

DETAILED INVITATION FOR BIDS

RAJASTHAN STATE POLLUTION CONTROL BOARD (RSPCB), JAIPUR

THROUGH

NTPC LIMITED (CONSULTANCY WING)

INVITATION FOR BIDS (IFB)

FOR

**SUPPLY, INSTALLATION, COMMISSIONING, OPERATION & MAINTENANCE SERVICES
FOR CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS) &
MOBILE AAQMS IN RAJASTHAN**

(Domestic Competitive Bidding)

IFB No. : 2021_NTPC_48425

Date 12.04.2021

Bidding Document No.: CW-CM-11080-C-O-M-001

1.0 NTPC invites online bids through e-tender on Single Stage Two Envelope Compliant bid basis (Envelope-I: Techno-Commercial Bid & Envelope-II: Price Bid) from eligible bidders for aforesaid Package. NTPC Ltd. Consultancy Wing has been engaged as “Consultant” by RSPCB for the above Package.

2.0 BRIEF SCOPE OF WORK:

The Scope of Works under the package shall include:

- A) The supply on FOR destination basis i.e. including packing, transportation, insurance and delivery to site, installation, testing and commissioning of equipment and provision of training of RSPCB officials station wise.
- B) Operation & Maintenance of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and Mobile AAQMS for a period of seven (07) years from the date of commissioning of the station.
- C) Report of data pertaining to CAAQMS & Mobile AAQMS to RSPCB/CPCB.
- D) On line transfer of data to RSPCB/CPCB

Other services involved with performance of the Works are specified in bid document.

3.0 RSPCB intends to finance the subject package through Own Resources/ partial assistance of CPCB.

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4.0 Detailed specification, scope of work and terms & conditions are given in the bidding documents as per the following schedule. A complete set of Bidding Documents may be downloaded by any interested Bidder from our e-Tender Site <https://eprocurmentpc.nic.in>

Bidding Document No. : CW-CM-11080-C-O-M-001

Downloading of Bidding Document : From 12.04.2021 to 12.05.2021

Last date for receipt of Queries from bidders (if any) : 28.04.2021

Pre-bid Conference : 29.04.2021

Bid Receipt Date & Time : Upto 12.05.2021 by 17:30hrs (IST)
for both Techno-Commercial and Price Bids

Bid Opening Date & Time : 13.05.2021 at 15:00hrs (IST)
for Techno-Commercial Bid

Bid Opening Date & Time for Financial Bid : Shall be intimated through e-tender portal by NTPC.

Cost of Bidding Document: INR 22,500/- (Indian Rupees Twenty Two Thousand Five Hundred only).

5.0 All bids must be accompanied by "Bid Security Declaration" in lieu of Bid Security in the form as stipulated in the Bidding Documents. ANY BID NOT ACCOMPANIED BY AN ACCEPTABLE "BID SECURITY DECLARATION" IN A SEPARATE SEALED ENVELOPE SHALL BE REJECTED BY THE EMPLOYER AS BEING NON-RESPONSIVE AND SHALL NOT BE OPENED.

6.0 **QUALIFYING REQUIREMENTS FOR BIDDERS:**

This invitation for the Bid is open to any bidder who is a reputed manufacturer or authorized representative of the manufacturer, who on its own or along with his associate as O&M partner meets the Qualifying Requirements stipulated hereunder for participation in the tender. The bidder shall furnish satisfactory evidence to establish that bidder meets the following qualifying requirements:

6.1 The bidder should be a manufacturer of items (i.e. Analyzers, Monitors, Calibrators and Sensors), who must have manufactured, supplied, tested and commissioned minimum twenty (20) nos. similar air monitoring stations either container based or otherwise in last five years (reckoned as on date of techno-commercial bid opening) which should be in continuous operation as on date of techno-commercial bid opening. As evidence of being a manufacturer, bidder must enclose copy of manufacturer's license/manufacturer's brochure or catalogue for the aforesaid items i.e. Analyzers, Monitors, Calibrators and

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Sensors. As evidence of having manufactured, supplied and commissioned the stations, bidder must enclose copy of purchase orders/letters of award/agreement, clearly indicating the scope of work, which must include the supply and commissioning of ambient air monitoring stations either container based or otherwise.

- 6.2 For the item(s) not manufactured by the Bidder (i.e. Analyzers, Monitors, Calibrators and Sensors), the bidder should be authorized by the manufacturer(s) for these items as per the format "Form of letter of authorities" provided as Attachment 3T of Section III.
- 6.3(i) Bidder or their associate as O&M partner should have adequate financial capability to execute the contract. The bidder must have average annual turnover of minimum Rupees 42Crores (Rupees Forty Two Crores) over last three years. The annual turnover is to be supported by annual report. Detail of annual turnover shall be furnished as per Attachment 8AT Section III.
- (ii) In case a Bidder does not satisfy the average annual turnover criteria, stipulated above on its own, its Holding Company would be required to meet the stipulated turnover requirements as above, provided that the Net Worth of such Holding Company as on the last day of the preceding financial year is at least equal to or more than the paid-up share capital of the Holding Company. In such an event, the Bidder would be required to furnish along with its Techno-Commercial bid, a Letter of Undertaking from the Holding Company, supported by the Holding Company's Board Resolution, as per the format enclosed in the bid documents, pledging unconditional and irrevocable financial support for the execution of the Contract by the Bidder in case of award.
- 6.4 Bids of bidders quoting as authorized representative of a manufacturer can also be considered, provided:
- (i) the manufacturer furnishes a legally enforceable authorization certificate in the prescribed form at Attachment-3T Section-III, assuming full guarantee and O&M obligations as per GCC and SCC, for the goods offered; and
- (ii) The bidder, as authorized representative, supplied, tested and commissioned minimum Ten(10) nos. similar air monitoring stations either container based or otherwise in any one year of the last five years which should be in continuous operation for last two (2) years as on date of techno-commercial bid opening.
- 6.5 The bidder should furnish the information on all past supplies and/or satisfactory performance for both 6.1 and 6.4 (ii) above, in "Performance Statement" as per Attachment No. 8BT& 8CT respectively of Section III. Further, the bidder shall furnish documentary evidences from minimum 2 nos. different clients in favor of bidder in support of continuous operation of minimum Five (5) nos. similar air monitoring stations, which is in use for last two (2) years.
- 6.6 The bidder or their associates with an O&M partner in India (any authorized agency in India) should have well trained O&M personnel as per following details to establish this. Bidder should enclose the curriculum vitae of following persons with required experience:

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Sl. No.	Responsibility	No. of Persons	Minimum Qualification	Experience
1.	Project Manager	1	Graduate Engg./ M.Sc.	10 years
2.	Technician	10	Diploma in Electronics/C&I/ Electrical	3 years
3	Data Analyst	2	Science Graduate with IT background or IT Engg./MCA or statistics graduate	2 Years

*The Team deputed can be changed only after permission from RSPCB.

The bidder shall furnish the above details in the format as per Attachment 9T of section-III.

6.7 The O&M partner shall furnish an undertaking regarding carrying out satisfactory O&M of CAAQMS covered in this document as per terms & conditions of the document on behalf of the bidder. This information is to be provided as per Attachment 5T& 9T of Section III.

6.8 Notwithstanding anything stated above, the owner reserves the right to assess the bidder's capability and capacity to perform the contract, should the circumstances warrant such assessment in the overall interest of the owner.

Note: "Similar air monitoring stations" stands for CAAQM stations containing at least five analyzers out of eight base analyzers.

7.0 RSPCB/NTPC reserves the right to reject any or all bids or cancel/withdraw the Invitation for Bids without assigning any reason whatsoever and in such case no Bidder / intending Bidder shall have any claim arising out of such action.

8.0 A complete set of Bidding Documents may be downloaded by any interested Bidder. However, vendors need to submit tender-fee NEFT /RTGS only online portal on payment (non-refundable) of the cost of the documents as mentioned above directly through the payment gateway at our e-Tender Site (<https://eprocurementpc.nic.in>).

9.0 Bids shall be submitted online and opened at the address given below in the presence of Bidder's representatives who choose to attend the bid opening. Bidder shall furnish Bid Security Declaration, Power of Attorney, Integrity pact in physical form as detailed in Bidding Documents before the stipulated bid submission closing date and time at the address given below.

10.0 'Class-I local suppliers' and 'Class-II local suppliers' only are eligible to participate in this tender, as defined in the bidding documents/ Public Procurement (Preference to Make in India), Order 2017 and its subsequent amendments/ revisions issued by DPIIT.

The bidders may apprise themselves of the relevant provisions of bidding documents in this regard before submission of their bids."

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11.0 **Address for communication:**

Manager (C&M),
Consultancy Wing, NTPC Ltd,
Room No. 205, EOC Annexe Building,
A-8A, Sector-24, Noida,
Gautam Budh Nagar-201301 (UP).
Tel. No. 0120-4947244
E-mail: akpurty@ntpc.co.in

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SECTION – I
INSTRUCTION TO BIDDERS



RAJASTHAN STATE POLLUTION CONTROL BOARD



CONSULTANT: NTPC LIMITED
(A Government of India Enterprise)

INSTRUCTION TO BIDDERS

VOLUME 1: SECTION I (ITB)

INSTRUCTIONS TO BIDDERS

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Important: Bidders are expected to examine the Bidding Documents carefully and are deemed to have received and read all documents. It shall be the responsibility of the Bidder to request copies of any missing documents. Failures to do so will be at the Bidder's risk.

INSTRUCTION TO BIDDERS

1.0 DEFINITIONS

The terms used in this bidding document shall have the meaning defined hereunder:

- 1.1 “The Project” or “The Works” means supply, installation & Commissioning of equipments for Continuous Ambient Air Quality Monitoring Stations (CAAQMS) & Mobile AAQMS and Operation & Maintenance of these stations at the pre-defined city/ location.
- 1.2.1 “RSPCB” means the **Rajasthan State Pollution Control Board having its office at 4, Institutional Area, Jhalana Doongri, Jaipur, India and shall include any person or persons authorized by the RSPCB. The RSPCB is also executing agency of the Project. “The Owner” means the RSPCB.**
- 1.2.2 “The Consultant” means **NTPC LTD. Consultancy Wing**, having its office at EOC Annexe Building, Sector-24, NOIDA, India and shall include any person or persons authorized by the NTPC LTD. Consultancy Wing.
- 1.3 “The Bid” means the offer or proposal of the Bidder to be submitted for the works in accordance with the stipulations set forth in this Bidding Documents.
- 1.4 “The Techno-commercial Bid” means the Techno-commercial part of the Bid.
- 1.5 “The Financial Bid” or the price bid means the financial part of the Bid.
- 1.6 “The Bidder” means either the manufacturer of the Equipment or his authorized Representative, who submits the Bid for the Works.
- 1.7 “The Authorized representative” means the bidder who has enclosed the manufacturer’s authorization as per the format “Form of letter of authorities” provided as Attachment 3 of Section III.
- 1.8 “The Contractor” means the Bidder, whose Bid for the Works has been accepted by the RSPCB/NTPC and includes his representatives, successors and authorized assignees.
- 1.9 “The Manufacturers” means the firms, which produces the equipment to be furnished by the Contractor under the Contract with the RSPCB.
- 1.10 “The Bidding Documents” mean all the documents in Volume-I and II in the bidding documents annexed thereto.
- 1.11 “The Contract” means the written agreement to be concluded between the RSPCB/NTPC and the Contractor and includes terms and conditions stipulated on the Bidding Documents and any other descriptions annexed thereto which form an integral part of the agreement to be provided by the RSPCB/NTPC.
- 1.12 “The Equipment” means all kind of materials, machinery, components, apparatus, articles and instruments for the Project to be provided by the Contractor to the RSPCB under the Contract.
- 1.13 “The Specifications” means the specifications of the Works to be performed by the Contractor in conformity with those specified in the Technical Specifications of Volume-II and all other related documents in the Bidding Documents, and modifications thereof or additions thereto as may from time to time be made and approved in writing by the RSPCB through the Consultant in case prior to the Contract and agreed upon by both the RSPCB and the Contractor after the Contract.
- 1.14 “S/W” means the Scope of Works in Section-II of this Volume.

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INSTRUCTION TO BIDDERS

- 1.15 "The Sites" means CAAQMS& Mobile AAQMS at the defined city/ location.
- 1.16 "The Contract Price" means the price payable to the contractor under the contract for the full and proper performance of its contractual obligations.

2.0 INTRODUCTION

2.1 RSPCB **through NTPC** intends to invite online bids through e-tender from eligible bidders for supply, installation & commissioning of equipments for Continuous Ambient Air Quality Monitoring Station (CAAQMS) & Mobile AAQMS and Operation & Maintenance of this CAAQMS& Mobile AAQMS at specified city / location.

2.2 Scope of Works

The description of Scope of Works is set forth in Section-II of this Volume-I.

2.3 Size of Bid and Type of Bidding

The whole bid is for single composite package as detailed at Section - II i.e. Scope of Work.

Single Stage Two Envelope Compliant bidding procedure shall be followed for the subject Package. Bidders shall submit the complete Envelope-I: Techno-commercial Bid and Envelope-II: Financial Bid together in respective part.

2.4 Eligible Equipment and conformity to the bidding documents

- (1) Bidding is open to bidders from within the Employer's country, ***subject to fulfillment of conditions specified in ITB Clause 2.6 "Restrictions on procurement from a Bidder of a country which shares a land border with India"***.

Bidders shall also certify their compliance to ITB Clause 2.6 "Restrictions on procurement from a Bidder including his associate/subcontractor etc. of a country which shares a land border with India" by accepting the following attribute at e-tender portal:

"Do you certify full compliance on ITB Clause "Restrictions on procurement from a Bidder of a country which shares a land border with India"?"

Acceptance of above attribute shall be considered as Bidder's confirmation that Bidder has read and understood the ITB Clause regarding "Restrictions on procurement from a Bidder of a country which shares a land border with India" and its bid is in compliance to this clause.

In case it is established that Bidder has provided any false information in pursuance of the aforesaid ITB Clause, while competing for this contract, then its bid shall be rejected.

In case of a successful bidder, if it is established that the Bidder has not complied with terms of aforesaid ITB Clause, during execution of contract, this would be a sufficient ground for immediate termination of the contract as per GCC Clause titled 'Termination for Default' and shall be dealt accordingly.

- (2) For the purpose of this clause "origin" means the place where the equipment or component parts thereof are grown, or produced. Equipment are produced when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

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- (3) The Bidder shall furnish the Certificate of Country of Origin (duly authenticated by competent authority of that country) of each Equipment (as per Attachment 4T to Section III) in these instructions, as the documentary evidence of the eligibility of the Equipment.
- (4) The origin of equipment maybe distinct from the nationality of the bidders.
- (5) Conformity of the Bidding documents may be in the form of literature, drawings, and data, and the Bidder shall also furnish:
 - a) A detailed description of equipment, essential technical and performance characteristics.
 - b) A list giving full particulars, including available sources of all spares (whether mandatory or recommended) and their prices, special tools etc., necessary for the proper and continued functioning / maintenance of the equipment on long term basis.
 - c) An inventory of the spare parts for each equipment available with the O&M partner in India mentioning the ones not available in India and have to be imported in case necessary after the expiry of O&M period.
 - d) A clause-by-clause commentary of the RSPCB/NTPC's Technical Specifications demonstrating the equipment's substantial responsiveness of these specifications.

The above stated requirements are a minimum and the RSPCB/NTPC reserves the right to request any additional information concerning the Bid Proposal in response to this Invitation of Bids.

