient Air Quality Monitoring Stations (CAAQMS)

Sr. No.	Specifications	Description	Bidder's Response
<b>1</b>	<b>MONITORINGS STATION</b>		
<b>1.1</b>	Monitoring Station:	Monitoring Station: is designed for housing the ambient air quality monitoring instruments to protect them from dust and heat. Temperature and Humidity sensors shall be installed in the housing for checking the humidity and temperature inside the station. Three Nos. 19" racks shall be installed inside the station so that the analysers are easily accessible from front & back for calibration and maintenance.	
<b>1.2</b>	Dimensions:	Inside length: Approx. 4200 mm Inside width: Approx. 3500 mm Inside height: Approx. 2500 mm	
<b>1.3</b>	Frame	All the material used for the construction of the floor, frame, roof frame etc., the 4 corners posts and 8 integrated, reinforced containers corners should be of metal. The exterior panel of the container shall be made of pre-coated MS Sheet of approved colour shade. All other steel parts should be hot dipped. Galvanized having minimum rate of galvanization of 275 gram per square meter. All joints of like metal such as steel-to-steel or aluminium-to-aluminium shall be protected against corrosion by liberal application of joining compound. All joints of dissimilar metals such as steel to aluminum shall be protected against corrosion due to galvanic action by liberal application of dielectric compound as well as jointing compound on both mating surfaces. For lifting / fixing the container, International Standard eyebolts should be provided at the corners.	
<b>1.4</b>	<b>Paneling</b>	The outer paneling will be of 1.2 mm of Pre-coated MS sheet to withstand external impacts and abrasions. Outer side of the MS Sheet i.e. exposed face of the sheet, shall be permanently colour coated with silicon modified polyester coating of dry film thickness (DFT) 20 micron (min.) of approved colour shade over primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum 7-micron off-white colour. The inner paneling will be of PVC coated 2 mm thick aluminium sheet, fixed over an inlay of 4 mm marine plywood. 100 mm thick polyurethane insulation will be used between the outer and inner walls (Pre-coated MS sheet and Marine plywood) as insulating material. Z spacers if required shall be made out of at least 2 mm thick galvanized steel sheet of grade 275 as per IS:277	

Sr. No.	Specifications	Description	Bidder's Response
1.5	<b>Floor</b>	The floor will be laid in frame of 600 x 600 mm center to center with 50 x50 x 6 mm MS angle. The floor surface will be of 19 mm marine plywood covered with robust quality. Vinyl flooring, 2 mm thick of approved colour. The floor should be of acid and alkaline resistant, waterproof, easily cleanable / washable. Bottom plate of thickness 2 mm hot dipped galvanized MS Plate shall be provided.	
1.6	<b>Outer Door</b>	One door of size approx. 2000 x 900 mm will be provided at the front side (L = 4200 mm) of the station with isolated 3 - point locking & door handle flush fitted.	
1.7	<b>Electric Power Supply Box</b>	Three - phase (3 Ø) electrical wiring will be laid in ducts. Copper wiring of appropriate gauge will be used. The terminal board should be mounted in a central power distribution box. Over voltage protection for each phase shall be provided along with the lightning arrestor. 2 numbers Emergency cut off switch & Thermostat switch (350 C) for power disconnection, 6 free sockets and 3 fluorescent lamps for lighting will be provided. The station shall be properly grounded with chemical earthing or as per BIS Standards with proper plate and only copper strip at-least on 2 corners (diametrically opposite). One three phase energy meter (Digital Type) shall be installed. Weatherproof cubicles / enclosure for housing of MCB / TP & N Switch of main power termination (outside shelter) and weatherproof telephone junction box for terminations of telephone line are to be provided. Proper earthing for telescopic mast of meteorological system shall be provided. There should be conduction between the telescopic mast of the meteorological system and the station. The guy ropes or wires shall be provided for supporting the mast.	
<b>Sr. No.</b>	<b>Specifications</b>		
		List of Consumables All Fuses : 02 set Lightning arrestor : 02 set Emergency Switch : 02 pcs Thermostat : 01 pc	
1.8	<b>Housing</b>	<ul style="list-style-type: none"> <li>▪ The housing will be partitioned as per drawing to create space for storing of gas cylinders, Meteorological mast &amp; UPS. The size will be 2000 x 1400 x 2300 mm.</li> <li>▪ A lockable door of size 900 x 2000 mm along-with 3 - Point locking system shall be provided on the outer wall of the housing. A 300 mm, single-phase (230 volts ± 10 volts AC and 50 Hz ± 3%) exhaust fan with safety grills will be provided.</li> <li>▪ Mounting brackets in 2 levels for fixing of at-least 06 (six) gas bottles should be provided.</li> <li>▪ The internal lights of the housing should be <b>sensor based</b>.</li> <li>▪ Air conditioners shall be mounted on proper rust proof</li> </ul>	

Sr. No.	Specifications	Description	Bidder's Response
		<p>supporting structures with rubber blocks to avoid vibration of structures.</p> <ul style="list-style-type: none"> <li>▪ Proper caging / grill should also be provided for the safety of ACs. Sunshades for external AC units shall be provided with fabricated pre-coated MS sheet (same as monitoring station) with supporting arrangements.</li> <li>▪ AC unit's external piping shall be placed in GI trays. Cable trays fixed on exterior wall shall be covered with pre-coated MS sheet, of same colour shade of monitoring station.</li> <li>▪ Roof top sheet to be levelled and sloped properly. Rainwater spout shall be fixed at top with rain water down pipe at two corners. The external lights of the station should be Solar operated.</li> </ul>	
1.9	Station Furnishing	<p>i. 19" racks - 2 Nos. ii. Fire extinguishers - 2 Nos. ii. Furniture:</p> <ul style="list-style-type: none"> <li>▪ Material- Furniture made of water-resistant laminated board</li> <li>▪ Cupboard - As per drawing</li> <li>▪ Working table- Powdered coated MS frame size 1400 x 900 x 750 mm (w x d x h) and top 19 mm thickness Board</li> <li>▪ Revolving tilting chair - 2 Nos.</li> </ul> <p>iv. Miscellaneous</p> <ul style="list-style-type: none"> <li>▪ The exhaust gases from the analyser should be collected and discharged by a common exhaust pipe and vented.</li> <li>▪ Folding aluminium ladder for roof access</li> <li>▪ Thermostat for measuring the temperature of the station</li> <li>▪ Hygro Meter for measurement of Humidity inside the station</li> <li>▪ Mounting bracket for the ladder</li> <li>▪ No smoking stickers</li> <li>▪ Vacuum cleaner of reputed make with minimum 100 watt power</li> <li>▪ Tool Kit having following tools: <ul style="list-style-type: none"> <li>▪ One screwdriver set</li> <li>▪ One multi-meter (Philips, Mico make)</li> <li>▪ One box spanner set</li> <li>▪ One D spanner set</li> <li>▪ One watch maker set</li> <li>▪ One Hammer set</li> <li>▪ One precision screw driver set</li> <li>▪ One pliers set</li> <li>▪ One Tong tester</li> <li>▪ One Emergency LED Cluster light</li> </ul> </li> <li>▪ Sign boards along-with logo of Central Pollution Control Board, Delhi / State Pollution Control Board, to be embedded with size 1500 x 900 mm on the front of the container and on the two side of</li> </ul>	



Sr. No.	Specifications	Description	Bidder's Response
		the container, The name of the Station i.e. Continuous Ambient Air Quality Monitoring Station, (Location) both in English and Hindi or local language to be inscribed. The Signs boards to be mounted on the station with proper spacers.	
1.9.1	Security Cabin (Optional)	A 4 feet x 4 feet wooden / Paneled security cabin with chair and small folding table for security guard with covered overhead selves to be provided separately with the station container	
1.9.2	Container Foundation (RCC)	L X W 6000 x 6000 mm Height 300 mm from ground	
	Pillars	Nine concrete pillars of 300 mm above the ground level and below the ground level with 200 x 200 mm beam and between pillar bricks to be used for filling the space. Outerwall of the foundation to be plastered with 1:4, Cement : Sand ratio and same has to be painted with weatherproof coat.	
	Top of the platform	RCC 150 mm with concrete ratio of 1:1:2 and to plastered and painted with weatherproof paint.	
	Staircase	Staircase to approach the main door of the container and the UPS / Gas room door in the side to be provided and each step should not be more than 150 mm	
2.0	<b>AIR CONDITIONER</b>		
2.1	Type	3 Nos. split type, roof mounted of 5-star rating with an automatic timer. Separate Voltage stabilizer will be provided with each unit.	
2.2	Capacity	2.0 Ton (2 Nos.) and 1 Ton (1 No.). The indoor units should be running alternately at an interval of four hours with timer control and the temperature inside the station should be maintained at 25 <sup>o</sup> C inside during peak summer months.	
2.3	Nominal Cooling	Btu /hr - 24000, Kcal / hr: 6000	
2.4	Fan type	Propeller Fan	
2.5	Fan Motor type	Permanent Split Capacitor, 1/8 Horsepower	
2.6	Control Type	Remote	
2.7	Compressor	Reciprocating	
2.8	Refrigerant	Eco Friendly	
2.9	Power SUPPLY UNDER BUY Back	230 volts $\pm$ 10 volts AC and 50 Hz $\pm$ 3%.	
3.0	<b>ONLINE UNINTERRUPTED POWER SUPPLY(UPS)</b>		
3.1		Single phase 10 kVA UPS along with Automatic Delayed Restoration Device (ADRD) with 1-hour backup in full capacity should be provided for the smooth operation of one 2 Ton	
3.1.1	Capacity	10.0 kVA	
3.1.2	Technology	PWM using IGBT / MOSFETS	
3.1.3	Crest Factor	More than 3: 1	
3.1.4	Input Voltage Range Voltage Frequency	230 V AC $\pm$ 25% 50 Hz $\pm$ 3%	
3.1.5	Output Voltage regulation Voltage Frequency	230 V AC $\pm$ 1% 50 Hz $\pm$ 0.01% Pure sine wave	