2.5 QUALIFYING REQUIREMENTS FOR BIDDERS:

This invitation for the Bid is open to any bidder who is a reputed manufacturer or authorized representative of the manufacturer, who on its own or along with his associate as O&M partner meets the Qualifying Requirements stipulated hereunder for participation in the tender. The bidder shall furnish satisfactory evidence to establish that bidder meets the following qualifying requirements:

- 2.5.1 The bidder should be a manufacturer of items (i.e. Analyzers, Monitors, Calibrators and Sensors), who must have manufactured, supplied, tested and commissioned minimum twenty (20) nos. similar air monitoring stations either container based or otherwise in last five years (reckoned as on date of techno-commercial bid opening) which should be in continuous operation as on date of techno-commercial bid opening. As evidence of being a manufacturer, bidder must enclose copy of manufacturer's license/manufacturer's brochure or catalogue for the aforesaid items i.e. Analyzers, Monitors, Calibrators and Sensors. As evidence of having manufactured, supplied and commissioned the stations, bidder must enclose copy of purchase orders / letters of award/agreement, clearly indicating the scope of work, which must include the supply and commissioning of ambient air monitoring stations either container based or otherwise.
- 2.5.2 For the item(s) not manufactured by the Bidder (i.e. Analyzers, Monitors, Calibrators and Sensors), the bidder should be authorized by the manufacturer(s) for these items as per the format "Form of letter of authorities" provided as Attachment 3T of Section III.
- 2.5.3(i) Bidder or their associate as O&M partner should have adequate financial capability to execute the contract. The bidder must have average annual turnover of minimum Rupees 42 crores (Rupees Forty Two Crores) over last three years. The annual turnover is to be supported by annual report. Detail of annual turnover shall be furnished as per Attachment 8AT Section III.

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(ii) In case a Bidder does not satisfy the average annual turnover criteria, stipulated above on its own, its Holding Company would be required to meet the stipulated turnover requirements as above, provided that the Net Worth of such Holding Company as on the last day of the preceding financial year is at least equal to or more than the paid-up share capital of the Holding Company. In such an event, the Bidder would be required to furnish along with its Techno-Commercial bid, a Letter of Undertaking from the Holding Company, supported by the Holding Company's Board Resolution, as per the format enclosed in the bid documents, pledging unconditional and irrevocable financial support for the execution of the Contract by the Bidder in case of award.

2.5.4 Bids of bidders quoting as authorized representative of a manufacturer can also be considered, provided:

- (i) the manufacturer furnishes a legally enforceable authorization certificate in the prescribed form at Attachment-3T Section-III, assuming full guarantee and O&M obligations as per GCC and SCC, for the goods offered; and
- (ii) The bidder, as authorized representative, supplied, tested and commissioned minimum Ten(10) nos. similar air monitoring stations either container based or otherwise in any one year of the last five years which should be in continuous operation for last two (2) years as on date of techno-commercial bid opening.

2.5.5 The bidder should furnish the information on all past supplies and/or satisfactory performance for both 2.5.1 and 2.5.4 (ii) above, in "Performance Statement" as per Attachment No. 8BT& 8CT respectively of Section III. Further, the bidder shall furnish documentary evidences from minimum 2 nos. different clients in favor of bidder in support of continuous operation of minimum Five (5) nos. similar air monitoring stations, which is in use for last two (2) years.

2.5.6 The bidder or their associates with an O&M partner in India (any authorized agency in India) should have well trained O&M personnel as per following details to establish this. Bidder should enclose the curriculum vitae of following persons with required experience:

Sl. No.	Responsibility	No. of Persons	Minimum Qualification	Experience
1.	Project Manager	1	Graduate Engg./ M.Sc.	10 years
2.	Technician	10	Diploma in Electronics/C&I/ Electrical	3 years
3	Data Analyst	2	Science Graduate with IT background or IT Engg./MCA or statistics graduate	2 Years

*The Team deputed can be changed only after permission from RSPCB.

The bidder shall furnish the above details in the format as per Attachment 9T of section III.

2.5.7 The O&M partner shall furnish an undertaking regarding carrying out satisfactory O&M of CAAQMS covered in this document as per terms & conditions of the document on behalf of the bidder. This information is to be provided as per Attachment 5T& 9T of Section III.

2.5.8 Notwithstanding anything stated above, the owner reserves the right to assess the bidder's capability and capacity to perform the contract, should the circumstances warrant such assessment in the overall interest of the owner.

Note: "Similar air monitoring stations" stands for CAAQM stations containing at least five analyzers out of eight base analyzers.

INSTRUCTION TO BIDDERS

2.6 “Restrictions on procurement from a Bidder of a country which shares a land border with India”:

2.6.1 Any Bidder (including its Collaborator/Associate/DJU Partner/JV partner/Consortium Member/Assignee, wherever applicable) from a country which shares a land border with India will be eligible to bid in this tender only if bidder is registered with the Competent Authority as mentioned in Special Conditions of Contract(SCC) Annexure-I.

Such registration should be valid for the entire period of bid validity or any extension thereof. However, in case the validity period of registration is less than bid validity period, the Bidder shall be required to submit the extension of the validity period of registration before the opening of price bids, failing which the bid shall be rejected.

Further, the successful bidder shall not be allowed to sub-contract supplies/services/works to any “Sub-contractor” from a country which shares a land border with India unless such Sub-contractor is registered with the competent Authority as mentioned in SCC.

However, the said requirement of registration will not apply to sub- contractors from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects. Bidders may apprise themselves of the updated lists of such countries available in the website of the Ministry of External Affairs.

2.6.2 “Bidder” (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency, branch or office controlled by such person, participating in a procurement process.

2.6.3 “Sub-contractor” (including the term ‘Sub-vendor’/Sub-supplier’ in certain contexts) means any person or firm or company, every artificial juridical person not falling in any of the descriptions of Sub-contractors stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

2.6.4 “Bidders from a country which shares a land border with India” /“Sub-contractor from a country which shares a land border with India” mentioned in para 2.6.1 above means;

- a) An entity incorporated, established or registered in such a country; or
- b) A subsidiary of an entity incorporated, established or registered in such a country; or
- c) An entity substantially controlled through entities incorporated, established or registered in such a country; or
- d) An entity whose *beneficial owner* is situated in such a country; or
- e) An Indian (or other) agent of such an entity; or
- f) A natural person who is a citizen of such a country; or
- g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.

2.6.5 The beneficial owner for the purpose of clause “2.6.4” above will be as under;

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- a) In case of company of Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation-

- i. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company;
 - ii. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholdings or management rights or shareholders agreements or voting agreements;
- b) In case of a partnership firms, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more judicial person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
- c) In case of an unincorporated associations or body of individuals, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
- d) Where no natural person is identified under (a) or (b) or (c) above, the beneficial owner is the relevant natural person who holds the position of senior managing officials;
- e) In case of a trust, the identifications of beneficial owner(s) shall include identification of the author of trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

2.6.6 An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

3.0 BIDDING DOCUMENTS

3.1 Download of Documents

A complete set of Bidding Documents may be downloaded by any interested Bidder from our e-Tender Site <https://eprocurentpc.nic.in> as detailed in the IFB.

Bidding Documents are not transferable.

3.2 Confidentiality of Documents

All parties who are downloading the Bidding Documents, regardless of whether the Bid is submitted or not, shall treat the details of the documents as private and confidential.

3.3 Check of the Bidding Documents

Upon receipt/downloading of the Bidding Documents, the Bidder shall check the number of pages and drawings and notify the consultant of any missing or duplicate pages and drawings or of any figures or words, which may be indistinct or ambiguous. No claim will be admitted as a result of the Bidder's failure to comply with the foregoing. The address for the contact is specified in Sub-clause 3.5 of this Instruction.

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3.4 Contents of Bidding Documents

- (i) The Bidding Documents include:

Volume I:

- a) INVITATION FOR BIDS: DETAILED IFB
- b) SECTION I : INSTRUCTION TO BIDDERS
- c) SECTION II : SCOPE OF WORKS
- d) SECTION III : FORM OF TECHNO-COMMERCIAL BID
- e) SECTION IV : FORM OF FINANCIAL BID
- f) SECTION V : GENERAL CONDITIONS OF CONTRACT
- g) SECTION VI : SPECIAL CONDITIONS OF CONTRACT

Volume II : TECHNICAL SPECIFICATIONS

- (ii) Bidders must acquaint themselves with all the Bidding Documents contained in Volume I and Volume II. In order to familiarize with the Works, the Bidders should ascertain all particulars regarding the location and site conditions at their own expenses. No plea attributed to lack of information or insufficient information will be entertained at any time.

The RSPCB/NTPC shall reserve the right and privilege to settle the affairs in case any doubt may occur concerning the Bidding Documents.

3.5 Clarification of Bidding Documents

- (i) If a prospective Bidder has any doubt as to the meaning of any part of the Bidding Documents, he may notify NTPC for supplementary information and explanation through e-tender website or in writing by e-mail indicated below in compliance with Form of Questionnaire of Attachment 1T in Section-III at least seven (7) days before the closing date of the bid submission.

(a) Manager (C&M),
Consultancy Wing, NTPC Ltd,
Room No. 205, EOC Annexe Building,
A-8A, Sector-24, Noida,
Gautam Budh Nagar-201301 (UP).
Mobile No. 9437107938
Tel. No. 0120-4947244
E-mail: akpurty@ntpc.co.in

(b) Addl. General Manager (C&M),
Consultancy Wing, NTPC Ltd,
Room No. 225, EOC Annexe Building,
A-8A, Sector-24, Noida,
Gautam Budh Nagar-201301 (UP).
Tel. No. 0120-2410667
E-mail: akchaurasia@ntpc.co.in

No queries from Bidders shall be entertained after last date of receipt of Queries/ Pre-Bid Conference (if applicable) as specified in IFB/NIT. Accordingly, any query(ies) received from Bidders after the cut-off date shall not be entertained.

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(ii) Pre-Bid Conference

The Bidder or his authorized representative is invited to attend the pre-bid conference to be held at the office of the consultant at 2nd Floor, EOC Annexe Building, A-8A, Sector-24, NOIDA – 201301 on the date & time mentioned in the IFB for CAAQMS Package. If required the Pre-bid conference will continue on next day. In case of exigencies, Pre-Bid Conference shall be held online on MS Teams.

- a) The purpose of the conference will be to clarify any issues regarding the Bidding Document.
- b) The bidder is required to submit questions on the e-tender portal or by email not later than seven days prior to the pre-bid conference.
- c) Any modification of the Bidding Document which may become necessary as a result of the pre-bid conference shall be made by the Owner/Consultant exclusively through an addendum to the bidding documents on e-tender platform.
- d) Non-attendance of the pre-bid conference will not be a cause for disqualification of a bidder.
- e) The bidder shall depute maximum two authorized persons to take part in pre-bid conference.
- f) The bidder is not expected to raise any additional query after pre-bid conference and the Owner/Consultant is not obliged to reply any such queries.
- g) The pre-bid conference shall be open to those intending bidders who have purchased the Bid Documents.

3.6 Amendment of Bidding Documents

- (1) At any time prior to the deadline for submission of the Bid, the RSPCB/NTPC, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, may modify the Bidding Documents by amendment.
- (2) The amendments will be posted on e-tender website for viewing by the Bidder. The amendments will be binding on Bidders and it will be assumed that the information contained therein will have been taken into account by the Bidder in its bid. Bidders are also advised to regularly check e-tender website for posting of Clarifications /Amendment, if any.
- (3) In order to allow prospective Bidders reasonable time in which to take amendment into account in preparing their Bids, the RSPCB/NTPC at its discretion may extend the deadline for submission of the Bid.

4.0 PREPARATION OF BID

4.1 Language

The Bid to be prepared by the Bidders, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the RSPCB or the Consultant shall be written in English language, provided that any printed literature furnished by the Bidder may be written in another language, as long as such literature is accompanied by a translation of its pertinent passages in English language in which case, for purposes of interpretation of the bid, the translation shall govern. Failure to comply with this may disqualify a bid.

The English Translation of the documents shall be carried out by professional translators and the translator shall certify that he is proficient in both languages in order to translate the document and that the translation is complete and accurate. Further, translation shall be authenticated by the Indian Consulate located in the Country where the documents have been issued or the Embassy of that Country in India.

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INSTRUCTION TO BIDDERS

4.2 One Bid per Bidder

Each Bidder shall submit one Bid only. A Bidder who submits or participates in more than one Bid in a particular package will be disqualified.

4.3 No Deviation Certificate

No deviation, whatsoever, is permitted by the Employer, to any of the provisions of the Bidding Documents. The Bidders are advised that while making their Bid Proposals and quoting prices, the same may appropriately be taken into consideration.

Bidders are required to necessarily confirm their acceptance to this provision / attribute on line under GTE.

“Do you certify full compliance to all provisions of Bidding Documents”

Acceptance of above GTE shall be considered as Bidder's confirmation that any deviation to any Provisions found anywhere in their Bid Proposal, implicit or explicit, shall stand unconditionally withdrawn, without any cost implication whatsoever to the Employer.

Bids of the bidders not accepting the above GTE will be rejected.

4.4 Bid Security Declaration

The Bidder shall furnish, as part of its Bid, a Bid Security Declaration in a separate envelope.

The format of the Bid Security Declaration shall be in accordance with the form of bid security declaration included in the Bidding Documents at Attachment-10T.

Wherever Bids under Joint Venture route are permitted as per the Qualifying Requirements in the Bidding Documents, the Bid Security Declaration by the Joint Venture must be on behalf of all the partners of the Joint Venture.

The Bid Security Declaration in Original shall be submitted in a separate sealed envelope before the stipulated bid submission closing date and time. In case acceptable Bid Security Declaration in a separate sealed envelope is not received then online Bid shall be rejected by EMPLOYER as being non-responsive and shall not be opened.

In case a Bidder does not submit the aforesaid declaration or no confirmation is indicated by them or statement/any declaration like 'later', 'to be furnished later', 'NA' etc. are indicated against the declaration, then the bid shall be rejected by EMPLOYER as being non-responsive and shall not be opened.

Any Bid Security Declaration received by the Employer after the bid submission deadline prescribed by the Employer will be rejected and returned unopened to the Bidder.

4.5 Validity of Bid

The bid shall remain valid and binding on the Bidder for one hundred eighty (180) days from the final time and date for submission of the Bid. Bid validity for a shorter period shall be rejected by the RSPCB/NTPC as non-responsive.

In exceptional circumstances, Employer may solicit the Bidder's consent to an extension of the bid validity period. The request and responses thereto shall be made in writing by post, or e-mail. A Bidder may grant or refuse the request. A Bidder granting the request will not be required nor permitted to modify its bid.

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Any Bidder may refuse to extend the validity of his Bid, but the Bid will not be considered.

4.6 Modification and Withdrawal of Bid

- a) The Bidder may modify or withdraw its Bid after the Bid's submission **prior to the deadline prescribed for submission of Bids.**
- b) The bidder's modification or withdrawal shall be prepared, sealed, marked, dispatched and uploaded in accordance with the provisions of clause 5 & 6 for Techno-commercial and financial bid respectively, with the outer and inner envelope additionally marked "MODIFICATION" or "WITHDRAWAL", as appropriate. A withdrawal notice may also be sent by e-mail but must be followed by a signed confirmation copy.
- c) No Bid shall be allowed to be modified subsequent to the deadline for submission of Bids.
- d) No bid may be withdrawn in the interval between the bid submission deadline and the expiration of the bid validity period specified in ITB Clause 4.5. Withdrawal of a bid during this interval may result in bidder being ineligible for participation in the future tenders issued from RSPCB/NTPC for a period of 06 months from the date of withdrawal of the bid.

4.7 Rejection of Bid

Failure by the Bidder to comply with the provisions of these Instructions to Bidders or any part of the Bidding Documents may result in rejection of the Bid.

The RSPCB/NTPC reserves the right to accept or reject any or all Bids or to amend the Bidding process at any time prior to award of the 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 the RSPCB/NTPC's action.

The RSPCB/NTPC also reserves to itself the right of accepting the whole or any part of the Bid and the Bidder shall be bound to perform the same at the rate quoted.

4.8 Contacting the RSPCB/NTPC

Except for responses to request for clarification of the Bid by the RSPCB/NTPC, the Bidder shall not contact the RSPCB/NTPC for any matter related to this Bid from the time of submission of the Bid until the Contract is awarded.

Any efforts by the Bidder to influence the RSPCB/NTPC in his decision in respect of evaluation of the Bid or award of the Contract shall result in the rejection of the Bid.

5.0 PREPARATION OF TECHNO-COMMERCIAL BID

Single stage two envelope bidding procedure shall be followed for the subjectPackage as under:

Envelope-I : Techno-commercial Bid

Envelope-II : Financial Bid

The techno-commercial bid submitted by the bidder through e-tender route shall comprise of following two categories documents:

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- I. To be submitted in hard copy in separate sealed envelopes.
- II. To be uploaded on e-tender site <https://eprocurementpc.nic.in>

5.1 Documents to be submitted in hard copy in separate sealed envelope

- 1) The bid security declaration furnished in accordance with ITB Clause 4.4 shall be sealed in a separate envelope duly marking the envelope as "BID SECURITY DECLARATION".
- 2) A power of attorney duly authorized by a Notary Public, indicating that the person(s) signing the bid has/have the authority to sign both [Techno-Commercial Bid and Financial Bid] the bid and that the bid is binding upon the Bidder during the full period of its validity. The Authority of the person issuing the Power of Attorney shall also be submitted.
- 3) Declaration / Affidavit of not being black listed/banned etc. shall be sealed in a separate envelope duly marking the envelope as "Declaration/Affidavit of not being Black listed/Banned etc." as per Attachment-18T.
- 4) The joint venture/consortium agreement (if applicable) shall be sealed in a separate envelope duly marking the envelope as "Joint Venture/Consortium Agreement".
- 5) Integrity Pact (IP) to be signed by the bidder and submitted in a separate envelope along with Techno-commercial bid.

In case of non-submission of above documents before the stipulated bid submission closing date and time by the bidder, such bids shall be rejected by Employer as being non-responsive and shall not be opened.

5.2 Qualification Documents (To be uploaded on e-procurement portal <https://www.eprocurementpc.nic.in>)

- 1) Attachments in support of meeting qualifying requirements as per Clause No. 2.5 for the quoted packages (Attachments 8AT, 8BT, 8CT & 9T of Section-III).
- 2) Copy of certificate of local branch, sales, residential and representative office(s) of the Bidder as per certificate form pursuant to Attachment 2T of Section-III.
- 3) Certificate of letter of authority from manufacturers for all the Equipment (Attachment 3T of Section III).
- 4) Certificate from manufacturer stating the country of origin of each Equipment duly authenticated by competent authority of that country (Attachment 4T of Section III).
- 5) Certificate of carrying out O&M by O&M Partner (Attachment 5T of Section III).
- 6) List of Equipment offered (Attachment 6T of Section III).
- 7) List of Manufacturers of the equipment offered (Attachment 7T of Section III).
- 8) Pre-requisite for installation of equipment offered (Attachment 11T of Section III).
- 9) All other necessary documents as per Clause No.2.5

5.3 Techno-commercial bid including Technical Specifications and Catalogs (To be uploaded online on e-procurement portal <https://eprocurementpc.nic.in>)

- 1) No Deviation Certificate (Attachment 12T of Technical Bid, Section-III).
- 2) Technical Data sheets of the Equipment in the package (Annexure-I, Vol. II) offered:
 - a) Deleted
 - b) Deleted

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- c) The Bidder shall clearly indicate contents and quantities of standard accessories for the proposed Equipment in the blanks.
 - d) The Bidder shall understand that decision of the RSPCB/NTPC will be binding in regards of anything not specifically mentioned in the technical specification.
 - e) The Bidders shall offer only one manufacturer, one brand and one model.
 - f) Complete set of original catalogues and/or photographs and/or pamphlets illustrating principal feature.
- 3) Form of acceptance of Fraud Prevention Policy duly filled in as per format.

6.0 PREPARATION OF FINANCIAL BID

The Price Bid is to be submitted online through e-tendering mode only.

(a) Item Data

Bidders shall fill the Price of Items in the Item Wise BoQ (Excel Sheet) and year wise O&M charges and re-upload the same without any modification / change in the template of the BoQ, on the e-tendering web site for computation of Total Quoted price.

(b) Attribute in General Data

The attributes, if mentioned in general data, requiring any confirmation/information are to be ticked/filled up suitably.

(c) Conditions in general data

The option to give discount (on the prices filled up in item data) in "Header Discount" field provided in conditions tab in general data shall not be allowed to bidder.

(d) Documents to be uploaded in price bid section.

Bidders shall also fill the prices in the forms of Financial Bid along with Bid Price Breakup for equipment and year wise O&M charges as given in Section IV and submit the same along with Bid Form as pdf file along with other documents to be uploaded online in price bid section.

6.1 Preparation of Financial Bid

The Bidder shall enter a price or rate against all the forms as specified in the following Sub-clauses from 6.2 to 6.5 and Attachments in Section IV.

6.2 Bid Form

The Bid Price to be quoted by the Bidder shall be prepared according to the Attachment 1F "Bid Form" in Section IV without any alteration or change.

The Bid Price shall be quoted for performing the Contract strictly in accordance with the Technical Specifications.

The Bid Price quoted by the Bidder shall be firm during the Bidder's performance of the Contract and not subject to variation on any account.

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A Bid Price submitted with an adjustable price will be treated as non-responsive and will be rejected.

6.3 Summary of Bid Price

Summary of Bid Price shall be prepared and submitted in accordance with the Attachment 2F in Section IV.

(i) The Bidder shall indicate prices for the package in the following manner:

Contract Price quoted for Supply part shall be on FOR destination basis and shall include all cost e.g. custom duty, transportation, insurance, installation, commissioning, training, etc. No additional charges will be paid by RSPCB. GST shall be payable extra as per applicable rate.

(ii) Cost of O&M of CAAQMS for Seven (7) years including insurance.

The Bidder shall include the price for the training as indicated in clause 10 of S/W(scope of work) in the total FOR destination contract price and no separate prices on account of training are payable. Cost of Travel, Boarding & Lodging and local transport cost of participants for the training shall be borne by the RSPCB.

Note:

- (1) Only GST shall be payable extra as per applicable rate. On requirement State Board may provide a user certificate consists of the locations details for installation of CAAQMS.
- (2) Quoted Price of O&M of a CAAQMS& Mobile AAQMS for each year should be at least 15% of the cost of Supply (FOR destination) of the CAAQMS. In case the bidder quotes O&M cost lower than 15% of the Supply(FOR destination) Price, the Owner will reduce the supply(FOR destination) cost suitably, so as to make the O&M cost as 15% of the Supply(FOR destination) cost, keeping the total quoted cost as unchanged.

6.4 Bid Price Breakup

The Bidder shall prepare and submit the Bid Price Breakdown for each item of the quoted package(s) in accordance with Attachment 3F in Section IV.

The Bidder shall prepare and submit break up of Operation & Maintenance of CAAQMS as per Attachment 3AF in Section-IV.

6.5 Currencies of Bid:

The unit rates and the prices shall be quoted by the bidder in Indian Rupees only.

7.0 COMPLETION AND SUBMISSION OF BID

7.1 Completion of Bids

The Bid including all attached documents shall be digitally certified using class III digital signature by a duly authorized representative of the bidder to bind him to the contract. The authorization shall be indicated by written power of attorney as per ITB clause 5.1(2) and shall be submitted in physical form prior to date & time of bid submission.

Files related to particular Attachment/Schedule including their Annexure/Appendices, if any, shall be given name of that Attachment/Schedule only.

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7.1.1 Techno-commercial Bid

Techno-commercial bid should not contain any price content entry. In case, the Techno-commercial bid is found to contain any price content, such bid shall be liable for rejection.

7.1.2 Financial Bid

While filling up the rates/amounts, the Bidder shall ensure that there is no discrepancy in the unit rates/amounts. In case of such a discrepancy, the rate/amount mentioned in Schedule of Quantities shall be taken as final and binding. Discrepancies and adjustment of errors shall be corrected in line with ITB Sub-Clause 11.2.

7.2 Submission of Bid

Bid shall be submitted online at e-tender site in the following manner and as specified elsewhere in bidding document. No manual/ hard copy of the bid shall be acceptable.

(a) Techno-Commercial Bid:

Bidder will attach the completed Technical Bid Form and Schedules along with all annexure as per Section-III. Bidders to ensure that all uploaded documents must be digitally certified. Bidders to further ensure that documents uploaded are being downloaded properly. RSPCB /NTPC shall not be responsible for corrupted files, if any, uploaded in e-tender site.

(b) Price Bid:

The bid form (Price Bid) as per Section-IV, duly completed together with the attachments and price schedules (Section-IV) shall be uploaded in general data through 'attachment' link.

(c) The following documents to be submitted in physical form at address mentioned at 3.5(i) shall be sealed and marked in the following manner

- (i) The bid security declaration in original, furnished in accordance with ITB Clause 4.4, shall be sealed in a separate envelope, duly marking the envelope as "ATTACHMENT-10T, BID SECURITYDECLARATION".
- (ii) The power of attorney furnished in accordance with ITB Clause 5.1 (2).
- (iii) Declaration / Affidavit of not being black listed/banned etc. shall be sealed in a separate envelope duly marking the envelope as "Declaration/Affidavit of not being Black listed/Banned etc."
- (iv) The joint venture/consortium agreement (if applicable) shall be sealed in a separate envelope duly marking the envelope as "Joint Venture/Consortium Agreement".
- (v) Integrity Pact (IP) to be signed by the bidder and submitted in a separate envelope alongwith Techno-commercial bid.

(d) The envelopes then shall be sealed in an outer envelope. The outer envelope shall:

- (i) be addressed to NTPC at the address given in the Invitation for Bid, and
- (ii) bear the package name, IFB No. and the statement "DO NOT OPEN BEFORE [date]."

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- (e) The inner envelopes shall also indicate the name and address of the Bidder.
- (f) If the outer envelope is not sealed and marked as required by ITB Sub-Clause 7.2(d) above, the NTPC will assume no responsibility for the misplacement of the bid.

The Bids once opened shall not be returned to the Bidders regardless of the result of the Bid. This will apply to both the Techno-commercial and financial bids in case a bidder is not qualified at the stage of Techno-commercial evaluation.

8.0 OPENING AND EVALUATION OF TECHNO-COMMERCIAL BID

8.1 Opening of Technical Bid

Only the Technical Bid will be opened at the place specified in Sub-Clause 3.5(i) here above. Bidders or their representatives may attend the opening.

During opening of the Techno-commercial Bid, the Bidder's name, the presence or absence of necessary envelopes, withdrawals of the Bid and such other details as the NTPC at their discretion may consider appropriate will be announced and recorded.

All the Bidders or their representatives present shall sign a format evidencing their attendance.

8.2 Confidentiality of the Process

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of the contract shall not be disclosed to bidders or any other person not officially concerned with such process. Any effort by a bidder to influence the NTPC's processing of Bids or award decisions may result in the rejection of the Bidder's Bid. The request for clarification and response shall be in writing, but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the NTPC in the evaluation of the bids in accordance with the clause 11.2 of these instructions.

8.3 Clarification of Techno-commercial Bids

To assist the Techno-commercial examination and evaluation of bids, NTPC may, at its discretion ask the bidder for a clarification of its Techno-commercial bid. All responses to request for clarification shall be in writing, and **no change in the price bid shall be sought, offered or permitted.**

8.4 Preliminary Examination

The NTPC will examine the Techno-commercial Bids to determine whether they are complete, whether the documents have been properly signed and whether the Techno-commercial Bids are generally in order. Any Techno-commercial Bid found to be non-responsive for any reason i.e. non-conformity of bid security, or not meeting the eligibility criteria and/ or qualifying requirements pursuant to clause 2.4 & 2.5 of ITB etc. will be rejected by the NTPC. No further Techno-commercial evaluation shall be carried out for such bidders.

Prior to detailed evaluation of Techno-commercial bids, pursuant to clause 8.5, the NTPC will determine the substantial responsiveness of each Bid to the Bidding Documents including acceptable quality of goods offered pursuant to clause 2.4 & 2.5. A substantially responsive Bid is one, which conforms to all terms and conditions of the Bidding Documents without material deviations, objections, conditionality or reservations. A material deviation, objection, conditionality or reservation is one (i) that affects in any substantial way the scope, quality or performance of the

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contract; (ii) that limits in any substantial way, inconsistent with bidding documents, the Owner's right or the successful Bidder's obligations under the Contract; or (iii) whose rectification would unfairly affect the competitive position of other Bidder's who are presenting substantially responsive bids.

Bidder may note that deviations, variations and additional conditions etc. found anywhere in the bid, shall not be given effect to in evaluation and it will be assumed that the Bidder complies with all the conditions of Bidding Documents. In case the Bidder refuses to withdraw deviations, implicit or explicit, found anywhere in the bid, without any financial implication whatsoever to the Employer, the bid shall be rejected.

The Owner's determination of bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence. If a bid is not substantially responsive, it will be rejected by the Owner, and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

8.5 Evaluation of Techno-commercial Bid

- (1) The NTPC will determine the responsive Techno-commercial Bids for the invitation of opening of Financial Bid if the Techno-commercial Bid meets satisfactorily technical specification and any other information, which they consider relevant to his offer.
- (2) If a Bidder is found not substantially responsive to the technical requirement, the Techno-commercial Bid will be rejected and the subsequent information as to opening of the Financial Bid will not be notified.
- (3) If the Techno-commercial clarifications are required by the NTPC to any part of the Techno-commercial Bids, the Bidders will be requested to clarify the same in writing.

8.6 Evaluation Criteria of Techno-commercial Bid

The Bidder who fulfill the requirements specified under Qualification Requirement (**Clause 2.5**) will be short listed. Under the Qualification Requirement a minimum threshold limit has been set for each parameter like technical experience and financial strength. Bidders not meeting the minimum threshold limit in any of these parameters will not be short-listed.

The detailed techno-commercial evaluation to be carried out shall be restricted to these short listed Bidders only.

9.0 NOTIFICATION OF SUCCESSFUL TECHNO-COMMERCIAL BID

After completing the techno-commercial evaluation of the Techno-commercial Bid first, the NTPC will notify in writing the **pre-qualified and techno-commercially responsive Bidders**, of the date and venue for the opening of the Financial Bid.

10.0 OPENING OF FINANCIAL BID

The Bidders to whom the opening time, date and venue for the Financial Bid are notified by the NTPC in writing will be invited to attend the Financial Bid opening. The Bidder's representatives present shall sign a format evidencing their attendance.

During opening of the Financial Bid, the Bidder's name, quoted price of package and other details, as the RSPCB/NTPC, at its discretion may consider appropriate, will be announced and recorded.

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11.0 EXAMINATION OF FINANCIAL BID

11.1 After opening of the Financial Bid, the NTPC will examine them to determine whether they are complete, signed, generally in order and substantially responsive to the Bidding Documents or not.

A Financial Bid determined as being not substantially responsive will be rejected.

The NTPC may waive any minor informality or non-conformity or irregularity in a Financial Bid which does not constitute a major deviation or reservation provided such waiver does not prejudice or affect the relative ranking of any Bidder.

The Financial Bid which is incomplete or conditional will be rejected.

The Financial Bid shall not be returned to the Bidder regardless of the result of the Bid.

11.2 During examination of Financial Bid any **arithmetical errors** will be corrected as follows:

- a) If there is any discrepancy between words and figures, the amount in words will prevail.
- b) If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected accordingly.
- c) The amount stated in the Form of Bid shall be adjusted by RSPCB/NTPC in accordance with the above procedure for the correction of errors and, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, its bid will be rejected.