Sr. No.	Specifications	Description	Bidder's Response
	Frequency regulation Waveform		
3.1.6	Battery type Back up time Battery Capacity Recharge time	Sealed maintenance free 1 Hour at full load For required backup time 5 hours to 90% after complete discharge	
3.1.7	Distortion	Less than 1% on linear load	
3.1.8	Power factor	0.9 to 1	
3.1.9	Indicator	L.E.D. - Battery Charge, Load level, online, overload, on battery, replace battery	
3.1.10	Alarm	Audible alarm for battery backup, battery low, and fault	
3.1.11	Protections Surge Overload Short circuit Battery low cut - off	Surge suppression meets BIS or International standard Fuse & current limited Fuse & current limited & cut - off No battery drain after cut - off	
3.1.12	Protections	110% for continuous load	
3.1.13	Efficiency	More than 90%	
3.1.14	Environment Operating Temperature Operating Humidity Audible Noise	0 - 50° C 10% to 95% (Noncondensing) Less than 45 dB (at 1 meter)	
3.2		Single phase 5 kVA UPS along with Automatic Delayed Restoration Device (ADRD) with 4 hours backup in full capacity should be provided for the smooth operation of Analyzers and peripherals at the station	
3.2.1	Capacity	5.0 kVA	
3.2.2	Technology	PWM using IGBT / MOSFETS	
3.2.3	Crest Factor	More than 3: 1	
3.2.4	Input Voltage Voltage Range Frequency	230 V AC ± 25% 50 Hz ± 3%	
3.2.5	Output Voltage Voltage regulation Frequency regulation Waveform	230 V AC ± 1% 50 Hz ± 0.01% Pure sine wave	
3.2.6	Battery type Back up time Battery Capacity Recharge time	Sealed maintenance free 2 Hour at full load For required backup time 5 hrs. to 90% after complete discharge	
3.2.7	Distortion	Less than 1% on linear load	
3.2.8	Power factor	0.9 to 1	
3.2.9	Indicator	L.E.D. - Battery Charge, Load level, online, overload, on battery, replace battery	
3.2.10	Alarm	Audible alarm for battery backup, battery	
3.2.11	Protections Surge Overload Short circuit Battery low cut - off	Surge suppression meets BIS or International standard Fuse & current limited Fuse & current limited & cut - off No battery drain after cut - off	
3.2.12	Overload Capacity	110% for continuous load	
3.2.13	Efficiency	More than 90%	
3.2.14	Environment Operating Temperature Operating Humidity Audible Noise	0 - 50° C 10% to 95% (Noncondensing) Less than 45 dB (at 1 meter)	
4.0		<b>AIR QUALITY ANALYSIS SYSTEM</b> (CO, SO <sub>2</sub> , NO <sub>x</sub> , NH <sub>3</sub> , BTX, PM <sub>10</sub> , PM <sub>2</sub> and O <sub>3</sub> Analysers) (General Specifications for all Analysers)	
4.1		The analysers should be 19" rack mounting model with facilities for fixing the analysers from front side	

Sr. No.	Specifications	Description	Bidder's Response
4.2		The ON / OFF switch and display of the entire important status signal viz. Sample flow, temperature, concentration, range switch, manual / auto mode, zero / span mode should be on front panel.	
4.3		The analysers should operate at operating voltage 230 volts $\pm$ 10 volts AC and 50 Hz $\pm$ 3%. The power Supply input to be protected against spikes from and to the analyser by an LC filter. The power connection cable should be CEE type complete with 15 Amperes plug adaptable to Indian mains socket.	
4.4		The analysers must function properly in Indian conditions without any defect between 0 -50 degree C ambient temperature, 10- 95% relative humidity and in high ambient dust levels. The data capture rate should not be less than 90%.	
4.5		The Manufacturer shall provide minimum of 2 weeks of operational & preventive maintenance hands-on training for 3 persons (maximum) per State.	
4.6		The analysers should be complete with calibration system. The calibration system should be delivered along-with respective span gas cylinder and permeation tubes. The span gas concentration should be within 60 - 90% of first measuring range. The analyser must have zero-point internal calibration system and in agreement with minimum detection limit of each analyser. The calibration procedures are to be integrated into the software system for automatic calibration.	
4.7		The permeation tube and the calibration gases provided with the system shall have Traceability to NIST.	
4.8		The analysers shall be supplied with all ancillaries necessary for operation including external pump (if any) and any other items such as charcoal scrubber, Teflon air sample intake filter, drier, Teflon tubing suitable for connection to air sampling manifold. All such items are to be itemized. Dust filter in all the analysers should be provided before solenoid valve to protect frequent chocking of solenoid valve.	
4.9		The connector systems for out-going signal for recording and the computer terminal should be on back panel with screw type connecting pins.	
4.10		All ambient gas analysers shall conform with the USEPA automated reference / TUV /EN or equivalent method designation as required by the specification for individual equipment / parameters. Method of measurement used shall also comply with the stipulation on National Ambient Air Quality Standards (NAAQS)2009 (Details of Methods of Measurement is available at MoEF and CPCB websites). All analysers, shall be microprocessor controlled with automatic calibration using an external dilution calibrator and calibration standards. All analysers and sensors should be fully integrated in the rack cabinet, fully calibrated & tested before SUPPLY and ready for start - up at the respective sites. Analyzer must exhibit performance equal to or better than values specified in the Calibration & test certificate provided with each analyzer.	
4.11		The manufacturer shall specify the cross sensitivity of measurement for all the analyzers.	
4.12		Each set of analyzers shall be supplied with two copies of elaborate operation manuals comprising details in three parts: Parts (I) should comprise installation, operational and trouble shooting details; Parts (II) should have details about preventive, routine and corrective maintenance; Parts (III) should comprise details of all electrical, electronic and pneumatic circuit diagrams, details of each spare parts, Catalogue No. etc. and details of each electronic card / PCB's; and Parts (IV) Schematic diagram for possible repair & maintenance.	
4.13		Digital Output: a)RS 232/ Ethernet port shared between Analyzers, Dust Monitor (PM2.5 & PM10), Meteorological Sensors and computer for data, status and control.	
4.14		Quality Control and Standard Data shall be collected and validated according to US EPA standards, using the methodologies included in 40Code of Federal Regulations.	

Sr. No.	Specifications	Description	Bidder's Response
		<p>All analyzers shall have current US EPA reference or equivalent method designation and shall be of the latest design. The supplier shall submit a Standard Operating Procedure for the air quality monitoring stations to the Buyer at the time of bid submission. This Standard Operating Procedure shall be approved by the Buyer prior to award. The Standard Operating Procedure shall contain the following: Operating procedures for all analyzers and meteorological sensors. Calibration procedures</p> <ol style="list-style-type: none"> <li>i. Calibration schedule</li> <li>ii. Maintenance procedures</li> <li>iii. Maintenance schedule</li> <li>iv. Data validation procedures</li> <li>v. Quality Assurance procedures</li> <li>vi. Sample quality assurance documentation</li> </ol> <p>Sample Air Quality Report The calibration procedures for analyzers shall conform to US EPA methodologies and shall include daily calibration checks, biweekly precision checks and linearity checks every six weeks. All analyzers shall undergo full calibration every six weeks. Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the Buyer along with the Air Quality Data. Air Quality Data shall be submitted to the Buyer on a monthly basis in the form of an Air Quality Report. This report shall include tabular and graphic information on gas and dust concentrations as well as meteorological data for each site. The data shall be reported in the form of 15-minute averages and shall also include daily, weekly and monthly averages, minimums, maximums, standard deviations, total data captured and percent data capture. The Air Quality Report shall also include wind roses where wind speed and direction are measured. Upon 24-hour notice from the Buyer, once per year, the supplier shall agree to submit to an audit of calibrations, conducted, using pre-approved US EPA methodologies, by a third party. The results of these audits shall be made immediately available to both the supplier and Buyer.</p>	
<b>5.0</b>	<b>SPECIFICATIONS OF SAMPLING SYSTEM</b>		
		<p>A suitable sampling system as specified by USEPA having 10ports manifold and fitted with a suction pump to draw ambient air. System duly equipped with moisture removal systems should be provided for sampling of ambient air separately for gaseous and dust measurement. Gases sampling system:</p>	
<b>5.1</b>	Height of the sampling system:	Approx. 1.0 meter above the roof	
<b>5.2</b>	Roof entry cut out:	Stainless Steel	
<b>5.3</b>	Conduit:	Stainless Steel	
<b>5.4</b>	Inner sampling system:	Borosilicate glass	
<b>5.5</b>	Sampling head:	Stainless Steel	
<b>5.6</b>	Manifold:	10 port for tubes 6 x 1 mm, self- tightening	
<b>6.0</b>	<p><b>SPECIFICATIONS OF 19" RACK</b> Suitable 19" Rack cabinet to accommodate all analyzers, calibrators, Zero air generators, data logger etc. The dimension of the rack without doors, with aluminum section and rear of 2mm steel sheet, one removable roof plate, fitted with 4 filling eyebolts. Four roof fixing screws included in package to replace the lifting eyebolts. One gland plate three-part, one pair of 475mm (19") mounting angles depth adjustable in 25 mm pitch pattern fitted on two fixing angles approximately 150 mm unit from the front standard. To accommodate panel width of 19" size: width = 600 mm, Height= 1400 mm and Depth = 800mm. The 19" racks should be screwed to the floor of the station with anti-vibration pads. All nuts and bolts shall be cadmium coated.</p>		
<b>7.0</b>	<b>AMBIENT AIR QUALITY MONITIORNG ANALYSERS</b>		