12.0 EVALUATION AND COMPARISON OF FINANCIAL BID

12.1 Evaluation Procedure

The NTPC will evaluate the Bid previously determined to be Techno-commercially responsive pursuant to clause 8.6. The NTPC reserves the right to reject any bid or bids received at its discretion without assigning any reason whatsoever.

12.2 The purchaser's evaluation of a bid will take into account following factors:

- (I) **Total cost of supply (FOR destination) at the identified city/ location of the equipment.**
The Bidder shall include the price for the training as indicated in clause 10 of S/W(scope of work) in the quote. Cost of Travel, Boarding & Lodging and local transport cost of participants shall be borne by the RSPCB.
- (II) **DELETED**
- (III) **O&M cost (including insurance) for seven years as Net Present Value discounted @8% per annum.**
- (IV) **Quoted price of O&M of a CAAQMS& Mobile AAQMS for each year should be at least 15% of price of Supply (FOR destination) of the CAAQMS& Mobile AAQMS. In case the bidder quotes O&M price lower than 15% of the Supply (FOR destination) cost:**
 - a) **Total quoted Supply(FOR destination) price shall be reduced and O&M price shall be increased by the same amount, so as to make the O&M price as 15% of the Supply(FOR destination) price, keeping the total quoted price as unchanged.**

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- b) In such case, break-up price of various components of the Supply (FOR destination) price shall be reduced on pro-rata basis.

NOTE: Taxes and duties shall not be considered for the purpose of evaluation.

12.3 NTPC will evaluate and compare Bid for complete package.

12.4 The rate of exchange for evaluation - Deleted

12.5 Clarification on Financial Bid

For the purpose of examination, evaluation and comparison of the Financial Bid, the NTPC may at his discretion request the Bidder in writing to clarify his Financial Bid, but no change in the Bid Price or substance of the Bid will be sought, offered or permitted.

12.6 Withdrawal for deviations

Any deviation, variation or additional condition etc. or any mention, contrary to the provisions of Bidding Documents and its subsequent Amendment(s)/ Clarification(s)/Addenda/Errata (if any) found anywhere in bid proposal, implicit or explicit shall stand unconditionally withdrawn, without any cost implication whatsoever to the Employer, failing which bid shall be rejected.

12.7 Illustrative Method of Evaluation of O&M Cost:

NPV of quoted O&M cost will be calculated as under:

Year No.	Quoted Price of O&M	Present Value	NPV of O&M cost (N)
1 st	O ₁	$PV_1=O_1$	$N= (PV_1+PV_2+PV_3+PV_4+PV_5+PV_6+PV_7)$
2 nd	O ₂	$PV_2=O_2/1.08$	
3 th	O ₃	$PV_3=O_3/(1.08)^2$	
4 th	O ₄	$PV_4=O_4/(1.08)^3$	
5 th	O ₅	$PV_5=O_5/(1.08)^4$	
6 th	O ₆	$PV_6=O_6/(1.08)^5$	
7 th	O ₇	$PV_7=O_7/(1.08)^6$	

13.0 AWARD OF CONTRACT (NOA)

13.1 Award of Contract to Successful Bidder

The RSPCB will award the Contract to successful Bidder:

1. Whose Bid will be determined to be substantially responsive to this Bidding document and who will be determined by the RSPCB/NTPC, to be qualified technically, financially and otherwise in respect of such other capabilities, as the RSPCB /NTPC may deem necessary and appropriate to satisfactory performance of the Contract and
2. Whose Bid will be determined to be lowest evaluated, responsive Bid and is determined to be qualified to satisfactorily perform the Contract.

INSTRUCTION TO BIDDERS

3. The RSPCB /NTPC reserves the right to reject any bid or bids received at its discretion without assigning any reason whatsoever.

13.2 Notification of Award

Prior to the expiration of the Bid validity pursuant to sub-clause 4.5 in this Instructions, RSPCB will notify the successful Bidder in writing by registered letter or by email to confirm that its Bid has been accepted.

The Notification of Award will constitute the formation of the Contract.

13.3 Signing of Contract

The successful bidder has to submit its acceptance; details required for opening of LC alongwith Performance Security within thirty days from date of issue of NOA. In case of delay in submission of record, delivery period will be counted from date of issue of order and LD clause will be applicable.

The Contract shall take the form of General and Special Condition attached at Section V& VI and such modifications as may be necessary.

The Bidder shall prepare at his own cost one (1) original and three (3) bound copies of the Contract including the Contract Form attached to the Special Conditions of Contract (Attachment 2 of Section VI) for distribution to the parties concerned in addition to soft copies.

14.0 PERFORMANCE SECURITY

Within thirty (30) days of notification of award from the RSPCB, the successful Bidder shall furnish the Performance Security in the form of bank guarantee issued by a Scheduled bank (as per enclosed list of Attachment-15T) having license to do business in India in accordance with Attachment-1A "Performance Security Form" provided in Special Conditions of Contract for amount as follows:

- (i) 20% of the value of contract for supply part valid up to 90 days after successful installation and commissioning of all 35 CAAQMS&2 Mobile AAQMS.
- (ii) 15% of the value of the contract for O&M charges valid up to 90 days beyond O&M period of 7 years.
- (iii) CPG for supply part shall remain valid till submission of CPG for O&M part of Contract and on submission of CPG for O&M part, CPG for supply part shall be released.

The Performance Bank Guarantee shall be in the name of Member Secretary, RSPCB

Failure of the successful Bidder to comply with the requirement of Sub-clause 13.3 or Clause 14 in these instructions shall constitute sufficient grounds for the annulment of the award.

15.0 EXPENSE OF BID

Under no circumstances will the NTPC/RSPCB be liable to the Bidder for any expenses, losses or damages whatever incurred in the Bid including but not limited to expenses, losses or damages associated with preparation of the Bid, visits to the Sites and all matters in connection with the Contract negotiations and signing regardless of the conduct or outcome of the bidding process.

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INSTRUCTION TO BIDDERS

16.0 RESPONSIBILITY FOR INFORMATION SUPPLIED

Prior to the final time and date for submission of the Bids, no representation, communication, explanation or statement, verbal or written, made to the Bidder or anyone else by the Bidder or any of their employees or authorized representatives other than as may be set out in amendment issued in accordance with Sub-clause 3.6 in this Instructions shall bind the Bidder in the exercise of their powers and duties under the Contract.

The information given in the Bidding Documents is the best in the possession of the NTPC, but the NTPC does not hold himself responsible for its accuracy.

17.0 INELIGIBILITY FOR PARTICIPATION IN RE-TENDER:

Notwithstanding the provisions specified in ITB Clause 13.2, if a bidder after having been issued the Notification of Award, either does not sign the Contract Agreement pursuant to ITB Clause 13.3 or does not submit an acceptable Performance Security pursuant to ITB Clause 14.0, then further process of Tender will be decided by State Board.

18.0 FRAUD PREVENTION POLICY

The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to the Fraud Prevention Policy of EMPLOYER displayed on its tender website <http://www.ntpctender.com> and shall immediately apprise Employer about any fraud or suspected fraud as soon as it comes to their notice. A certificate to this effect shall be furnished by the bidder along with his bid, in relevant attachment to Bid Form as per format enclosed with the Bidding Document at Attachment-17T. If in terms of above policy it is established that the bidder/his representatives have committed any fraud while competing for this contract then the bid shall be rejected.

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Sub: Preference to Make In India and Eligibility for ParticipationI granting of Purchase Preference to Class-I local suppliers- regarding

It is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of Goods and Services in India with a view to enhancing income and employment. In this regard, the following guidelines, concerning the procedure to be adopted for granting Eligibility for Participation/purchase preference to local suppliers, are hereby issued:

1.0 Definitions:

- a) **'Local content'** means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the goods, services or works procured (excluding net domestic indirect taxes) minus the value of imported content in the goods, services or works(including all customs duties) as a proportion of the total value, in percent.
- b) **'Class-I local supplier'** means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed.
'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class- II local supplier' but less than that prescribed for 'Class-I local supplier'.
- c) **'L1'**means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.
- d) **'Margin of purchase preference'** means the maximum extent to which the evaluated bid price of a 'Class-I local supplier' may be above the L1 for the purpose of purchase preference.
- e) **Fraud Prevention Policy** – shall mean the policy related to prevention of fraud displayed on NTPC tender website<http://www.ntpctender.com>.
- f) **Policy& Procedure for Withholding & Banning of Business Dealings**–shall mean the policy related to Withholding & Banning of Business Dealings forming part of Bidding Document.

2.0 Eligibility for Participation / Purchase Preference:

2.1 Eligibility for Participation

Only Class-I and Class-II Local Suppliers are eligible to Bid. Bids received (if any) from Non Local Supplier shall be out rightly rejected.

3.0 Purchase Preference

3.1 Margin of Purchase Preference

The margin of purchase preference shall be 20%.

3.2 Purchase preference shall be given to 'Class-I local suppliers' as specified here under:

Procurements **where MSE benefits are not applicable:**

****i)**In all procurements where MSE benefits are not applicable and **which are not divisible in nature and the same has been specified in bidding documents**, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- Among all qualified bids and substantially responsive bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.
 - If L1 is not 'Class-I local supplier', the lowest evaluated bidder among the 'Class-I local supplier', will be invited to match the lowest evaluated bid (L1) price subject to Class-I local supplier's evaluated price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the lowest evaluated bid(L1) price.
 - In case such lowest eligible 'Class-I local supplier' fails to match the lowest evaluated bid (L1) price, the 'Class-I local supplier' with the next higher evaluated bid within the margin of purchase preference shall be invited to match the lowest evaluated bid (L1) price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the lowest evaluated bid (L1) price, the contract may be awarded to the L1 bidder.
- (ii) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by NTPC/RSPCB.
- (iii) For the purpose of matching of lowest evaluated bid(L1)price, the Class-I local supplier would have to necessarily reduce all components of the quoted price on pro-rata basis. The reduction should not apply on the evaluation loading on account of functional guarantees and other loadings (if any, which are not dependent on quoted price). Further, the Contract shall be awarded on such revised/ reduced quoted price. The summation of the revised / reduced quoted price and the evaluation loading on account of functional guarantees and other loadings(if any)shall be equal to the lowest evaluated bid(L1)price.

4.0 Minimum Local Content

4.1 The local content requirement to categorize a Bidder/Supplier as 'Class-I local supplier' is minimum 50%. For 'Class-II local supplier', the 'local content' requirement is minimum 20%.

5.0 **Verification of Local Content:**

- 5.1 The 'Class-I local supplier' / 'Class-II local supplier' shall be required to provide, in the Bid Form / relevant Attachment 19T of Techno-Commercial Bid, self-certification / declaration that the Item offered meets the local content requirement for 'Class- I local supplier' / 'Class-II local supplier' and shall give details of the location(s) at which the local value addition is made.
- 5.2 In case the total bid price of the supplier / bidder is in excess of INR 10 crore, the 'Class-I local supplier' / 'Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company(in the case of companies)or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content during execution prior to submission of last bill for payment.

In case aforesaid Certificate furnished by Contractor/Vendor is not in line with the declaration in respect of Local content in their bid, same shall be treated as false declaration.

- 5.3 However, if the item(s) offered by Supplier are manufactured in India under license from foreign manufacturers holding intellectual property rights and where there is a transfer of technology agreement, the supplier shall be required to provide, in the relevant Attachment of Techno-Commercial Bid, self-certification / declaration to this effect for availing exemption from meeting the Minimum Local Content requirement.
- 5.4 False declarations will be dealt in line with the Fraud Prevention Policy and Policy & Procedure for Withholding and Banning of Business Dealings of NTPC.
- 5.5 In case of false declaration / violation of the provision of PPP-MII Order, if a bidder has been debarred / banned by RSPCB/NTPC, then the fact and duration of debarment should be promptly brought to the notice of the Member-Convenor of the Standing Committee (as per para 16 of PPP-MII Order) and the Department of Expenditure through Ministry of Power, GOI.
- 5.6 A supplier who has been debarred/banned by any other procuring entity for violation of 'Public Procurement (Preference to Make In India), Order 2017'(PPP-MII Order) dated 15.06.2017 and its subsequent revisions/amendments issued by Department of Industrial Policy and Promotion (DIPP) shall not be eligible for evaluation / preference, as applicable, under the aforesaid procedures for duration of the debarment. The 'Class-I local supplier' / 'Class-II local supplier' shall be required to furnish a confirmation in this regard in the Bid Form/relevant Attachment of Techno-Commercial Bid.

6.0 **Local Sourcing**

- 6.1 The Bidder / its Sub-vendors must be Class-I local supplier for Item(s) mentioned in Technical Specifications, as applicable, in case such item(s) are self manufactured /Bought-out.
- 6.2 The Bidder/ Contractor are requested to encourage and promote domestic manufacturing and production of goods and services by sourcing goods and services applicable under the contract / package from domestic suppliers/service providers. In this regard, Bidder shall also follow guidelines / advisory issued by Government of India from time to time, to the extent applicable to them, regarding promotion of local sourcing of goods including Bought out Items and services

SCOPE OF WORK

VOLUME - I

SECTION II

SCOPE OF WORK



Rajasthan State Pollution Control Board



**CONSULTANT: NTPC LIMITED
(A Government of India Enterprise)**

SCOPE OF WORK

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1.0 DETAILS OF PROJECT STRUCTURE

- (a) Successful Bidder would be awarded the project/work under a Supply and Service Agreement, which would entail:
1. Supply, installation and Commissioning of CAAQMS Equipment & Mobile AAQMS at the defined cities/ locations.
 2. Operation and Maintenance of the CAAQMS Equipment & Mobile AAQMS for a period of 7 years from the date of commissioning. O&M may be extended for 5 years on mutual agreement depending upon performance.
 3. Daily reporting of data pertaining to Ambient Air Quality to RSPCB/ CPCB (RSPCB would make payment for CAAQMS & Mobile AAQMS as per schedule of requirement, for Supply, Installation and Commissioning of the system. RSPCB would procure all the CAAQMS equipment & Mobile AAQMS on its name. RSPCB 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:
 - (a) Supply (FOR destination basis) and;
 - (b) Reporting of data to RSPCB / CPCB .The price for the data supply would include the Operation and Maintenance, including incidental charges, electricity, manpower, security, etc.

RSPCB would provide land for installation of CAAQMS free of cost, in the identified location to the Successful Bidder. Along with the land, RSPCB would provide letter/ documents for telephone, electricity and internet 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.

The Day light & Night visible, live data display system for display of pollutant, AQI and other relevant information is to be supplied, installed and maintained initially for seven years. The Day light & Night visible, live data display system will be installed one at each CAAQMS and one centralized data display system for display of online data of all CAAQMS installed or to be installed in Rajasthan by RSPCB. 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 RSPCB. 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.

(b) **SCHEDULE OF REQUIREMENTS**

The CAAQMS and Mobile AAQMS shall have the schedule of requirement as per Attachment 1S. Bidder is required to submit the same duly initialed and stamped alongwith other attachments 2S to & 7S along with their bid. The system should be completely functional. Any balance of material not specified but required for the purpose must be supplied by the bidder.

2.0 SCOPE OF SERVICES

The Scope of Works under the package shall include:

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- A) The supply including packing, inland transportation, inland transit insurance and delivery to site, installation, testing and commissioning of equipment and provision of training of RSPCB officials station wise.
- B) Operation & Maintenance of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and Mobile AAQMS for a period of seven (7) years from the date of commissioning of the station. Operation & maintenance contract may be extended further for a period of 5 years through mutual agreement between RSPCB & the Supplier depending on the performance to contractor.
- C) Report of data pertaining to CAAQMS and mobile AAQMS to RSPCB/CPCB
- D) On line transfer of data to RSPCB & CPCB

Other services involved with performance of the Works are specified in Bid documents.

3.0 MINIMUM TECHNICAL SPECIFICATIONS

The minimum technical specification requirements for the CAAQMS and Mobile AAQMS to be installed are given in Volume – II (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 Volume – II (Technical Specifications) of bid documents are descriptive and RSPCB can consider technical proposals having similar specifications.

4.0 DESIRED OUTPUT FOR CAAQMS EQUIPMENT and MOBILE AQMS

The desired output requirements from the CAAQMS and mobile AAQMS equipment to be installed are given in Attachment 2S to 6S.

5.0 DATA MANAGEMENT AND QUALITY CHECKS

Data shall be collected and validated according to US EPA standards/National Ambient Air Quality 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.

Successful bidder shall submit a Standard Operating Procedure for the Continuous Ambient Air Quality Monitoring Station & mobile AAQMS to the RSPCB before award of contract. This Standard Operating Procedure shall be approved by the RSPCB 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
Data reporting

Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the RSPCB along with the Air Quality Data.

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Inventory of spares and consumables to be maintained and recorded from time to time and a buffer stock for any eventuality to be maintained.

Upon 3 days notice from the RSPCB once per year, Successful Bidder shall agree to submit to an audit of calibrations, conducted, using pre-approved US EPA methodologies, by a third party. ISO certified party audit will be arranged by the bidder at bidder's 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 and if deviation is found then it will be rectified by the bidder at its own cost. No charges will be borne by RSPCB.

Operator shall participate in Proficiency Testing Exercise organized by reputed organization.

GENERAL GUIDELINES

Working Hours: The site for CAAQMS & mobile AAQMS operation should be manned by the employees of the Successful Bidder as per the following:-

Contractor shall depute one Project Manager, one data analyst and one data operator at RSPCB headquarter in Jaipur. One technician each stations and 1 no at each for mobile vans i.e. 35 nos technician at the CAAQMS and 02 at mobile vehicles equipped with analyzers. Driver for mobile van shall be in the scope of Contractor. Besides it, security guard (s) at the station is also within the scope of bidder. Bidder to quote O&M price considering all these costs.

Contractor shall ensure that all CAAQM stations shall be manned throughout the day through technician and/or Security guard. In case, CAAQM stations are found to be unmanned then Contractor's payment shall be reduced at double the rate of minimum wages as notified by labour ministry of GOI.

Insurance: 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 RSPCB of an appropriate amount.

Station platform, pillars Electricity & telephone / modem arrangement:

The successful bidder shall construct station platform, pillars etc. as required and shall also arrange electric, telephone and internet connection modems etc. required for the smooth Operation of the station. The necessary documentation shall be provided by the concerned RSPCB / local authority.

6.0 LOCATION

The location of the CAAQMS in Rajasthan has been specified at 5.0 of GCC (Section V)
(All CAAQMS/mobile AAQMS shall be monitored by RSPCB)

7.0 SUPPLY OF EQUIPMENT

Attachment –1S, specifies the list of equipment in the package, quantity of equipment to be supplied, delivered and installed.

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8.0 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 RSPCB.

9.0 INSPECTION AND TEST

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.

9.2 Performance Test

The Contractor shall carry out the performance test for all the Equipment supplied under the scope of work of this document.

In case the Equipment for performance test requires the supplemental and/ or supporting Equipment, the Contractor shall carry out the performance test including such Equipment.

10.0 PROVISION OF TRAINING

The contractor shall provide the training to RSPCB officials. 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) "Do's" 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 contractor shall carry out the training including such Equipment.

The contractor shall discuss and finalize the detailed contents and schedule of the training program in consultation with the Board during installation of the Equipment.

The contractor shall furnish the training manual and CD as required for training for all the Equipment supplied under the scope of work of this document.

Contents of training manual and CD for the Equipment are as follows:

1. Principle of the Equipment.
2. Operation and calibration of the Equipment.

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3. Maintenance and basic repair of the Equipment.
4. Safety instruction of the Equipment.
5. Others, which are deemed to be necessary by the Supplier.
6. QA/QC, Data Validation & management and software Application

11.0 OPERATION & MAINTENANCE OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS& Mobile AAQMS

11.1 The Contractor’s responsibilities shall include without limitations the following works to be carried out on the Continuous Ambient Air Quality Monitoring Stations & Mobile AAQMS installed under this Contract during the Operation & Maintenance of the stations:

- a) Operation and Maintenance of all the commissioned equipments and amenities as supplied by the Manufacturer under the Contract including services during forced and planned outages and overhauls.
- b) The Contractor shall take over the entire Continuous Ambient Air Quality Monitoring Station & Mobile AAQMS (including all equipment) for O&M after execution of Indemnity Bond as per format placed at Attachment- 13T, Section III of bid document.
- c) The Contractor shall provide to the owner a monthly summary of all operation and maintenance activities performed by the contractor during each month.
- d) Operation and Maintenance Obligations:

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

- i) Undertake comprehensive maintenance including i.e. schedule and breakdown maintenance & repair at site and keep RSPCB Informed regarding status of equipments and forward daily data as per Attachment 3S of Section II.
- ii) Obtain permission from the owner and inform the OEM for any assistance for which equipment is required to be sent to the works. Contractor shall arrange substitute equipment to keep CAAQM station & mobile AAQMS operational.
- iii) Take reasonable action to assure that the Personnel deployed at Continuous Ambient Air Quality Monitoring Stations & Mobile AAQMS and any subcontractors and agents are provided with a work place in compliance with applicable Law.
- iv) Keep the Continuous Ambient Air Quality Monitoring Stations & Mobile AAQMS clean, well maintained and in good working condition.
- v) Security: It is the duty of the Contractor to secure the movable, immovable and other properties of the Owner at the Continuous Ambient Air Quality Monitoring Station & Mobile AAQMS. The Contractor shall indemnify the loss caused to the Owner on account of any damage, loss or theft caused to the property of the Owner.
- vi) Scheduled Maintenance: Unless Owner and Contractor mutually agree otherwise, perform all required Scheduled maintenance for all equipment, auxiliaries etc., in accordance with the O&M specifications.
- vii) 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 operator shall provide the Owner with detailed written

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information on nature of the repair or replacement to be carried out, estimated down time and other necessary details as required.

- viii) The Contractor shall source all the spares required for maintenance & repairs of the installed equipment from OEM only.
- e) The Operator shall not:
 - i) Make any modifications as to the Continuous Ambient Air Quality Monitoring Stations & Mobile AAQMS, other than in an Emergency, without the prior written approval of the Owner, or
 - ii) Dispose off any assets, settle law-suits or engage in transactions relating thereto on the Owner's behalf without the prior written approval of the Owner.
- f) The Contractor shall purchase spare parts, materials, supplies and other consumable items, and maintain an inventory thereof, for the Continuous Ambient Air Quality Monitoring Stations & /Mobile AAQMS. All such material supplied and other items shall be the property of the Contractor However all the spares shall be sourced from OEM's only.
- g) The Contractor shall review all applicable Laws and initiate and maintain such prosecution, procedures and operating plans relating to operation of the Continuous Ambient Air Quality Monitoring Stations & Mobile AAQMS as are necessary to comply therewith or assist the owner in complying therewith as the case may be.
- h) The Contractor shall operate the equipment as per the laid out standards in the operating manual of the equipment and provide data for ambient air to RSPCB on daily basis in the suggested format. The daily, monthly and yearly Reporting Formats are attached in bid documents
- i) The CAAQMS has to be in operation for a minimum of 90% of the days in a year, 24 hours a day, and should not be inoperable for more than 7 days at a stretch.
- j) Provide data collected through operation of the equipments on daily basis in suggested output formats given in the bid document.
 - i) 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.
 - ii) Provide access to the owner to the Continuous Ambient Air Quality Monitoring Stations & Mobile AAQMS and its data at all reasonable times and as and when required.
 - iii) Provide the operational data required to all competent authorities including, Government of India or concerned State Governments.
 - iv) Display of data on webpage of RSPCB and CPCB along with Air Quality Index (AQI) as per protocol devised by CPCB shall be provided by bidder. Vendor shall ensure all parameters related to health of instruments and diagnostics as well as site parameters are to be transmitted and made available for evaluation, perusal, analysis and validation of data on RSPCB and CPCB servers.

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- v) Protocol dated 30.04.2015 for data transmission for CAAQM stations & Mobile AAQMS as provided by CPCB shall be followed.
 - k) The Contractor shall ensure accuracy of the data provided as per standards.
 - l) The contractor shall ensure periodic re-calibration of all the equipment as per manufacturer's instructions and maintain "Protocol Calibration" as per Attachment 2S of Section II.
- 11.2 Owner shall arrange for the following and Contractor shall guide and assist the Owner:
- a) The Owner shall pay O&M charges to the Contractor at the end of each quarter after submission of validated data & report by the Contractor, in accordance with the payment terms detailed in Special Conditions of Contract.
 - b) Owner shall pay only GST extra as per applicable rate.
 - c) The Owner shall identify and hand over the site for erection & commissioning of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) & Mobile AAQMS free from all encumbrances.
 - d) The Owner 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 Contractor.
 - e) The valid data capture rate should be minimum 90%. The full payment shall only be made if validated data is 90% and all the calibration protocol maintenance scheduled and spare parts/ consumable replacement document are maintained and verified by the RSPCB. The contractor has to maintain records / Receipts/ bills paid available as and when required.
 - f) The O&M firm shall maintain backup at all the stations in separate hard disk for the safety of the data and it will kept under the custody of state board stations wise.

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

11.4 **Relocation of Station:**

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

11.5 **Penalties:**

During O&M period, in case of any Analyses/ system failure, penalty will be charged by RSPCB @ Rs.1,000/- (one thousand) per day per Analyzer after a grace period of seven (7) continuous non-working days. The grace period of seven (7) continuous non-working days shall be given only once per quarter (3 months).

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Scope of Work Section II	Page 8 of 21
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SCOPE OF WORK

The O&M firm shall take preventive measure to ensure proper data transmission to RSPCB and CPCB server. Any up gradation in the communication system like lease line, charges for up gradation etc. will be the responsibility of O&M firm. No extra charges would be paid by RSPCB. For failure of data transmission from CAAQM stations, penalty will be charged by RSPCB @ 2000/- (two thousand) per day per station after a grace period of one non-working day. The grace period of one non-working day shall be given only once per quarter (3 months).

For a failure of Data display on Board/panel, a penalty will be charged by RSPCB @ Rs. 1,000/- (one thousand) per day after a grace period of five (5) continuous non-working days. The grace period of Five (5) continuous non-working days shall be given only once per quarter (3 months).

Delay in data submission (hard copy) would be charged by RSPCB as per details given below after the grace period of seven days:

- A. Delay in data submission i.e. weekly and monthly submission by 1 to 10 days after the grace period would be liable of penalty of 2.5% of total quarterly O &M payments
- B. Delay in i.e. weekly and monthly submission by 11 to 20 days after the grace period would be liable of penalty of 5 % of total quarterly O &M payments
- C. Delay in i.e. weekly and monthly submission by 21 to 30 days after the grace period would be liable of penalty of 7 % of total quarterly O &M payments
- D. Delay in i.e. weekly and monthly submission more than 31 days after the grace period would be liable of penalty of 10 % of total quarterly O &M payments

Failure due to power outage and other Force Majeure conditions shall not be considered for levy of penalty.

Total penalty per year during O&M period on account of above conditions shall be limited to 30% of total O&M charges for every quarter failing which defective/ malfunctioning analyser/ system has to be replaced.

In case penalty in the year exceeds 30% as above, the Contractor shall be required to replace the defective analyzer(s) or systems with new ones at his own cost, failing which the RSPCB shall have the right to terminate the O&M contract or may charge penalty more than 30% after the grace period of 3 months.

12.0 SCHEDULE

- 12.1 Contractor shall complete all activities covered in the scope of work up to installation & commissioning of Continuous Ambient Air Quality Monitoring Stations & Mobile AAQMS within 28 weeks from date of notification of award.
- 12.2 The Contractor shall carry out Operation & Maintenance of Continuous Ambient Air Quality Monitoring Stations (CAQMS) and Mobile AAQMS for a period of seven (7) years from the date of commissioning of the station.
- 12.3 The operation and maintenance contract shall be executed by the Member Secretary of Rajasthan State Pollution Control Board having jurisdiction of the area under his control. The term and condition shall be governed as per the tender document. The Member Secretary of RSPCB or any person authorized by him shall be the ultimate consignee.

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Scope of Work Section II	Page 9 of 21
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SCOPE OF WORK

ATTACHMENT 1S

Schedule No.	Brief Description	Units	Total Quantity
1.	Continuous Automatic Air Quality Monitoring Analyzers for CO, SO ₂ , NO-NO ₂ -NO _x , O ₃ , PM _{2.5} and PM ₁₀ Monitors	No	37
2.	Continuous Automatic Air Quality Monitoring Analyzers for NH ₃	No	37
3.	Ambient BTX Analyser	No	37
4.	Multi point Gas calibration system	No	37
5.	Meteorological System comprising of sensors for (A) Wind Speed, (B) Wind Direction, (C) Ambient Temperature, (D) Relative Humidity, (E) Solar Radiation , (F) Barometric pressure & (G) Rainfall, mounted on (H) Telescopic Crank-up Meteorological Tower	No	37
6.	Work Station Computer at stations (for AQI Preparation)	No	37
7.	Rack Server (For Central Station at RSPCB)	No	2
8.	Data acquisition software for a) Station (CAAQM) -37 nos b) Central station at RSPCB-1 no	No	39
9.	Display board data transmission device, day light and night visible data display system (35 at the stations+ 33 at the different city areas)	No	68
10.	Data display board(1.5ftx3ft) mounted on Mobile Van	No	2
11.	Housing/Container for Continuous Ambient Air Quality Monitoring (CAAQM) Station/ Mobile AAQMS including sampling system, internal fittings, instrument racks, electrical and gas line fittings, tools (electrical & mechanical), etc.	No	37
12.	Online UPS 10 KVA, capacity (Three Phase I/P and Single Phase O/P, with 02 hrs backup) (for Air Conditioner)	No	37
13.	Online UPS 5 kVA, capacity (Single Phase I/P & Single phase O/P, with 02hrs backup) (01 for Analysers & 01 for Server at Central Station)	No	39
14.	Split Air Conditioner (2 Ton Capacity)	No	74
15.	Split Air Conditioners (1 Ton capacity)	No	37
16.	RCC foundation, Pillars, misc works including Caging, Civil & Electrical work (for CAAQM stations as well as Data Display Boards)	Actual	

SCOPE OF WORK

Schedule No.	Brief Description	Units	Total Quantity
17	Sampling System	No	37
18	Data acquisition and handling system at stations	No	37
19.	19" Rack cabinet to accommodate all analyzers & systems	No	111
20.	Meteorological, Flow and Electronics Calibration	No	37
21.	Manageable CISCO Switch (Rack Mountable)	No	37
22.	Remote Monitoring Tool/Software (For Stations and Central locations) with access through Mobile App. for Central Station	No	37
23.	42 U Industrial Rack (For Central Station at SPCB)	No	1
24.	Access Point (AP) (For Central Station at SPCB)	No	1
25.	Unified Threat Management (UTM) device (For Central Station at RSPCB)	No	1
26.	Connectivity for Data Transfer (Station)	No	35
27.	Petrol Generator set-10 kVA	No	2
28.	Vehicle model number TATA LPT 709Ex 2/Mahindra Loading or equivalent of reputed make along with vehicle frame (Chassis build up) air conditioned and thermally stable instrument cabin. Arrangements like Thermally Stable Housing (Body Built up)for installation of Continuous Ambient air quality Monitoring analysers with Sampling line, Internal fittings, Instruments racks, Electrical and Gas line Fittings, Tools (electrical and mechanical).	No	2

SCOPE OF WORK

ATTACHMENT 2S

**STATION PROTOCOL
FOR MANUAL CALIBRATION
CAAQM STATION UNDER O&M CONTRACT**

NAME OF CAAQM STATION

DATE:

S. No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Remarks
			Pre	Post	Pre	Post	Span Source	Pre	Post	Pre	Post	
1.	CO Analyzer											
2.	SO₂ Analyzer											
3.	NO_x Analyzer											
	NO											
	NO ₂											
	NO _x											
	NH ₃											
4.	O₃ Analyzer											
5.	BTX Analyzer											
	Benzene											
	Toluene											
	E-benzene											
	M+P Xylene											
	O-Xylene											
6.	Dust Analyzer											
	PM _{2.5}											
	PM ₁₀											
7.	Meteorological Parameter											
	Temperature											
	Humidity											
	Wind Speed											
	Wind Direction											
	Solar Radiation											
	Barometric pressure											

SCOPE OF WORK

	Rain Fall											
8.	Computers											
9.	UPS / ACs / Others											
10.	Data Display Board											
	Maintenance Details/ Requirement											
	1.											
	2.											
	3.											
	Specific Observation(s)											

Station Maintained By.....