Sr. No.	Specifications	Description	Bidder's Response
(A)	<b>AMBIENT OXIDES OF NITROGEN (NO-NO<sub>2</sub>-NO<sub>x</sub>) ANALYSER</b>	NO <sub>x</sub> Analyzer Approval	
	<b>Conforming to USEPA Automated Federal Reference Method (FRM) Designation (NO<sub>x</sub> Analyzer Approval from US EPA)</b>		
1.	Principle	Chemiluminescence	
2.	Measurement	NO / NO <sub>2</sub> / NO <sub>x</sub> in Ambient Air	
3.	Display	Digital	
4.	Ranges	Auto ranging 0-2000 PPB	
5.	Minimum Detectable Limit	1 PPB	
6.	Noise Level	0.5 PPB	
7.	Zero Drift	< 1 PPB/24 Hrs.	
8.	Span Drift	< 2% in 15 days of full scale	
9.	Response Time	30 seconds or earlier	
10.	Linearity	± 1% of full scale	
11.	Calibration	Please see Multi-calibration section (Sl. No. J) and also, calibration section in General Specifications (4.6 & 4.7).	
12.	Output Signals or Analog Output	3 Analog output 0 - 1 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA	
13.	Digital Output	RS 232/ Ethernet port	
(B)	<b>AMBIENT AMMONIA ANALYSER (NH<sub>3</sub>) Conforming to USEPA Automated Federal Reference Method(FRM) Designation</b>		
1.	Principle	Chemiluminescence NH <sub>3</sub> conversion to NO by oxidation. NO <sub>2</sub> also converted to NO. the difference obtained by measuring NO in output of two sample stream as equal to NH <sub>3</sub>	
2.	Measurement	Ammonia in Ambient Air	
3.	Display	Digital	
4.	Ranges	Auto ranging 0-1000 PPB	
5.	Minimum Detectable Limit	1 PPB	
6.	Noise Level	0.2% of reading	
7.	Zero Drift	< 5 PPB /24 Hrs.	
8.	Span Drift	< 2% in 15 days of full scale	
9.	NH <sub>3</sub> /NO converter	Quartz at approx. 1000 <sup>0</sup> C	
10.	Linearity	± 1% of full scale	
11.	Response time	180 second	
12.	Calibration	Please see Multi-calibration section (Sl. No. J) and also, calibration section in General Specifications	
13.	Rise / fall Time 95% of the final value	< 30 Sec	
14.	Digital Output	RS 232/ Ethernet port	
15.	Analog Output	0 - 1 V, 0 - 10 V, 0 - 20 mA, 4 - 20 mA	
(C)	<b>AMBIENT SULPHUR DIOXIDE (SO<sub>2</sub>) ANALYSER Conforming to USEPA Automated Federal Equivalent Method (FEM) Designation</b>		
1.	Principle	Pulsed UV Fluorescence	
2.	Measurement	Sulphur Dioxide in Ambient Air	

Sr. No.	Specifications	Description	Bidder's Response
3.	Lower Detectable Limit	1 PPB	
4.	Ranges	Auto ranging 0 - 500 PPB	
5.	Display	Digital	
6.	Noise Level	0.50 PPB or 1% of the reading	
7.	Zero Drift	< 1 PPB / 24 Hrs. With automatic zero compensation	
8.	Span Drift	< 2 PPB full scale in 15 days	
9.	Calibration	Please see Multi-calibration section (Sl. No. J) and also, calibration section in General Specifications	
10.	Precision	0.5 ppb or 1% reading whichever is greater	
11.	Output Signals or Analog Output	3 Analog output 0 - 1 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA	
12.	Digital Output	RS 232/ Ethernet port	
(D)	<b>AMBIENT OZONE (O<sub>3</sub>) ANALYSER Conforming to USEPA Automated Federal Reference Method (FRM) Designation</b>		
1.	Principle	UV Photometric	
2.	Measurement	Ozone in Ambient Air	
3.	Display	Digital	
4.	Range	Auto ranging 0 - 500 PPB	
5.	Minimum Detectable Limit	2.0 PPB	
6.	Noise	± 1.0 PPB	
7.	Zero Drift	< ½% per month	
8.	Span Drift	< 1% per month	
9.	Calibration	With built in Zero and span generator and also see Multi-calibration section (Sl. No. J)	
10.	Linearity	Continuous + 1%	
11.	Output Signals or Analog Output	3 Analog output 0 - 1 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA	
12.	Digital Output	RS 232/ Ethernet port	
(E)	<b>AMBIENT CARBON MONOXIDE (CO) ANALYSER Conforming to USEPA Automated Federal Reference Method (FRM) Designation</b>		
01.	Principle	Non Dispersive Infra-Red (NDIR) with Gas Filter Correlation	
02.	Measurement	Carbon Monoxide in Ambient Air	
03.	Display	Digital	
04.	Ranges	At least four ranges Auto ranging 0 - 100 PPM.	
05.	Minimum Detectable Limit	0.1 PPM	
06.	Zero Noise	0.05 PPM with time constant ± 30 seconds	
07.	Zero Drift	< 0.2 PPM/7 days	
08.	Span Drift	< 1% full scale in 24 hrs.	
09.	Calibration	Calibration gas (CO) cylinder - 10 liters capacity. A Highly polished aluminum cylinder portable filled with 40 PPM NIST traceable Calibration gas has to be provided along-with the instrument for calibration purpose. It should also have pressure gas valve for Zero and Span gas.	
10.	Linearity	Continuous + 1%	
11.	Output Signals or Analog	3 Analog output 0 - 1 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA	

Sr. No.	Specifications	Description	Bidder's Response
	Output		
12.	Digital Output	RS 232/ Ethernet port	
(F)	<b>PM10 MONITOR Conforming to USEPA Automated Federal Equivalent Method (FEM) Designation</b> Based on the principle of $\beta$ -ray attenuation by particulate sampled through the instrument and collected on fiberglass filter tape. Before and after sampling $\beta$ -ray radiation is measured by scintillation / G.M. counter. An internal microprocessor handles all sequences and automatically calculates the concentration of SPM.		
01.	Principle	Continuous measurement of PM10 in ambient air	
02.	Particle Size Cut Off	0 - 10 Microns	
03.	Measuring Range	0 to 2000 $\mu\text{g}/\text{m}^3$	
04.	Resolution	1% of the concentration	
05.	Minimum Detectable Limit	2 $\mu\text{g}/\text{m}^3$	
06.	Detector	Plastic Scintillator / GM Counter, Silicon Semiconductor Beta Detector	
07.	Air Flow Rate	At - least 1.5 $\text{m}^3$ / hrs. (Adjustable to 1 $\text{m}^3/\text{hr}$ )	
08.	Filter Material	Glass Fiber Filter	
09.	Display	LED / LCD	
10.	Sampling Head	Dynamic heated sampling head for measurement of PM10, with adjustable temperature 20 - 70 $^{\circ}\text{C}$	
11.	Calibration	Reference membrane facility should be provided for calibration of analyser.	
12.	Compatibility	Analyser should be compatible with protocols mentioned in DAS section	
13.	Roll Length	Approximately 30 meters	
14.	Measurement Result	1 hr average or shorter	
(G)	<b>PM2.5 MONITOR Conforming to USEPA Automated Federal Equivalent Method (FEM)</b> Designation Based on the principle of $\beta$ -ray attenuation by particulate sampled through the instrument and collected on fiberglass filter tape. Before and after sampling $\beta$ -ray radiation is measured by scintillation / G.M. counter. An internal microprocessor handles all sequences and automatically calculates the concentration of SPM.		
01.	Principle	Continuous measurement of PM2.5 in ambient air	
02.	Particle Size Cut Off	0 - 2.5 Microns	
03.	Measuring Range	0 to 1000 $\mu\text{g}/\text{m}^3$	
04.	Resolution	1% of the concentration	
05.	Minimum Detectable Limit	2 $\mu\text{g}/\text{m}^3$	
06.	Detector	Plastic Scintillator / GM Counter, Silicon Semiconductor Beta Detector	
07.	Air Flow Rate	At - least 1.5 $\text{m}^3$ / hrs. (Adjustable to 1 $\text{m}^3/\text{hr}$ )	
08.	Filter Material	Glass Fiber Filter	
09.	Display	LED / LCD	
10.	Sampling Head	Dynamic heated sampling head for measurement of PM2.5 with adjustable temperature 20 - 70 $^{\circ}\text{C}$	
11.	Calibration	Reference membrane facility should be provided for calibration of analyser.	
12.	Compatibility	Analyser should be compatible with protocols mentioned in DAS section	
13.	Roll Length	Approximately 30 meters	

Sr. No.	Specifications	Description	Bidder's Response
14.	Measurement Result	1 hr average or shorter	
	Or		
(H)	<b>Ambient Particulate Monitor based on the principle "Tapered Element Oscillating Microbalance" (TEOM) Conforming to USEPA Automated Federal Equivalent Method (FEM) Designation (EQPM-0609-182)</b>		
	<b>SPECIFICATIONS TEOM 1405-DF Ambient Particulate Monitor 1405DF = Dual TEOM w/ FDMS</b>		
	<b>Regulatory Designations</b>	<ul style="list-style-type: none"> <li>▪ U.S. EPA approved PM-2.5 equivalent monitor (EQPM-0609-182)</li> <li>▪ Menu-driven software for user interaction via 1/4 VGA display with touch screen</li> <li>▪ Connecting and Interface Cables, and Vacuum Pump</li> <li>▪ Consumables for average three year's operation (ambient)</li> <li>▪ RPCOMM and e Port Software for Local or Remote Communication</li> </ul>	
	<b>Instrument Performance (3 l/min, 1s, stable conditions)</b>	<ul style="list-style-type: none"> <li>▪ Measurement Range: 0 to 1,000,000 <math>\mu\text{g}/\text{m}^3</math> (1 <math>\text{g}/\text{m}^3</math>)</li> <li>▪ Resolution: 0.5 <math>\mu\text{g}/\text{m}^3</math></li> <li>▪ Precision: <math>\pm 2.0 \mu\text{g}/\text{m}^3</math> (1-hour average), <math>\pm 1.0 \mu\text{g}/\text{m}^3</math> (24-hour avg.)</li> <li>▪ Accuracy for Mass Measurement: <math>\pm 1\%</math></li> </ul>	
	<b>Data Averaging and Output</b>	<ul style="list-style-type: none"> <li>• Real-time Mass Conc. Average: 1 hour rolling average updated every six minutes</li> <li>• Long-Term Averaging: 1, 8, and 24 hr</li> <li>• Data Output Rate: selectable from 10 sec to 24 hour</li> </ul>	
	<b>Operating Range</b>	<ul style="list-style-type: none"> <li>▪ The temperature of the sampled air may vary between-40 and 60 °C. The TEOM Sensor and Control Units must be weather protected within the range of 8 to 25 °C. An optional Complete Outdoor Enclosure provides complete weather protection.</li> </ul>	
	<b>Sample Flow</b>	<ul style="list-style-type: none"> <li>▪ ACTi Vol flow control system uses the mass flow sensors and the measured ambient temperature and pressure to maintain constant volumetric flow rates</li> <li>▪ Main Flow Rate: Fine PM filter: 3.0 l/min; Coarse PM filter: 1.67 l/min</li> <li>▪ Bypass Flow Rate: 12.0 l/min</li> </ul>	
	<b>Data Storage</b>	<ul style="list-style-type: none"> <li>▪ Internal data logging of user-specified variables; capacity of 500,000 records.</li> </ul>	
	<b>Filter Media</b>	<ul style="list-style-type: none"> <li>▪ Sample Filter: Pallflex TX40, 13 mm effective diameter</li> <li>▪ Sample Conditioner Filter: 47 mm diameter housed in an FRM-style molded filter cassette, maintained at 4°C. Suitable for collecting and archiving time-integrated PM samples for subsequent laboratory analysis.</li> </ul>	
	<b>Sample Conditioning</b>	<ul style="list-style-type: none"> <li>▪ Sample Equilibration System (SES) dryer lowers the main flow relative humidity and allows for mass transducer operation at 5°C over the peak air monitoring station temperature</li> <li>▪ Purge Filter Conditioner contains a heat exchanger that maintains the temperature of the main flow and particle filter at 4°C to efficiently filter the volatile and</li> </ul>	



Sr. No.	Specifications	Description	Bidder's Response
		non-volatile PM in the sample.	
	<b>Data Output and Input</b>	<ul style="list-style-type: none"> <li>▪ e-Port software to view and change system operation from PC</li> <li>▪ Touch screen user interface</li> <li>▪ Ethernet with embedded FTP server, USB, RS232, RS485</li> <li>▪ User-Defined Analog Outputs (0-1 or 0-5 VDC)</li> <li>▪ User-Defined Contact Closure Alarm Circuits</li> <li>▪ 4 Averaged Analog Inputs (0-5 VDC) with user-defined conversion to engineering units</li> </ul>	
<b>(I)</b>	<b>BTX MONITOR / ANALYSER</b>		
<b>1.0</b>	<b>GENERAL</b>		
	a) A complete monitor / analyzer system including continuous automatic sampling (pump etc.), sampling, analyzer, detector, calibrator, computer hardware and software for instrument control, data storage, display, acquisition, processing and for selective determination of volatile compounds in ambient air optimized for Benzene, Toluene, Ethyl Benzene and o, m, p - Xylenes. Compatible to power SUPPLY UNDER BUY-BACK (voltage 230 volts $\pm$ 10 volts AC and 50 Hz $\pm$ 3%). Continuous unattended measurement system of individual BTEX should work without cryogenic cooling. System should have protocol compatible to communicate & transfer data to main computer through modem and subsequently to CPCB/MPCB website preferably having features of security, data validation & alarms etc. Raw data storage capacity without erase minimum for three month or more. The system should be delivered with all necessary spares, consumables, tubing etc. for making it functional		
<b>2.0</b>	<b>TECHNICAL SPECIFICATIONS</b>		
<b>2.1</b>	<b>AUTOMATIC SAMPLING (MONITOR)</b> with Sample volume controlled by thermal mass flow controller(dust protected). Sample flow range may be 20 -100 ml/min or more (adjustable). Sample volume should be between 400ml - one liter or more of ambient air over a 10-15 min sampling cycle. All sample transfer tubing's should be in stainless steel flow / pressure sensor to be preferred with digital display. Sample volume should be controlled by flow controller (dust protected) with volume measurement saved in memory.		
<b>2.2</b>	<b>DETECTOR</b> Photo Ionization Detector (PID)Asper EPA/EU/TUV approved specs, which do not require hydrogen gas. The system should have auto-clean & autocalibration facilities. PID Lamp eV should be 10.6eV. PID sensitivity sensor should be available to check sensitivity.		
<b>2.3</b>	<b>MINIMUM SPECIFICATIONS</b>		
	Lowest detector limit	0.1 $\mu$ g/m <sup>3</sup> (0.03 ppb) or less for Benzene(There should be no interferences on Methyl-cyclopentane, 2,2, 3-trimethylbutane, 2, 4 -dimethyl pentane, Tetrachloromethane, Cyclohexane, 2, 3 - dimethyl pentane, 2- methyl hexane, 3 - ethyl pentane ,Trichloroethylene, n - heptane, isooctane with BTX components.)	
	Temperature Range	5 - 35oC or more	
	Measuring Range	1 - 1000 $\mu$ g / m <sup>3</sup> or better (0.3 ppb to 270 ppb)	
	Repeatability	Retention Time : <0.1% RSD Amount : <1.0% RSD	