Station supervised by

SCOPE OF WORK

ATTACHMENT 3S

DAILY REPORTING FORMAT FOR METEOROLOGICAL PARAMETERS
 (To be submitted daily at 12 Noon for the previous day ending 12 midnight)

Location:

Date:

Hrs.	WIND SPEED	WIND DIRECTION	HUMIDITY	TEMPERATURE	SOLAR RADIATION	BAROMETRIC PRESSURE	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								

Hrs.	NO	NO ₂	NO _x	NH ₃	SO ₂	CO	O ₃	PM _{2.5}	PM ₁₀	Benzene	Toluene	Ethyl Ben	MP Xylene	Oxylene
	µg/m ³	µg/m ³	ppb	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
15-16 Hr.														
16-17Hr.														
17-18 Hr.														
18-19 Hr.														
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.														
MINIMUM														
MAXIMU M														
AVERAGE														
Data Captured														
Note :														

ATTACHMENT-6S

Rajasthan State Pollution Control Board

MONTHLY REPORTING FORMAT FOR MAIN POLLUTANTS (MEAN CONCENTRATION)

Year

Monitoring Location:

Months	NO	NO ₂	NO _x	NH ₃	SO ₂	CO	O ₃	PM _{2.5}	PM ₁₀	Benzene	Toluene	Ethyl Ben	MP Xylene	Oxylene
	µg/m ³	µg/m ³	ppb	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
January														
February														
March														
April														
May														
June														
July														
August														
September														
October														
November														
December														
MINIMUM														
MAXIMUM														
AVERAGE														

**Calculation of City-wise Payment for O & M Charges on Quarterly Basis for CAAQM Stations and MOBILE AAQMS
under O& M Contract**

Bill raised for O & M Charges by M/s		Invoice No.	Rs.
Date			
Bill raised for spares and consumables		Invoice No.	Rs.
Date			
Total Amount			Rs.
Name of the Station →		STATION I (Location	
Quarter No.: →			
Duration: →			
Year: →			
Percentage of valid monthly data captured rate →	Month 1		
	Month 2		
	Month 3		
Average Quarterly Data Captured Rate→			
		Price for service portion 70%	Price for material part & other incidental charges 30%
Base Amount per Quarter (as per NOA)(A)			
Proportionate Amount based on Valid Data Captured Rate(B) Formula: see at footnote* (Specimen Calculation sheet attached in Annexure I)			
Applicable Deduction as per penalty provision for continuous non-functioning(C) (Specimen Calculation sheet attached in Annexure II)			
Any Other Deduction, specify with justification(D)			
GST (E)			
Net Amount Payable (Rs)[F = B- (C+D) +E]			
Total O&M cost Payable(Station Wise)			
Total Amount Payable (Rs) for O& M cost for City for quarter no. 1/2/3/4 of year			

* Percentage quarterly data captured rate/ 90% X A

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

Name of Station*	Name of non-functional system	Total period of continuous non-functioning(days)	Period considered for Penalty calculation after grace period**	Penalty amount (period x unit rate)

Total Penalty Amount (Rs):

* (To be prepared & submitted separately for each station)

** Grace period of 7days is applicable only once per quarter

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

Name of Station*	Observed Monthly Data Captured Rate																				Average Percentage Data Capture Rate		
	For gases pollutant										Dust Particles		For Mat. Parameters										
	NO	NO _x	NO ₂	NH ₃	SO ₂	CO	O ₃	Benzene	Toluene	Ethylene Benzene	MP Xylene	Oxylene	PM _{2.5}	PM ₁₀	Temp	RH	WS	WD	SR	BP		RF	

* (To be prepared & submitted separately for each station)

VOLUME I
SECTION III
FORM OF TECHNO-COMMERCIAL BID



RAJASTHAN STATE POLLUTION CONTROL BOARD



CONSULTANT: NTPC LIMITED
(A Government of India Enterprise)

SECTION III
FORM OF TECHNO-COMMERCIAL BID
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<Letterhead of the Bidder>

FORM OF QUESTIONNAIRE

BIDDING DOCUMENTS

FOR SUPPLY, INSTALLATION & COMMISSIONING OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS & Mobile AAQMS) AND OPERATION & MAINTENANCE SERVICES FOR CAAQMS& Mobile AAQMS FOR RSPCB

Date:

To,

**Add. General Manager (C&M)
Consultancy Wing,
NTPC Ltd,
EOC Annexe Building,
A-8A, Sector-24, Noida-201301,
India.**

From: Name of Bidder
 Address
 Name of Representative
 Position
 Fax No.
 Email id.
 Signature

Question
Brief report of experience and capabilities and company profile.

<Letterhead of the Bidder>

CERTIFICATE OF O&M PARTNER OF THE BIDDER IN INDIA

To,

**Add. General Manager (C&M)
 Consultancy Wing,
 NTPC Ltd,
 EOC Annexe Building,
 A-8A, Sector-24, Noida-201301,
 India.**

Subject: Certificate of Existence of Local Branch, Sales Residential and Representative Office(s) in India

1. Name of Office (s):
2. Address :
 Tel. No. :
 Email id:
3. Status of Office(s):
4. Date of Establishment of Office (s):
5. Name & Address of Residential Representative:
6. Total No. of years of association with OEM (Name of the manufacturer):
7. Total Manpower:
8. Total No. of trained Service Engineer:
9. Present No. of offices in India (Name the locations & address):
10. Total Turnover in last 3 years:
11. Major jobs in Hand:
12. Experience in O&M contract:

Sl. No.	Name of Client and Address, Phone No.etc.	Description of Contract (Brief scope of contract)	Year of Placement of Order	Present Status

Signature

Name:

Designation:

Seal:

FORM OF LETTER OF AUTHORITY

To,

**Addl. General Manager (C&M)
 Consultancy Wing,
 NTPC Ltd,
 EOC Annexe Building,
 A-8A, Sector-24, Noida-201301,
 India.**

Name of Manufacturer

Subject: Letter of Authority from Manufacturer

Dear Sirs,

We,(Name of Manufacturer)....., a manufacturer duly organized and existing under the law of(Country Name)..... with its principal office of business at(Address)..... hereby make, constitute and appoint..... (name of Bidder)....., a company duly organized and existing under the laws of..... (India)..... 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 for Supply and O&M of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) & Mobile AAQMS for RSPCB in the State of Jaipur (India), regarding the supply and installation of the following equipment proposed in the bid which we manufacture or produce.

Item No.	Name of Equipment

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, deliver and install the equipment in accordance with the terms and conditions of contract with (Name of Bidder) and the RSPCB -

We hereby give and grant to (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 on2021.

ACCEPTED ON -----, 2021

NAME OF BIDDER

NAME OF ISSUING MANUFACTURER

(Name of duly authorized
representative to sign and signature)

(Name of duly authorized
representative to sign and signature)

(Rank of position and department)

(Rank of position and department)

<Letterhead of the Manufacturer>
**FORM OF CERTIFICATE OF SUPPLY OF SPARES AND CONSUMABLES BY
 MANUFACTURER**

Date:

To,

**Addl. General Manager (C&M)
 Consultancy Wing,
 NTPC Ltd,
 EOC Annexe Building,
 A-8A, Sector-24, Noida-201301,
 India.**

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 contractor(Name of the contractor).... / Owner.

It is hereby guaranteed that we shall maintain stocks of consumables and spare parts for the following equipment for a period of Seven Ten (7) years after the commissioning of the equipment in India.

Item No.	Name of Equipment	Name of Manufacturer

Signature:

Name of Person:

Position:

Name of Manufacturer:

Office Seal of Manufacturer:

Legal Address of Manufacturer:

<Letterhead of the Manufacturer>
FORM OF CERTIFICATE OF COUNTRY OF ORIGIN

To,

**Addl. General Manager (C&M)
 Consultancy Wing,
 NTPC Ltd,
 EOC Annexe Building,
 A-8A, Sector-24, Noida-201301,
 India.**

Name of Manufacturer:

Subject: Certificate of Country of Origin

We,(Name of Manufacturer)....., hereby certify that our equipment for procurement and installation of equipment for RSPCB in the State of Jaipur , India is to be manufactured in the country mentioned below:

Item No.	Name of Equipment	Country of Origin

Signature

Name of Person:

Title:

Name of Manufacturer:

Legal Address:

<Letterhead of the Manufacturer>
**EVIDENCE OF VALID REGISTRATION BY COMPETENT AUTHORITY
OF DEPARTMENT FOR PROMOTION OF INDUSTRY AND INTERNAL TRADE**

To,

**Addl. General Manager (C&M)
Consultancy Wing,
NTPC Ltd,
EOC Annexe Building,
A-8A, Sector-24, Noida-201301,
India.**

Name of Bidder/Associate:

**Subject:- Confirmation & Evidence of valid registration by the Competent Authority
for us/our Collaborator/Assignee**

We, (Name of Bidder/Collaborator/Associate/ /Assignee), hereby confirm that, We have read the ITB clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries. We certify that we/our Collaborator /Assignee are/is not from such a country or, if from such a country, have/has been registered with the Competent Authority and we will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. We hereby certify that we fulfill all requirements in this regard and are eligible to be considered.

***We further confirm that evidence of valid registration by the Competent Authority
for us/our Collaborator/JV Partner/Consortium member/Assignee, as applicable, is
enclosed as Annexure...**....**

Signature

Name of Person:

Title:

Name of Manufacturer:

Legal Address:

***Bidder to strike-off, if not applicable.**

****Bidder to mention the Annexure no.**

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C- O-M-001	Section-III (Form of Techno- Commercial Bid)	Page 8 of 34
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<Letterhead of the O&M Partner>

FORM OF CERTIFICATE OF CARRYING OUT O&M OF CAAQMS's & Mobile AAQMS's BY THE O&M PARTNER IN INDIA

Date:

To:

**Addl. General Manager (C&M)
 Consultancy Wing,
 NTPC Ltd,
 EOC Annexe Building,
 A-8A, Sector-24, Noida-201301,
 India.**

Sub: Certificate of carrying out O&M of CAAQMS's & Mobile AAQMS's by the O&M partner in India.

This is to certify that we..... (Name of O&M Partner)..... hereby agree to carry out day to day Operation and maintenance of the 35 CAAQMS & 2 Mobile AAQMS installed and commissioned by(Name of the main bidder)..... for minimum of seven years from the date of installation & commissioning of the CAAQMS/Mobile AAQMS at the rates quoted by(Name of the main bidder)..... against this tender, strictly in accordance with terms & conditions contained in this bid document.

Signature:

Name of Person:

Position:

Name of O&M Partner:

Name Seal of O&M Partner:

Legal Address of O&M Partner in India:

Counter-signed by main bidder

Name of Person:

Position:

Name of the Bidder:

Office Seal of Bidder:

Legal Address of Bidder:

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-III (Form of Techno-Commercial Bid)	Page 9 of 34
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<Letterhead of the O&M Partner>
Form of Equipment List (Imported and indigenous)

S. No.	Name of equipment	Name of manufacturer	Quantity	Country of Origin

<Letterhead of the O&M Partner>
List of Manufacturer (Imported and Indigenous items)

Sl. No.	Name of equipment	Name of manufacturer

**PROFORMA FOR FINANCIAL CAPABILITY OF BIDDER
(for a period of last three years)**

Bid No. ----- Package Code ----- Date of Opening -----
 Time -----
 Name of the Bidder

Year	Currency	Turnover
2017-2018 financial year		
2018-2019 financial year		
2019-2020 financial year		
Average		

Note:

1. The annual turnover amount for the above mentioned years is to be supported by annual report.

Signature of the Authorized Representative
 Name of the Person
 Position

BIDDING DOCUMENT NO. CW-CM-11080-C-O-M-001

PROFORMA OF LETTER OF UNDERTAKING (TO BE FURNISHED ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE) [To be executed by the Holding Company Supported by Board Resolution and submitted by the Bidder along with the Bid, in case financial support is being extended by the Holding Company to the by Bidder /Associate/Collaborator for meeting the stipulated Financial Qualifying Requirement as per Item No. 2.5.3(ii) of ITB

Dear Sir,

1.0 We, M/sdeclare that we are the holding company of M/s(Name of the Bidder) and have controlling interest therein.

M/s(Name of the Bidder) proposes to submit the bid for the package..... (Name of the package) for (Name of the Project) under bid reference nodatedand have sought financial strength and support from us for meeting the stipulated Financial Qualifying Requirement as per Item No. 2.5.3(ii) of ITB

2.0 We hereby undertake that we hereby pledge our unconditional & irrevocable financial support for the execution of the said package to M/s..... (Name of the Bidder), for the execution of the Contract, in case they are awarded the Contract for the said package at the end of the bidding process.

We further agree that this undertaking shall be without prejudice to the various liabilities that M/s..... (Name of Bidder) would be required to undertake in terms of the Contract including the Performance Security as well as other obligations of the Bidder/Contractor.

3.0 This undertaking is irrevocable and unconditional, and shall remain in force till the successful execution and performance of the entire contract and/or till it is discharged by Employer.

4.0 We are herewith enclosing a copy of the Board Resolution in support of this undertaking.

Yours faithfully,

(Signature of Authorized Signatory on behalf of the Holding Company)

Date: Name & Designation.....

Place: Name of the Holding Company.....

Seal of the Holding Company.....

WITNESS:

1.
2.

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-III (Form of Techno-Commercial Bid)	Page 13 of 34
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ATTACHMENT 8BT

PROFORMA FOR PERFORMANCE STATEMENT FOR MANUFACTURER

Bid No..... Name of Equipment.....

Date of Opening Time.....

Name of Manufacturer.....

Order placed by (Address of purchaser)	Order No. & Date	Description of ordered equipment (Model no.)	Quantity supplied	Value of order	Date of commissioning and handing over	Has the equipment been in continuous operation? (Attach certificates from the purchaser/consignee for each equipment)
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
 Designation

ATTACHMENT 8CT

PROFORMA FOR PERFORMANCE STATEMENT FOR BIDDER (O&M OPERATOR) AS AUTHORIZED REPRESENTATIVE OF THE MANUFACTURER

Bid No..... Name of Equipment.....

Date of Opening..... Time.....

Name of Manufacturer.....