Sr. No.	Specifications	Description	Bidder's Response
	Typical Cycle Time	Total Cycle Time should not exceed 15/30min. approx. i.e. Sample Collection Time -15 min. approx. Analytical Time - 15 min.approx.	
2.5	<b>CALIBRATION UNIT WITH SPAN GAS / IN BUILT CALIBRATION WITH /PERMEATION TUBES AND GAS MIXING / DILUTION FACILITY</b> In Built Calibration/Permeation Tubes Facility in the analyzer with the certified permeation tubes and span or calibration gas mixture (low conc. in ppb range, stable for at-least 6months) with S.S. container/cylinder, regulators with filters should be provided. Calibration unit having gas flow (approx.): 10 ml / min(calibration gas); 1.4-2.0 lit / min(dilution gas) with auto gas selection/dilution option for automatic calibration for ppb level calibration gas (10-30 ppb of individual compound of interest). Manual and software selectable valves for sample, calibration span and blank zero air gases. Dilution factor between 1: 50 to 150.		
2.6	<b>MEMORY AND CONTROL FACILITIES</b>	Method auto load and system restart after power failure. Methods storage capacity with timed events programs for control of system parameters in permanent memory. Diagnostics & Fault status; gas SUPPLY (low press). System stability (temperature and sample flow). Detector signal(low) and communication should be in digital form on monitor by LED's & be controlled from computer. Output signals: Analog 0-1 mV, Serial RS 232 for data intermission and CP-BUS for monitor control from remote. Both digital & analog outputs should be available.	
2.7	<b>Hardware/Software(s)</b> Latest PC with operating system/software. Basic Window based latest software's (English version) consisting instrumental control features as well as data storage, acquisition, processing and handling in desired/customized format including sorting of data (1 / 4 /8 / 12 / 24 hourly, days wise/date wise reporting as microgram / m3 or ppb(selectable) & averaging, data capture rate s etc.) Data presentation / graphical & statistical processing & data transfer to Excel including time. series, correlation matrix etc. is required. Communication software with protocol compatible to communicate & transfer data. from BTX monitor to central computer through modem (preferably including sample chromatogram) and from central computer to CPCB website preferably having features of security, data validation & alarms etc. System should have remote access to BTX monitor. Resident program as well BTX control / monitor user program with monitor startup / off / status, blank / calibration and sample gas measured, fault status, carrier gas if any, and communication errors indications. Updation of response factors automatically after calibration run. Auto tune facility. Raw data storage capacity without erase minimum for three month or more.		
(J)	<b>MULTICALIBRATION SYSTEM</b> Calibration system should provide for the calibration of the air quality analysers, data acquisition system, meteorological equipment, and gas calibration system.		
a	<b>Gas Calibration System:</b> The calibration system for air monitoring equipment (listed above) should incorporate an automatic gas dilution calibrator, calibration gas standards and a high performance zero air generator to calibrate all of the analysers in the system. The calibration cycles should be able to be configured through the Data Acquisition System at any specific time during the day and night. It should be mounted on standard 19" rack.The dilution calibrator should be able to perform mixing of source gas, from the calibration gas bottles, with zero air generator, in order to generate a wide range of calibration gas concentrations and minimizing the number of calibration gas standards required. All the calibration gases provided along-with the system MUST be NIST Traceable (certificate should be provided).The system should include at least three permeation chambers and should accept a Permeation Tube up to 11 cm in total length and 2 cm in diameter. It should also have facility for Gas Phase titration (GPT), having Ozone generator of 6 PPM / Liters and the converter efficiency should be 100 % for conversion		

Sr. No.	Specifications	Description	Bidder's Response
		of NO <sub>2</sub> concentration to NO. The system should also include calibration of Ozone analyzer.	
<b>b)</b>	<b>Meteorological, Flow and Electronics Calibration</b>	The supplier should provide calibration devices or calibration check devices for all the meteorological and other electrical equipment mentioned above as per the specifications of the manufacturers.	
<b>8.0</b>	<b>METEOROLOGICAL MONITORING SYSTEM</b>	The meteorological instrumentation should be interfaced directly with the Data Acquisition System after passing through a lightning. protection isolation box. A crank - up telescopic 10 meters tower should be erected for mounting of meteorological sensors. The relative humidity and solar radiation sensors should be mounted on the tower. All sensors should be NIST (National Institute for Standards and Technology, USA) traceable. The specifications are follows:	
<b>(a)</b>	<b>WIND SPEED</b>		
	Range (Operation)	0 - 60 m/s or better	
	Sustainability	Up-to 75 m/sec	
	Accuracy	± 0.5 m/sec or better	
	Resolution	0.1 m/sec	
	Sensor Type	Ultrasonic	
	Threshold	0.5 m/sec or less	
	Response time	10 sec or better	
<b>(b)</b>	<b>WIND DIRECTION</b>		
	Range	0 - 359 degree	
	Accuracy	± 5 degree or better	
	Resolution	1 degree	
	Sensor type	Ultrasonic	
	Threshold	0.5 m/sec or less	
	Response time	10 sec or better	
<b>(c)</b>	<b>AMBIENT TEMPERATURE</b>		
	Range	-10 ° C to 60 ° C	
	Accuracy	± 0.2 ° C or better (with radiation shield)	
	Response	10 seconds in still air	
	Sensor type	Resistance type	
	Response time	10 sec or better	
<b>(d)</b>	<b>RELATIVE HUMIDITY</b>		
	Range	0 to 100% RH	
	Accuracy	± 3.0 % or better	
	Resolution	1%	
	Sensor type	Capacitive / Solid State	
	Response Time	10 sec or better	
<b>(e)</b>	<b>SOLAR RADIATION</b>		
	Range	0 to 1500 W/m <sup>2</sup> or better	
	Accuracy	± 5.0 % or better	
	Resolution	5W/m <sup>2</sup>	
<b>(f)</b>	<b>RAINFALL</b>		
	Range	0.2 mm to 100 mm /hr	
	Accuracy	± 5% or better	

Sr. No.	Specifications	Description	Bidder's Response
	Resolution	0.2 mm	
	Sensor type	Tipping bucket rain gauge or any other suitable sensor	
	Response Time	10 sec or better	
(g)	<b>TELESCOPIC CRANK - UP METEOROLOGICAL TOWER</b> The wind speed, wind direction, temperature, relative humidity and solar radiation sensors are to be mounted on the Meteorological Tower. The tower is to be a free standing four section telescopic tower provided with a hand crank to raise and lower the instruments mounted on the tower, Specifications are as follows:		
	Extended Height	10 meters	
	Retracted Height	2 metres	
	Wind load Limit	0.7896 sq. m. (8.5 sq. ft) at 50 mph	
	Number of Sections	4	
	<b>Construction material</b> <b>Note:</b> Humidity and temperature sensors are to be supplied with weather and thermal radiation shield made of anodized aluminium and sensor should be supplied with all necessary cables, connector and mounting arrangements as required.	Galvanised steel or aluminium	
(h)	<b>SPECIFICATIONS OF DATA LOGGER</b>		
	Data logger with 8 analogs, 24 digital inputs and 18 bit resolution. Ability to log channels at different intervals and should have capability of averaging and displaying real time data and averaged data over a period of 1 min, 10 min, ½ hr, 1 hr, 4 hrs, 8 hrs, 24 hrs, 1 Month and year. Communication between data logger and computer using standard multi drop RS 232 Connector. The data logger should have internal battery with charger. The data logger should support PSTN line or Internal GSM modem for data transfer.		
<b>9.0</b>	<b>SPECIFICATION OF SOFTWARE FOR CAAQMS.</b>		
<b>A</b>	<b>DATA ACQUISITION SYSTEM IN THE STATION SPECIFICATIONS OF STATION SOFTWARE</b> The station software captures data from all channels in the system and stores in the Personal Computer. Personal computer is used for calibration and configuration of each channel.		
<b>1)</b>	<b>Data Acquisition</b>	<ul style="list-style-type: none"> <li>i. Frequency of data acquisition</li> <li>ii. User selectable 1, 5, 30, 60, 120 second averaging duration online digitally.</li> <li>iii. Channel size <ul style="list-style-type: none"> <li>• 32 Channels or more supported</li> <li>• Expandable to 64 channels, if required in future</li> </ul> </li> <li>iv. Data input <ul style="list-style-type: none"> <li>• Either Analog (0-1 volt / 0-10 volt / 2- 20mA / 4- 20mA)</li> <li>• Or Digital (firm will develop the protocol, if required without additional cost within project duration) to configure with the PC.</li> </ul> </li> <li>v. User configurable channels, stations and equipment with communication parameters.</li> </ul>	

Sr. No.	Specifications	Description	Bidder's Response
		<ul style="list-style-type: none"> <li>vi. Analyzer data channel should comprise of Name, Units, Communication Address, Validity Range, Operation and Error Status. h) Provision to incorporate conversion factors such as PPB to <math>\mu\text{g}/\text{m}^3</math> etc.</li> <li>vii. Software should be equipped to configure the analysers with it, irrespective of the output mode i.e. Analog or Digital (RS 232) of the instrument.</li> <li>viii. System should read raw data values of the analyzers and meteorological instruments and duration of averaging data should be user selectable like 10 / 20 / 30 / 40 / 50 / 60 seconds.</li> <li>ix. The output should be converted into realistic data in prescribed units.</li> </ul>	
10	<b>Data Collection</b>	<ul style="list-style-type: none"> <li>▪ Software should collect each second data.</li> <li>▪ Average data over user selectable time (1, 5, 30, 60 seconds time interval) period.</li> <li>▪ Operational status, Error status, calibration status and calibration values observed from the analyzer should be captured and should be made available along with the data with a frequency of maximum five minutes.</li> <li>▪ System should collect of the diagnostics of the instrument comprising actual diagnostics parameters and their values at least once in every five minute to check the state of the health analyzer.</li> <li>▪ Calibration parameters               <ul style="list-style-type: none"> <li>i) Provision to entering calibration, span calibration values of gas cylinder/permeation to devices</li> <li>ii) Provision for collecting zero calibration,span calibration values (pre calibration &amp; post calibration) into the database for further analysis.</li> <li>iii) Provisions to collect electronic system pre calibration &amp; post calibration to ascertain the percentage deviation/ correction apply during each calibration.</li> </ul> </li> </ul>	
11	<b>Data Storage</b>	<ul style="list-style-type: none"> <li>▪ Data along-with diagnostic, calibration alarms should be stored at station computer at a defined path.</li> <li>▪ Interval of data dumping will be same defined in the data collection.</li> <li>▪ System should be capable to keep eve second acquired data from 32 channels of a period of minimum five years.</li> <li>▪ Data stored should be plain text format.</li> <li>▪ No data encryption should be done at the station and if encryption is done than decryption procedure should be made available in soft file format to check the data at station at any point of time. To convert data on continuous basis for exporting to any</li> </ul>	

Sr. No.	Specifications	Description	Bidder's Response
	<b>Data formats</b>	<p>other software, if required, procedure should be available without any licensing.</p> <p>a) In 4-in-4 graphs, 4-in-1 graph and / or 16- in-1 graph formats</p> <p>b) In terms of 4-in-1 table format</p> <p>c) Real time multi - graphs over user selectable time period.</p> <p>d) Display of graphic &amp; tabular display of the current data.</p> <p>e) Graphical form should comprise of 4-4 graphs, 4-1 graphs in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)</p> <p>f) Tabular form should comprise of 4 channel list in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)</p> <p>g) Station instruments basic configuration etc. should be visible on screen continuously.</p> <p>h) Main window for real time display of all measured parameters with status of all analyzers/sensors.</p> <p>i) Statistical analysis tools like regression analysis, co-relation analysis and other analysis as per industry standards in the field of environment should be available and if not the firm should develop these for CPCB within a time frame.</p> <p>j) The system should have procedures for normal analysis tools like calculation of data with respect to a threshold value, average, minimum, maximum, calculation of violating value with respect defined values (Air Quality Standards) for defined period for the database etc.</p> <p>k) Data analysis of diagnostics parameters</p> <p>l) Data analysis of Pre calibration and post calibration data (if facility not available can be developed)</p> <p>m) Data analysis of corrections applied of each calibration cycle (if facility not available can be developed)</p>	
12	<b>Data Backup</b>	<p>a) There should be defined data backup procedure through which data can be extracted from station computer in simple text format / excel (user definable).</p> <p>b) There should be defined restore procedure also to restore the data in case of data loss.</p> <p>c) A display screen should be available to update the user about data availability.</p>	
	<b>At station software</b>	<p>Data Validation automatic check Zero level and span level checks if performed cyclically and defined results are not obtained up to +/- 5% (user definable 0-10%) then system should alarm the user of system failure and the recorded alarm should be transmitted to central software. After instruments perform the calibration the</p>	

Sr. No.	Specifications	Description	Bidder's Response
		results obtained should be recorded and should be transmitted to central computer.	
	<b>Data validation requests generated at station computer</b>	At least three tier request generation and request acceptance system procedure is desired. Details are given in the Annexure -I. Inbuilt checks capability may be provided, where if instrument throws erratic data software can check automatically and display message and send information in the form of corrected data in corrected database to be approved by the central software at central level. (facility if not available needs to be developed by the system provider) There should be provision of two databases one is raw database and another corrected database. (facility if not available needs to be developed by the system provider).  Validation of data through calibration database Pre calibration & post calibration values collected. Validation of data through calibration database Pre calibration & post calibration values collected.	
	<b>Calibration of systems</b>	Calibration window for analyzer for the calibration from computer. Remote Access to Calibration: Calibration exercise need to be done remotely. All necessary arrangements for it should be made in the system. Calibration data file may be prepared separately. Calibration database need to be formed, stored and transmitted to central. Calibration cycles to be as per the models of the instruments. Calibration records should store the calibration values displayed by instrument. Diagnostics during calibration should also be recorded. Calibration window for analyzer for the calibration from computer.	
	<b>Location of station</b>	a) Fixed Station location to be recorded b) Moving station location to be recorded c) Latitude and longitude of stations be recorded	
	<b>Data transfer to Central</b>	All data captured at station computer should be transferred to central software. a) User selectable time frame for Transmission of data to central server. b) Diagnostics (actual diagnostics parameter values recorded each time in the station), configurations (station channel configurations), alarms (generated alarms) should be transmitted.	
	<b>Data transfer to Display Boards</b>	The system provider is responsible to maintain necessary software provisions to connect output on display boards. The formats of files may vary with the formation of defined formats is the responsibility of system provider for the project duration. Software should be capable to transfer and display online data on display board at the station location. The data in user defined formats (customizable) should be made available for continuous display.	
<b>13</b>	<b>DATA ACQUISITION SYSTEM AT THE CENTRAL STATION</b>	Data communication system handles the data transmission of an ambient air quality network and receive incoming messages / signals from remote stations.	

Sr. No.	Specifications	Description	Bidder's Response
	<b>SPECIFICATIONS OF CENTRAL SOFTWARE</b>	The central software processes signals and data and displays it on the web and other interfaces. Detailed requirement is as below:	
	<b>Software at Central Station</b>	<ul style="list-style-type: none"> <li>i. Software should not have any restriction on number of locations and computers either technologically or in terms of licensing.</li> <li>ii. Should display multiple stations on – line data (momentary values) in tabular text and graphic format.</li> <li>iii. Data should be received by the central from all locations within 5minutes duration or at user defined time intervals.</li> <li>iv. Data along-with diagnostics and calibration details should be transmitted at central from all connected locations.</li> <li>v. Should support dialup systems, broadband connectivity, wireless connectivity, 2G or 3G or any new technology which shall be in place during project time should be compatible and if not need to developed by the system provider up-to project duration without additional charges.</li> <li>vi. Should have the remote-control facilities for calibrations (Zero &amp; Span) of instruments and measuring range modifications.</li> <li>vii. Should have facility for displaying data communication error reports, image management which should be recorded and should be available for display.</li> </ul>	
	<b>Data Display at Central</b>	<ul style="list-style-type: none"> <li>a) In 4-in-4 graphs, 4-in-1 graph and/or 16-in-1 graph formats</li> <li>b) In terms of 4-in-1 table format</li> <li>c) Real time multi - graphs over user selectable time period.</li> <li>d) Display of graphic &amp; tabular display of the current data like simple 3D line and column chart, polar diagnostics and 3D perspective column chart.</li> <li>e) Graphical form should comprise of 4-4 graphs, 4-1 graphs in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)</li> <li>f) Tabular form should comprise of 4 channel list in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)</li> <li>g) Display of data using selectable name of different stations. Generation of Wind Roses, Pollution Roses (12 &amp; 16 directional i.e. 0 degree, 22.5, 45, 67.5, 90 and 360 degree) with user defined time limits.</li> <li>h) Calculate vector mean of wind direction.</li> <li>i) Programmable downloading of data.</li> </ul>	



Sr. No.	Specifications	Description	Bidder's Response
		j) Comparison of data w.r.t. Standards in Graphical form and tabular form with information of values exceeds the Standards. k) Specific data zooming facility Database correction procedure. l) Separate user ID and Password for correction of database so that all regional level users if authorized can validate their regions data and the events be recorded along-with ID and time. m) Data validation trail recording.	
	<b>Data Export</b>	a) Customizable data format developing capability required b) Possibility to export the data files in Excel, Text and other formats Tabular form should be in user defined format i.e., 1, 5, 10, 15, 30 min, 1 hour, 4, 8, 24 hours, 30 days and yearly.	
	<b>Data Import</b>	In case of communication medium phase there should a mechanism to shift the data into Pen drive (Physical medium for data collection) physically and a procedure to import the same on central software.	
	<b>Printing</b>	Possibility to connect different types of printers and auto printing facility for displays generated throughout the analysis of data at any point of time. of data at any point of time.	
	<b>Data Validation automatic checks at Central software</b>	a) Zero level and span level checks if performed cyclically and defined results are not obtained up to +/- 5% (user definable 0-10%) then system should generate alarm the user of system failure and the recorded alarm should be transmitted to central software and stored. There should be provisions to read these alarms in a database for corrective actions and for comparison of data for acceptability or rejection. b) After instruments perform the calibration the results obtained should be recorded and should be transmitted to central computer and stored. There should be provisions to configure at least 08 alarms for any given instrument auto check. c) Data validation requests management at central computer (if not available facility may be developed by the firm) d) Data validation requests sent by station computer should be recorded and the system should provide a window to user to accept or reject the reasons mentioned by the user end. e) Inbuilt checks capability should be provided, which can be configured by the administrator at central to put alarms according to requirement on data, errors generated or on diagnostics of systems. f) The software at central should have facility to log in data validation requests. These requests will carry the erroneous data for user selected period and for which user at station will request to change	