Order placed by (Address of purchaser)	Order No. & Date	Description of ordered equipment (Model no.)	Quantity supplied	Value of order	Date of commissioning and handing over	Has the equipment been in continuous operation? (Attach certificates from the purchaser/consignee for each equipment)
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
 Designation

ATTACHMENT 9T

CAPABILITY & EXPERIENCE OF O&M PARTNER

Name and address of the O&M Partner in India (if applicable):

Sl. No.	Name of the O&M personnel proposed to be deployed	Educational Qualification	Experience in no. of years in carrying out O&M of Air Monitoring Stations	Detail Curriculum Vitae Attached (YES / NO)
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

BID SECURITY DECLARATION FORM

To

[Employer's Name and Address]

Dear Sirs,

In accordance with Invitation for Bids under your Bid Document No , We, M/s.....[Bidder's Name]..... having our Registered/ Head Office at (hereinafter called the 'Bidder') wish to participate in the said tender for [Name of Package]

We confirm that we have read the provisions of the bidding document no. and we hereby declare the following:

1. We confirm that, in case we withdraw our offer within the validity period of the offer provided in the bidding documents or any extension thereof, then we shall be treated as ineligible for participation in the future tenders issued from NTPC/RSPCB for a period of 06 months from the date of withdrawal of the bid.
2. In addition, we also confirm that in case after having been issued the Notification of Award/Purchase Order of a package, we either do not accept the Notification of Award/Purchase Order or do not sign the Contract or do not submit an acceptable Performance Security as per bidding documents provision, and which result in tender being annulled then we shall be treated ineligible for participation in retendering of this particular package and contractual action may be taken against us as per the provisions of the Bidding documents. Further, NTPC/RSPCB shall also be free to take further actions as per the provisions of the policy for Withholding and Banning of Business Dealings.

Date: Signature

Place: Name of the Authorized person

NOTE :

Bidder may note that in case they do not submit the aforesaid declaration or no confirmation is indicated by them or statement/any declaration like 'later', 'to be furnished later', 'NA' etc. are indicated against the declaration, then the bid shall be rejected by EMPLOYER as being non-responsive and shall not be opened.

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-III (Form of Techno-Commercial Bid)	Page 17 of 34
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PRE-REQUISITES FOR INSTALLATION OF EQUIPMENT

Dear Sir,

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

Package no. / Item No.	Name of the Equipment	Installation & commissioning pre-requisites*

*Requirement of power supply (KW / KVA etc.), power backup, air conditioning, hooding, space, furniture, gas supply etc. to be mentioned by the bidder.

Signature of the Authorized Representative
 Name of the Person
 Position

Note: Continuation sheets, of size and format, may be used as per Bidder's requirement and shall be annexed to this schedule.

SUPPLY, INSTALLATION & COMMISSIONING OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS)& MOBILE AAQMS AND OPERATION & MAINTENANCE SERVICES FOR CAAQMS & MOBILE AAQMS FOR RSPCB
(No Deviation Certificate)

Bidders Name & Address

Dear Sir,

Subject: No Deviation Certificate.

We declare that we have taken no deviations, variations from the Scope of Supply & Services as outlined in your Technical Specifications for the subject package. The entire work shall be performed as per your specifications and documents. Further, we agree the conditions, if any found elsewhere in the offer, save that pertaining to any rebates / discount offered, shall not be given effect to:

Date:
Place

(Signature)
.....
(Printed Name)
.....
(Designation)
.....
(Common Seal)
.....

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INDEMNITY BOND FOR HANDING OVER CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS & MOBILE AAQMS INCLUDING ALL EQUIPMENT TO THE O&M CONTRACTOR

This Indemnity Bond is made this Day of 2021.....by.....a Company registered under the Companies Act,1956/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 **RSPCB** with Office at ----, which term shall include permitted assigns and successors, (hereinafter called “RSPCB” which expression shall include its successors and assigns).

Whereas RSPCB has awarded to the Contractor, a contract for O&M of the 35 nos. of Continuous Ambient Air Monitoring Stations & 2 MOBILE AAQMS (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 RSPCB 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 RSPCB indemnified, for the full value of the Equipment. The Contractor hereby acknowledges receipt of the Equipments 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) & MOBILE AAQMS belonging to RSPCB against all risks whatsoever till the Equipments are duly used in accordance with all terms of the Contract. The Contractor undertakes to keep RSPCB 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 criminal breach of trust on the part of the Contractor for all intents and purposes including legal / penal consequences.
4. That RSPCB is and shall remain the exclusive Owner of the Equipment free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by Project-in-Charge RSPCB 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, misutilised 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 RSPCB 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 RSPCB as to assessment of loss or damage to the Equipments shall be final and binding on the Contractor.

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-III (Form of Techno-Commercial Bid)	Page 20 of 34
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The Contractor binds itself and undertakes to replace the lost and / or damaged Equipments at its own or remedy that may be available to RSPCB 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 RSPCB, then the above bond shall be void, but otherwise, it shall remain in full force and virtue.

In witness whereof, the Contractor has hereunto 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

Particulars of the Equipments handed over	Quantity	Value of the Equipment	Signature of Authorised Person

For and on behalf of
M/s.....

Witness I

1. Signature
2. Name
3. Address

Name
Signature
Designation
Authorized representative

Witness II

1. Signature
2. Name
3. Address

(Common Seal)
(In case of Company)

(DELETED)

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C- O-M-001	Section-III (Form of Techno- Commercial Bid)	Page 22 of 34
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**LIST OF BANKS ACCEPTABLE FOR SUBMISSION
OF BANK GUARANTEES FOR PERFORMANCE SECURITIES**

SCHEDULED COMMERCIAL BANK LIST

A STATE BANK OF INDIA

B NATIONALISED BANKS

- 1 Bank of Baroda
- 2 Bank of India
- 3 Bank of Maharashtra
- 4 Canara Bank
- 5 Central Bank of India
- 6 Indian Overseas Bank
- 7 Indian Bank
- 8 Punjab National Bank
- 9 Union Bank of India
- 10 Punjab & Sind Bank
- 11 UCO Bank

C SCHEDULED PRIVATE BANKS (INDIAN BANKS)

- 1 Axis Bank Ltd
- 2 Bandhan Bank Limited
- 3 CSB Bank
- 4 City Union Bank
- 5 DCB Bank Ltd
- 6 Dhanlaxmi Bank Ltd
- 7 Federal Bank Ltd
- 8 HDFC Bank Ltd
- 9 ICICI Bank Ltd
- 10 IndusInd Bank Ltd
- 11 IDFC FIRST Bank Limited
- 12 Jammu & Kashmir Bank Ltd
- 13 Karnataka Bank Ltd
- 14 Karur Vysya Bank Ltd
- 15 Kotak Mahindra Bank
- 16 Lakshmi Vilas Bank Ltd
- 17 Nainital Bank Ltd
- 18 RBL Bank Limited
- 19 South Indian Bank Ltd
- 20 Tamilnad Mercantile Bank Ltd
- 21 Yes Bank Ltd
- 22 IDBI Bank Ltd.

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D SCHEDULED PRIVATE BANKS (FOREIGN BANKS)

- 1 AB Bank Ltd
- 2 Abu Dhabi Commercial Bank PJSC
- 3 American Express Banking Corporation
- 4 Australia & Newzealand Banking Group Limited
- 5 Barclays Bank Plc
- 6 Bank of America
- 7 Bank of Bahrain & Kuwait B.S.C.
- 8 Bank of Ceylon
- 9 Bank of China Limited
- 10 Bank of Nova Scotia
- 11 BNP Paribas
- 12 Citi Bank NA
- 13 Cooperatieve Rabobank UA
- 14 Crédit Agricole Corporate and Investment Bank
- 15 Credit Suisse AG
- 16 CTBC Bank Co Ltd
- 17 DBS Bank India Ltd
- 18 Deutsche Bank A.G.
- 19 Doha Bank Q.P.S.C
- 20 Emirates NBD Bank (PJSC)
- 21 First Abu Dhabi Bank PJSC
- 22 FirstRand Bank Ltd
- 23 HSBC Ltd
- 24 Industrial & Commercial Bank of China Ltd
- 25 Industrial Bank of Korea
- 26 JP Morgan Chase Bank, National Association
- 27 JSC VTB Bank
- 28 KEB Hana Bank
- 29 Kookmin Bank
- 30 Krung Thai Bank Public Company Ltd
- 31 Mashreq Bank PSC
- 32 Mizuho Bank Ltd
- 33 MUFG Bank, Ltd
- 34 NatWest Markets Plc
- 35 PT Bank Maybank Indonesia TBK
- 36 Qatar National Bank (Q.P.S.C.)
- 37 Sberbank
- 38 SBM Bank (India) Ltd
- 39 Shinhan Bank
- 40 Societe Generale
- 41 Sonali Bank Ltd
- 42 Standard Chartered Bank
- 43 Sumitomo Mitsui Banking Corporation
- 44 United Overseas Bank Ltd
- 45 Westpac Banking Corporation
- 46 Woori Bank

*Note - Any Addition/ Deletion/ Modification in Bank list shall be as per changes in Second Schedule List by RBI from time to time

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PRE CONTRACT INTEGRITY PACT

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made onday of the month of2017, between, (Rajasthan State Pollution Control Board), acting through Shri, (Designation of the officer, Department, Government of (Name of the State) hereinafter called the “BUYER”, which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns of the First Part and M/s..... represented by Shri....., Chief Executive Officer (hereinafter called the “BIDDER / SELLER” which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the BUYER proposes to procure (Name of the Stores/Equipment/Item) and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company/public company/Government undertaking/partnership/registered export agency, constituted in accordance with the relevant law in the matter and the BUYER RSPCB work under the ageis of Environment & Forests, performing its functions as per the provisions of Water Act 1974, Air Act ,1981 and EPA Act, 1986.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to :-

Enabling the BUYER to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the BUYER

- 1.1 The BUYER undertakes that no official of the BUYER, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.
- 1.2 The BUYER will, during the pre-contract stage, treat all BIDDERS alike, and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERS.

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- 1.3 All the officials of the BUYER will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
2. In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the BUYER with full and verifiable facts and the same is prima facie found to be correct by the BUYER, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the BUYER and such a person shall be debarred from further dealings related to the contract process. In such a case while an inquiry is being conducted by the BUYER the proceedings under the contract would not be stalled.

Commitments of BIDDER

3. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:-
- 3.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.
- 3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the Government.
- 3.3* BIDDER shall disclose the name and address of agents and representatives and Indian BIDDER shall disclose their foreign principals or associates.
- 3.4* BIDDER shall disclose the payments to be made by them to agents/brokers or any other intermediary, in connection with this bid/contract.
- 3.5* The BIDDER further confirms and declares to the BUYER that the BIDDER is the original manufacturer/integrator/authorized government sponsored export entity of the defence stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the BUYER or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
- 3.6 The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the BUYER or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.

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- 3.7 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.8 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.9 The BIDDER shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the BUYER as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.10 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11 The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.12 If the BIDDER or any employee of the BIDDER or any person action on behalf of the BIDDER, either directly or indirectly, is a relative of any of the officers of the BUYER, or alternatively, if any relative of an officer of the BUYER has financial interest/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filling of tender.
- 3.13 The BIDDER shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the BUYER.

4. Previous Transgression

- 4.1 The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify BIDDER's exclusion from the tender process.
- 4.2 The BIDDER agrees that if it makes incorrect statement on this subject, BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Sanctions for Violations

- 5.1 Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle the BUYER to take all or any one of the following actions, wherever required:-
 - (i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER (s) would continue.
 - (ii) Performance security (after the contract is signed) shall stand forfeited either fully or partially, as decided by the BUYER and the BUYER shall not be required to assign any reason therefore.

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- (iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
 - (iv) To recover all sums already paid by the BUYER, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the BUYER in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.
 - (v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.
 - (vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation/rescission and the BUYER shall be entitled to deduct the amount so payable from the money (s) due to the BIDDER.
 - (vii) To debar the BIDDER from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the BUYER.
 - (viii) To recover all sums paid in violation of this Pact by BIDDER (s) to any middleman or agent or broker with a view to securing the contract.
 - (ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the BUYER with the BIDDER, the same shall not be opened.
 - (x) Forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.
- 5.2 The BUYER will be entitled to take all or any of the actions mentioned at para 6.1 (i) to (x) of this Pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in Chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.
- 5.3 The decision of the BUYER to the effect that a breach of the provisions of this Pact has been committed by the BIDDER shall be final and conclusive on the BIDDER. However, the BIDDER can approach the Independent Monitor (s) appointed for the purposes of this Pact.

6. Fall Clause

- 6.1 The BIDDER undertakes that it has not supplied/is not supplying similar product/systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India or PSU and if it is found at any stage that similar product/systems or sub systems was supplied by the BIDDER to any other Ministry/Department of the Government of India, State Pollution Control Boards or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the BIDDER to the BUYER, if the contract has already been concluded.

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7. Independent Monitors

- 7.1 The BUYER has appointed Independent Monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission (Names and Addresses of the Monitors to be given).
- 7.2 The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.
- 7.3 The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.
- 7.4 Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.
- 7.5 As soon as the Monitor notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the BUYER.
- 7.6 The BIDDER(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.
- 7.7 The BUYER will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitor the option to participate in such meetings.
- 7.8 The Monitor will submit a written report to the designated Authority of BUYER/Secretary in the Department/ within 8 to 10 weeks from the date of reference or intimation to him by the BUYER / BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

8. Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of Commission, the BUYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

9. Law and Place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat/place of the BUYER.

10. Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

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11. Validity

11.1 The validity of this Integrity Pact shall be from date of its signing and extend up-to 5 years or the complete execution of the contract to the satisfaction of both the BUYER and the BIDDER/Seller, including warranty period, whichever is later. In case BIDDER is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.

11.2 Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

12. The parties hereby sign the Integrity Pact aton.....

BUYER

BIDDER

Name of the Officer.

CHIEF EXECUTIVE OFFICER

Designation

Deptt. / (Name of the Board)

Witness

Witness

1.....

1.....

2.....

2.....

SUPPLY, INSTALLATION & COMMISSIONING OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS) & MOBILE AAQMS AND OPERATION & MAINTENANCE SERVICES FOR CAAQMS AND MOBILE AAQMS FOR RSPCB

(DECLARATION ON FRAUD PREVENTION POLICY)

Bidder's Name and Address:

Dear Sirs,

We have read the contents of the Fraud Prevention Policy of NTPC displayed on its tender website <https://eprocurentpc.nic.in> and undertake that we along with our associate/collaborator/subcontractors/subvendors/consultants/service providers shall strictly abide by the provisions of the said Fraud Prevention policy of NTPC.

Date : (Signature).....

Place : (Printed Name).....

(Designation).....

(Company Seal).....

Authorised Signatory of Bidder :

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SUPPLY, INSTALLATION & COMMISSIONING OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS) & MOBILE AAQMS AND OPERATION & MAINTENANCE SERVICES FOR CAAQM & MOBILE AAQMS FOR RSPCB

(DECLARATION ON BANNING POLICY)

Bidder's Name and Address:

Dear Sirs,

1. We have read the contents of the Banning Policy of NTPC attached with this Bidding Documents and agree to abide by this policy. Further, in terms of requirement under Banning policy we hereby declare the following:

- a) We have not been Banned/Blacklisted as on date of submission of bid by Ministry of Power or Government of India.
- b) We have not employed any public servant dismissed/removed or person convicted for an offence involving corruption or abetment of such offences.
- c) Our Director(s) Owner(s) Proprietor/Partner(s) have not been convicted by any court of law for offences involving corrupt and fraudulent practices including moral turpitude in relation to business dealings with Government of India or NTPC or RSPCB or NTPC's group companies during the last five years.

2. We further declare as under:

That if at any point subsequent to award of Contract, the declarations given above are found to be incorrect, RSPCB shall have the full right to terminate the Contract and take any action as per applicable laws for breach of contract including forfeiture of Performance Bank Guarantee.

Date : (Signature).....

Place : (Printed Name).....
(Designation).....
(Company Seal).....