Sr. No.	Specifications	Description	Bidder's Response
		<p>the data due to environmental or instrumental operation conditions. These requests will reside in central location and whenever user at central agrees the data will be changed in the validated database. Hence, system will have two types of databases</p> <p>g) Raw database which can never be touched which has to be modified and corrected as per agreed conditions. The detail of user requesting or applying changes in corrected database should be recorded with time.</p>	
	<p><b>Data Display at Web (if not available facility may be developed by the firm)</b></p>	<p>a) System should have standard web display software in place. Central software should be capable to show the data in predefined formats at website on a physical map.</p> <p>b) The data from Corrected database shall be displayed on the web.</p> <p>c) Current data should be displayed on web page. There should be provisions to show no. of violations occurred, percentage of violation occurred at stations parameters comparing hourly, 8 hourly, 24 hourly and yearly standards Provision is required to change standard value, since standard values do change after certain period of time as per Govt. policy.</p> <p>d) Displayed web page should have facility of providing information to all with respect to environment as well as to provide specific files for downloading.</p> <p>e) The logo of CPCB should be displayed on webpage.</p> <p>f) The disclaimer have to be provided on the webpage</p> <p>g) Some predefined queries have to be developed to display the data on web page. A search page needs to be developed for converting data into meaningful format for the general public. Help in developing such kind of systems can be taken from existing running system at <a href="http://www.cpcb.gov.in/caaqm">www.cpcb.gov.in/caaqm</a> and <a href="http://www.cpcb.gov.in/cpcbpa">www.cpcb.gov.in/cpcbpa</a>.</p> <p>h) The current data displayed on the web should have comment inserting facility at individual data and for running data as well Like if any station instrument out of order then station official should be able to display message "Instrument under maintenance". Similarly, when data goes beyond a defined limit it should automatically display a predefined message as comment on webpage as "Data under Scrutiny".</p> <p>i) Automatic e-mail messages to be generated for the identified end users to start a corrective action. Station photos to be uploaded for the display along-with the data.</p> <p>j) User defined 05 pages may be developed additionally, if required by CPCB designs for which may be decided mutually.</p>	
	<p><b>Data Reports Generation</b></p>	<p>a) To prepare reports hourly, weekly, monthly, yearly in user defined interval and formats. Mean, Median, Percentile, Maximum, Standard deviation, Frequency</p>	

Sr. No.	Specifications	Description	Bidder's Response
		<p>analysis and Maximum Frequency analysis. System should have predefined user selectable procedures through which reports of any specific station or multi stations reports upto four parameters can be generated as per user selected time frame. Data Comparison Software should be able to compare any of the four channels irrespective of type of data in the system with respect to each other on a single time scale user selectable. Data Comparison on different time scale. Software should be able to compare data on the basis of different time scales like one station (x) parameter (y) of one given date is compared with other station (z) parameter (y) on any other date in a single graph. Data reports, calibration reports and status reports with user time periods. Historic multi - curves / graphs over user selectable time period.</p> <p>b) Report generation over user selectable Time (instantaneous or averaged over a period of 1, 15, 30 min, 1 hr, 4, 8,12, 16 and 24 hrs etc.). Diurnal variation, standard deviation, regression and other statistical parameter reporting possibilities with various available mathematical methods. If required separate report generation procedures have to be developed for which firm will be responsible for project duration.</p>	
	<b>Compatibility</b>	Should have compatibility with the latest Operating System with a contract of 05 (five) years from the date of SUPPLY of software for providing assistance to operate system at CPCB and all the new patches developed. for the software during these 05 years without additional cost. Software should have capability of data transmission with the presently available PROTOCOL (list attached).	
	<b>Security</b>	System should have the facility to have it Password protected or without password as decided by CPCB at the time of implementation. System software should be totally secured and any antivirus software required to run the system for the complete project duration has to be managed by the system provider.	
	<b>Other Technical Conditions</b>	<p>a) Hardware required for data transmission has to be made available by the firm and there should not be non-compatibility. Firm should have the capability to develop the Software PROTOCOL for data transmission from any system available in the field in future during next 05 years or up-to the project period.</p> <p>b) Should support the latest formats of Windows 32 bit or 64 bit or any other available platform like Linux etc.</p> <p>c) Manual of complete system should be provided.</p> <p>d) Firm should provide the hardware required for data acquisition along with all the software's required like OS, MS. Office, Networking software, Remote functionality software, Data uploading software on website, Data display software if required, and should</p>	

Sr. No.	Specifications	Description	Bidder's Response
		<p>maintain hardware for project duration.</p> <p>e) Since, system has to be placed in NIC domain for which the web software developed along-with the database and web server software should be certified by CERT-IN empanelled vendors for vulnerability. The system provider is responsible for fulfilling all criteria required to place the system at NIC domain. The firm will be responsible for entire duration of the project for any vulnerability if noticed by NIC.</p> <p>f) The computers required for the work will be procured by CPCB and configuration or the same will have to be provided by the system provider.</p> <p>g) Display board will be procured by the CPCB.</p>	
	<b>VALIDATION SYSTEM</b>	<p>At least three tier request generation and requests acceptance procedure is desired in the system. It is presumed that level 1 is station, level 2 is Central location at regional level and level 3 at Central level. The regional and central levels will have central station computers and software installed and stations will have station computer installed with station data acquisition software and data transmission software. The flow of data has to be from station to Regional Level and then to Central level. It is desired that environmental database has to be corrected for instrumentation issues as well as for the environmental issues. Hence, officials available at stations will communicate with central and state levels through system itself by commenting on the data. The respective data can be picked up from the database at station itself, corrected to the desired numbers and then transmitted to regional level central computer where, the administrator of system if agrees to the changes desired then data flows to the next level else request is rejected. If request will come to Central server for accepting or rejecting then central level should have authority of accepting or rejecting the data. If central level agrees to the changes than data should be changed in the corrected database else request should be rejected. Hence, there should be provisions for accepting or rejecting data at all three levels accordingly. Here, whenever such requests are generated, concerned administrators need to be sent email alerts.</p>	

Sr. No.	Specifications	Description	Bidder's Response
	<b>List of protocols for which CAAQM software should support</b>		
	Bayern-Hessen Intercomp5 Intercomp 6 Intercomp 1 LabCom Metek USA-1 Unor, Oxor AK R+P Defor MBF Blendmaster Multor Gemi Klimet Travelpilot DX-V	FH62 Konf. ChemPro 100 PVM100 MultiPD II VC820 X am 7000 TSI 30222/25 HG Monitor 3000 ESM FH40G	

	Adam Module CLD700 FH62 Hygrowin Gesytac II RFM433 NMEA183	Uras 14Modbus Binos1000 HP34970A Almemo Modbus DGH Module BH/Timo 9600	Thygan USA Turbulence Thies DL14/15 PR820R Innova1312 Multiwarn II MeteoBus Wind observer	AK Conf. Thermo Instr. PAC3 Data Collect SDR VDO Navigation	
	<b>SPECIFICATIONS OF DAY LIGHT &amp; NIGHT VISIBLE DATA DISPLAY SYSTEM</b>				
	Size of display System	8' x 12'			
	Visibility range	200 Meters (Day Time)			
	Nos. of display Line	4			
	Display of colour elements	Multi Colour (Red, Green and Blue)			
	Minimum life span of the system	10 Years			
	Smallest Character Size	260 mm x 190 mm (approx.)			
	Operating and Non-Operating Temperature	0 - 50 ° C			
	<b>Parameters</b>	<b>Concentration(µg / m<sup>3</sup>)</b>	<b>Standard Limit (µg / m<sup>3</sup>)</b>		
	Particulate Matter (PM10)	400	100		
	Particulate Matter (PM2.5)	160	60		
	SO2	35	80		
	NO2	79	80		
	CO	3320	2000		
	.....	.....	.....		
	.....	.....	.....		
	The display of above variable data should be supported with moving messages / slogans to be changed from time to time				
	Input Power requirement	Cluster LED based			
	Display Mounting	Weather proof casing to cope up with local Condition; Protection from all weather with shed from top to avoid rain/extreme Summer			
	Computer System	Software compatible with latest version			
	General	The display system should be capable to transfer the data from computer to Display Board through Modem System. The system should also have the facility to display the environment message, environmental picture through video camera / VCR / CD Player etc. for public awareness.			

## Annexure 42 Checklist to compare Firm's Technical capability

S. No.	Details	Capability of firm's software as on date	Firm agree or disagree to develop software in future	If firm agrees to develop application then time frame from individual activity
1.	Data transfer interval Max. 5 minutes from all locations?			
2.	System will transmit data along with diagnostics. If yes then how many channels diagnostics values shall be transmitted to central and at what duration?			
3.	System will transmit data along with Calibration values (Pre cal and Post Cal)?			
4.	Systfloor should remote calibration procedures in place of regional level and central level both?			
5.	System has remote configuration facility for regional and central level both?			
6.	System has database validation procedure in place?			
7.	Web software already de1400 x or not?			
8.	If Web software is available is it modifiable as per CPCB need by the firm?			
9.	Whether agree to develop five web pages as per mutual discussion			
10.	Web software with password and or without password			
11.	Password providing facility available at regional levels			
12.	Statistical tools available at web software or not?			
13.	System provider is capable of placing system in NIC domain			
14.	System provider will provide certification from CERT-IN empanelled firms			
15.	Data import from other files			
16.	Data export to other files			
17.	Pre-defined queries to be inbuilt for providing data to public whether these are already available or to be developed if yes then time frame?			
18.	Standards comparison and exceedances be reported on web			
19.	Different types of predefined formats of report preparation available or not?			
20.	Support various protocols available till date as listed provided or not?			

S. No.	Details	Capability of firm's software as on date	Firm agree or disagree to develop software in future	If firm agrees to develop application then time frame from individual activity
21.	If new protocol-based software is to be developed whether firm will			
22.	Unlimited Number of stations supported by Central Server software or not? If not then support for how many stations will be provided			
23.	System compatibility with Dialup/BB/2G/3G/Wireless available or not? If not, then what technologies supported as on date? What time frame if other to be develop			
24.	Software has Wind rose reports generating capability			
25.	Software has pollution rose generating facility			
26.	Software has diurnal variation facility			
27.	Software has mathematical tools			
28.	Software has 16 channels display at on page			
29.	Software has data communication error reports			
30.	System has error correction procedure			
31.	Software has parallel data display reports			
32.	Software has virtual channel deployment capacity			
33.	Software has data be properly procedures at stations or not? If yes then data can be off switch from station or not?			
34.	Software compatible for ANDROID technology			
35.	System Provider will provide all Hardware required at station and Central			
36.	System Provider to provide all necessary gauge for data acquisition, display, Analysis, website uploading etc.			

## Annexure 43 Locations for installations

Sr. No.	City/location of CAAQMS	No. of CAAQMS
1	Thane MC	03
2	Vasai-Virar MC	03
3	Kalyan-Dosmbivali MC	03
4	Pune MC	02
5	Pimpri Chinchwad MC	02
6	Mira-Bhayandar MC	02
7	Bhiwandi-Nizampur MC	02
8.	Nanded-Waghala MC	02
9.	Ulhasnagar MC	02
10.	Sangali-Miraj MC	02
11.	Chh. Sambhaji Nagar MC	02
12.	Nagpur MC	01
13	Nashik MC	01
14	Amravati MC	01
15	Ambarnath MC	01
16	Achalpur	01
17	Barshi (Solapur)	01
18	Bhusawal	01
19	Beed	01
20	Gondia	01
21	Ichalkaranji	01
22	Nandurbar	01
23	Osmanabad	01
24	Satara	01
25	Udgir	01
26	Wardha	01
27	Yavatmal	01
28	Washim (District Place)	01
29	Hingoli (District Place)	01
30	Buldhana (District Place)	01
31	Bhandara (District Place)	01
32	Gadchiroil (District Place)	01
33	Palghar (District Place)	01
34	Raigad (District Place)	01
35	Ratnagiri (District Place)	01
36	Sindhudurg (District Place)	01
37	City/Location will be declared in due course	03
	<b>Total</b>	<b>53</b>
<b>Buy-Back of Existing 07 numbers of CAAQMS "As is Where is Basis"</b>		
01	Karve Road Pune	01



Sr. No.	City/location of CAAQMS	No. of CAAQMS
02	Solapur	01
03	MPCB Aurangabad	01
04	Kalyan	01
05	Old MIDC Chandrapur	01
06	Municipal Corporation Nashik	01
07	Town Hall Nagpur	01
		01

## Annexure 44 Format for Bank Guarantee as EMD

B.G. No. Dated:

1. In consideration of you, ....., having its office at ....., (hereinafter referred to as the “Authority”, which expression shall unless it be repugnant to the subject or context thereof include its, successors and assigns) having agreed to receive the Bid of ..... (a company registered under the Companies Act, 1956/ 2013) and having its registered office at ..... (and acting on behalf of its Consortium) (hereinafter referred to as the “Bidder” which expression shall unless it be repugnant to the subject or context thereof include its/their executors, administrators, successors and assigns), for the ***RFP for Supply, Installation, Commissioning and Comprehensive Operation & Maintenance Services of 60 New Continuous Ambient Air Quality Monitoring Stations (CAAQMS) including Buy-back of 07 Existing CAAQMS in the State of Maharashtra*** project (hereinafter referred to as “the Project”) pursuant to the RFP Document dated ..... issued in respect of the Project and other related documents including without limitation the draft concession agreement (hereinafter collectively referred to as “Bidding Documents”), we (Name of the Bank) having our registered office at ..... and one of its branches at ..... (hereinafter referred to as the “Bank”), at the request of the Bidder, do hereby in terms of Clause 2.9 of the RFP Document, irrevocably, unconditionally and without reservation guarantee the due and faithful fulfilment and compliance of the terms and conditions of the Bidding Documents (including the RFP Document) by the said Bidder and unconditionally and irrevocably undertake to pay forthwith to the Authority an amount of INR . ..... (INR ..... only) (hereinafter referred to as the “Guarantee”) as our primary obligation without any demur, reservation, recourse, contest or protest and without reference to the Bidder if the Bidder shall fail to fulfil or comply with all or any of the terms and conditions contained in the said Bidding Documents.
2. Any such written demand made by the Authority stating that the Bidder is in default of the due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents shall be final, conclusive and binding on the Bank.
3. We, the Bank, do hereby unconditionally undertake to pay the amounts due and payable under this Guarantee without any demur, reservation, recourse, contest or protest and without any reference to the Bidder or any other person and irrespective of whether the claim of the Authority is disputed by the Bidder or not, merely on the first demand from the Authority stating that the amount claimed is due to the Authority by reason of failure of the Bidder to fulfil and comply with the terms and conditions contained in the Bidding Documents including
4. failure of the said Bidder to keep its Bid open during the Bid validity period as set forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs. .... (Rupees ..... only).
5. This Guarantee shall be irrevocable and remain in full force for a period of 180 (one hundred and eighty) days from the Bid Due Date inclusive of a claim period of 60 (sixty) days or for such extended period as may be mutually agreed between the Authority and the Bidder, and agreed to by the Bank, and shall continue to be enforceable till all amounts under this Guarantee have been paid.

6. We, the Bank, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, *inter alia*, the failure of the Bidder to keep its Bid open during the Bid validity period set forth in the said Bidding Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, Tribunal, Arbitrator or any other authority.
7. The Guarantee shall not be affected by any change in the constitution or winding up of the Bidder or the Bank or any absorption, merger or amalgamation of the Bidder or the Bank with any other person.
8. In order to give full effect to this Guarantee, the Authority shall be entitled to treat the Bank as the principal debtor. The Authority shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee from time to time to vary any of the terms and conditions contained in the said Bidding Documents or to extend time for submission of the Bids or the Bid validity period or the period for conveying acceptance of Letter of Award by the Bidder or the period for fulfilment and compliance with all or any of the terms and conditions contained in the said Bidding Documents by the said Bidder or to postpone for any time and from time to time any of the powers exercisable by it against the said Bidder and either to enforce or forbear from enforcing any of the terms and conditions contained in the said Bidding Documents or the securities available to the Authority, and the Bank shall not be released from its liability under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the said Bidder or any other forbearance, act or omission on the part of the Authority or any indulgence by the Authority to the said Bidder or by any change in the constitution of the Authority or its absorption, merger or amalgamation with any other person or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of releasing the Bank from its such liability.
9. Any notice by way of request, demand or otherwise hereunder shall be sufficiently given or made if addressed to the Bank and sent by courier or by registered mail to the Bank at the address set forth herein.
10. We undertake to make the payment on receipt of your notice of claim on us addressed to [name of Bank along with branch address] and delivered at our above branch which shall be deemed to have been duly authorised to receive the said notice of claim.
11. It shall not be necessary for the Authority to proceed against the said Bidder before proceeding against the Bank and the guarantee herein contained shall be enforceable against the Bank, notwithstanding any other security which the Authority may have obtained from the said Bidder or any other person and which shall, at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealised.
12. We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of the Authority in writing.
13. The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorised and has full power to execute this Guarantee for and on behalf of the Bank.

14. For the avoidance of doubt, the Bank's liability under this Guarantee shall be restricted to Rs. .... crore (INR ..... crore only). The Bank shall be liable to pay the said amount or any part thereof only if the Authority serves a written claim on the Bank in accordance with paragraph 9 hereof, on or before [..... (indicate date falling 180 days after the Bid Due Date)].

Signed and Delivered by ..... Bank

By the hand of Mr./Ms ....., its ..... and authorised official.

(Signature of the Authorised Signatory)

(Official Seal)