Authorised Signatory of Bidder :

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-III (Form of Techno-Commercial Bid)	Page 32 of 34
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SUPPLY, INSTALLATION & COMMISSIONING OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS) & MOBILE AAQMS AND OPERATION & MAINTENANCE SERVICES FOR CAAQMS & MOBILE AAQMS FOR RSPCB

FORM FOR DECLARATION OF LOCAL CONTENT

***(i)** We confirm that we fulfill the requirements of Local content for Class-I local supplier.

OR

***(i)** We confirm that we fulfill the requirements of Local content for Class-II local supplier.

The details of the location(s) at which the local value addition is made are as under:

Sl. No.	Description of Goods & Services	Details of the location(s) at which the local value addition is made

(ii)We confirm that we fulfill the requirements of Local content for Class-I local supplier for Item(s) mentioned in Technical Specifications, as applicable. We further confirm that in case such item(s) are bought-out for us, we shall source the same from Class-I local supplier only.

#We undertake that a certificate from the statutory auditor or cost auditor (in the case the bidder is a company) or from a practicing cost accountant or practicing chartered accountant (in respect of bidders other than companies) certifying the percentage of local content shall be submitted by us prior to submission of our last bill for payment.

##We further confirm that we are presently not debarred / banned by any other procuring entity for violation of 'Public Procurement (Preference to Make in India),

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Order 2017' (PPP-MII Order) dated 15.06.2017 and its subsequent revisions / amendments issued by Department of Industrial Policy and Promotion(DIPP).”

****Bidder to strike-off whichever is not applicable***

#[Applicable in packages with estimated value (excluding taxes & duties) exceeding INR 10 Crores.]

##In case a Bidder has been banned/debarred by any other procuring entity for violation of 'Public Procurement (Preference to Make In India), Order2017' (PPP- MII Order) dated 15.06.2017 and its subsequent revisions / amendments issued by Department of Industrial Policy and Promotion (DIPP), the same may be declared by Bidder by striking off para above and declaring the details of banning using additional sheets.

Bidder may also enclose additional sheets in similar format (if required), for providing details pertaining to local value addition.

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VOLUME I
SECTION IV
FORM OF FINANCIAL BID



RAJASTHAN STATE POLLUTION CONTROL BOARD



CONSULTANT: NTPC LIMITED
(A Government of India Enterprise)

SECTION IV
FORM OF FINANCIAL BID

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Attachment 3F	Bid Price Breakup Equipment in Indian Rs.	5
Attachment 3AF	Bid Price Breakup For O&M of CAAQMS's for Seven Years	7

<Letterhead of the Bidder>

Date:

Bid No. -----

BID FORM

TO: Consultancy Wing
 NTPC Limited,
 Room No. 225, EOC Annexe Building,
 A-8A, Sector-24, Noida,
 Gautam Budh Nagar-201301 (UP)

Gentlemen:

1. Having examined the Bidding documents for procurement, installation & commissioning and Operation & Maintenance of CAAQMS's at thirty five (35) number(s) locations and two Mobile AAQMS, RSPCB (herein after referred to as "the Works"), including, but not limited to, the Instructions to Bidders, Scope of Works, General and Special Conditions of Contract, Technical Specifications, Schedules, Attachments, Amendment Nos. we, the undersigned, offer to execute and complete the whole of the works and remedy any defects therein, in conformity with the said Bidding Documents for the sum of Indian Rupees..... (INR.....) for the incidental costs incurred in India (if any) as may be ascertained in accordance with the Summary of Bid Price and Bid Price breakup attached herewith and made part of this bid.
2. We undertake, if our Bid is accepted, to complete and deliver the whole of the Works comprised in the Contract within the time specified in the contract, subject to the said conditions.
3. If our Bid is accepted, we will obtain the guarantee of a bank in a sum as mentioned at Clause No. 14 of ITB (Section-I) for the due performance of the Contract, in the form prescribed by the NTPC/RSPCB.
4. We agree to abide by this Bid for a period of One hundred eighty (180) days from the final date of the submission of Bid fixed in sub-clause 4.5 of the Instruction of Bidders, and shall remain binding upon us and may be accepted at any time before the expiration of that period.
5. Unless and until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding Contract between us.
6. We understand that you are not bound to accept the lowest of any bid you may receive, and that you will not defray any expense incurred by us in bidding.
7. We have read the ITB clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries. We certify that we/our Collaborator/JV Partner/Consortium member are/is not from such a country or, if from such a country, have/has been registered with the Competent Authority and we will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. We hereby certify that we fulfill all requirements in this regard and are eligible to be considered.

***We further confirm that evidence of valid registration by the Competent Authority for us/our Collaborator/JV Partner/Consortium member, as applicable, is enclosed as Annexure...**...**

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-IV Form of Financial Bid	Page2 of 7
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***Bidder to strike-off, if not applicable.**

****Bidder to mention the Annexure no.**

8. We declare that we have taken no deviations, variations from the Scope of Supply & Services as outlined in your Technical Specifications for the subject package. The entire work shall be performed as per your specifications and documents. Further, we agree the conditions, if any found elsewhere in the offer, save that pertaining to any rebates / discount offered, shall not be given effect to
9. We have read the contents of the Fraud Prevention Policy of NTPC displayed on its tender website <https://eprocurerntpc.nic.in> and undertake that we along with our associate/ collaborator/ subcontractors/subvendors/consultants/service providers shall strictly abide by the provisions of the said Fraud Prevention policy of NTPC.
- 10.0 We confirm our acceptance to all attribute made/ticked online under GTE meaning full compliance to all provisions of Bidding Documents.

Date this-----day of ----- 2021.

Signature ----- in the capacity of -----

Duly authorized to sign Bid for and on behalf of -----

(IN BLOCK CAPITAL) -----

Address -----

Telephone Number -----

Email id. -----

WITNESS -----

Address -----

Occupation -----

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-IV Form of Financial Bid	Page3 of 7
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SUMMARY OF BID PRICE

DESCRIPTION	Value in Indian Rs. per CAAQMS	Value in Indian Rs. for 35 CAAQMS & 2 MOBILE AAQMS
I. SUPPLY		
The FOR destination price of the Equipment		
II. O&M CHARGES		
Total O&M charges for Seven years as indicated in Attachment 3AF		
GRAND TOTAL CONTRACT PRICE (INR) (I + II)		

NOTE:

- Contract Price quoted for Supply part shall be on FOR destination basis and shall include all cost e.g. custom duty, transportation, insurance, installation, commissioning, training, etc. No additional charges will be paid by RSPCB
- ONLY GST SHALL BE PAYABLE EXTRA AS PER APPLICABLE RATE BY THE OWNER.
- QUOTED COST OF O&M OF CAAQMS & MOBILE AAQMS FOR EACH YEAR SHOULD BE AT LEAST 15% OF THE COST OF SUPPLY (FOR DESTINATION) OF THE CAAQMS & MOBILE AAQMS. IN CASE THE BIDDER QUOTES O&M COST LOWER THAN 15% OF THE SUPPLY (FOR DESTINATION) COST, THE OWNER WILL REDUCE THE SUPPLY (FOR DESTINATION) COST SUITABLY, SO AS TO MAKE THE O&M COST AS 15% OF THE SUPPLY COST (FOR DESTINATION), KEEPING THE TOTAL QUOTED COST AS UNCHANGED.
- GST SHALL BE PAYABLE ONLY ON THE SERVICE PORTION OF O&M COST ONLY (EXCLUDING SUPPLY OF SPARES FOR MAINTENANCE & OVERHAULING) AS **INDICATED IN ATTACHMENT – 3AF.**

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-IV Form of Financial Bid	Page 4 of 7
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**BID PRICE BREAKUP FOR EQUIPMENT
PRICE**

S. No.	Item / Analyzer Name	Manufacturer	Country of Origin	Model	Quantity in Nos. / Sets	Unit Price Indian Rs.	TOTAL Price Indian Rs.
1.	Automatic Ambient CO Analyzer						
2.	Automatic Ambient SO ₂ Analyzer						
3.	Automatic Ambient NO, NO ₂ and NO _x Analyzer						
4.	Automatic Ambient NH ₃ Analyzer						
5.	Automatic Ambient O ₃ Analyzer						
6.	PM ₁₀ Monitor						
7.	PM _{2.5} Monitor						
8.	Ambient BTX Analyser						
9.	Multi point Gas calibration system						
10.	Meteorological System comprising of sensors for (A) Wind Speed, (B) Wind Direction, (C) Ambient Temperature, (D) Relative Humidity, (E) Solar Radiation , (F) Barometric pressure & (G) Rainfall, mounted on (H) Telescopic Crank-up Meteorological Tower						
11.	Work Station Computer at stations (for AQI Preparation)						
12.	Rack Server (For Central Station at RSPCB)						
13.	Data acquisition software for a) Station (CAAQM) b) Central station at RSPCB						
14.	Display board data transmission device, day light, and night visible data display system						
15.	Data display board(1.5ftx3ft) mounted on Mobile Van						
16.	Housing/Container for Continuous Ambient Air Quality Monitoring (CAAQM) Station including sampling system, internal fittings, instrument racks, electrical and gas line fittings, tools (electrical & mechanical), etc.						
17.	Online UPS 10 KVA, capacity (Three Phase I/P and Single Phase O/P, with 02 hrs backup) (for Air Conditioner)						
18.	Online UPS 5 kVA, capacity (Single Phase I/P & Single phase O/P, with 02hrs backup) (01 for Analysers & 01 for Server at Central Station)						
19.	Split Air Conditioner (2 Ton Capacity)						

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-IV Form of Financial Bid	Page5 of 7
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S. No.	Item / Analyzer Name	Manufacturer	Country of Origin	Model	Quantity in Nos. / Sets	Unit Price Indian Rs.	TOTAL Price Indian Rs.
20.	Split Air Conditioners (1 Ton capacity)						
21.	RCC foundation, Pillars, misc works including Caging, Civil & Electrical work (for CAAQM stations as well as Data Display Boards)						
22.	Sampling System						
23.	Data acquisition and handling system at stations						
24.	19" Rack cabinet to accommodate all analyzers & systems						
25.	Meteorological, Flow and Electronics Calibration						
26.	Manageable CISCO Switch (Rack Mountable)						
27.	Remote Monitoring Tool/Software (For Stations and Central locations) with access through Mobile App. for Central Station						
28.	42 U Industrial Rack (For Central Station at SPCB)						
29.	Access Point (AP) (For Central Station at SPCB)						
30.	Unified Threat Management (UTM) device (For Central Station at RSPCB)						
31.	Connectivity for Data Transfer (Station)						
32.	Petrol Generator set-10 kVA						
33.	Vehicle model number TATA LPT 709Ex 2/Mahindra Loadking or equivalent of reputed make along with vehicle frame (Chassis build up) air conditioned and thermally stable instrument cabin.						
34.	Security Cabin						

Total Indian Rs.

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section-IV Form of Financial Bid	Page6 of 7
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BID PRICE BREAKUP FOR O&M OF ONE CAAQMS FOR SEVEN YEARS

Sl. No.	Year of O&M	Service charges (70%) for O&M in Rs. (i)		Cost of (Incidental charges(30%) consisting of security, Electricity, Phones/ internet, Manpower, AMCs material including spares & consumables for Operation & maintenance and other in Rs. (ii)		Total Charges for the year in Rs. (i)+(ii)	
1.	1 st year						
2.	2 nd year						
3.	3 rd year						
4.	4 th year						
5.	5 th year						
6.	6 th year						
7.	7 th year						
TOTAL							

Total Bid price of one CAAQMS shall be transferred to Attachment 2F under Column "Value per CAAQMS"

NOTE:

- A. GST SHALL BE PAYABLE ON THE SERVICE PORTION OF O&M COST ONLY (EXCLUDING SUPPLY OF SPARES FOR MAINTENANCE & OVERHAULING).**
- B. COST OF MATERIAL INCLUDING SPARES & CONSUMABLES FOR OPERATION & MAINTENANCE SHALL BE INCLUSIVE OF ALL TAXES & DUTIES.**

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VOLUME I

SECTION V

GENERAL CONDITIONS OF CONTRACT (GCC)



RAJASTHAN STATE POLLUTION CONTROL BOARD



**CONSULTANT: NTPC LIMITED
(A Government of India Enterprise)**

**SECTION V
GENERAL CONDITION OF CONTRACT CONTENTS**

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GENERAL CONDITIONS OF CONTRACT

These conditions encompass all the Works to be executed and completed by the Contractor for the Project and as further defined herein.

1.0 DEFINITION

Unless the context of the General and Special Conditions of Contract otherwise requires, the following terms wherever in the General and Special Conditions of Contract shall have the meaning defined hereunder.

Words imparting the singular shall also include the plural and vice versa where the context requires. Whether the words and phrases defined in this Clause are capitalized or not in the Contract shall not affect their meaning.

- 1.1 “The **Project**” or “The Works” means supply, installation & commissioning of equipments for Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and Mobile AAQMS and their Operation & Maintenance at defined locations under the supervision and control of Rajasthan State Pollution Control Board.
- 1.2 “The **Contract**” means the written agreement to be concluded between the RSPCB /NTPC and the Contractor and includes terms and conditions stipulated on the Bidding Documents and any other descriptions annexed thereto which form an integral part of the agreement to be provided by the RSPCB /NTPC.
- 1.3 “The **Contract Price**” means the price payable to the Contractor under the Contract for the full and proper performance of its contractual obligations for the Works.
- 1.4 “The **Equipment**” means all kind of materials, Machinery, Components, apparatus, articles and instruments for the Project to be provided by the Contractor to the, RSPCB /NTPC under the Contract.
- 1.5 “**GCC**” means the General Conditions of Contract contained in this Section.
- 1.6 “**SCC**” means the Special Conditions of Contract in Section VI of this Volume.
- 1.7 “**S/W**” means the Scope of Works in Section II of this Volume.
- 1.8 “The **Contractor**” means the firm supplying the Equipment and performing the Works in connection with the Project under the Contract and includes his personal representatives, successors and authorized assignees.
- 1.8.1 “**The Subcontractor,**” including vendors, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant and Equipment, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.
- 1.8.2 “**Sub-contractor from a country which shares a land border with India**” means;
 - a) An entity incorporated, established or registered in such a country; or
 - b) A subsidiary of an entity incorporated, established or registered in such a country; or

- c) An entity substantially controlled through entities incorporated, established or registered in such a country; or
- d) An entity whose *beneficial owner* is situated in such a country; or
- e) An Indian (or other) agent of such an entity; or
- f) A natural person who is a citizen of such a country; or
- g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.

1.8.3 The beneficial owner for the purpose of clause “1.8.2” above will be as under;

- a) In case of company of Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation-

1. “Controlling ownership interest” means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company;
 2. “Control” shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholdings or management rights or shareholders agreements or voting agreements;
- b) In case of a partnership firms, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more judicial person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
 - c) In case of an unincorporated associations or body of individuals, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
 - d) Where no natural person is identified under (a) or (b) or (c) above, the beneficial owner is the relevant natural person who holds the position of senior managing officials;
 - e) In case of a trust, the identifications of beneficial owner(s) shall include identification of the author of trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

1.9 “The **Manufacturers**” means the firms, which produce the Equipment to be furnished by the Contractor under the Contract with the RSPCB/NTPC.

1.10 “The **Specifications**” means the specifications of the Works to be performed by the Contractor in conformity with those specified in both the Technical Specifications of Volume II and all other related documents in the Bidding Documents, and modifications thereof or additions thereto as may from time to time be made, and approved in writing by the NTPC/RSPCB through the

Consultant prior to the Contract and agreed upon by both the RSPCB/NTPC and the Contractor after the Contract.

- 1.11 "The **Sites**" means CAAQMS's / Mobile AAQMS as specified in Clause 1 of Scope of Works (Section – II).

2.0 INTENT OF CONTRACT

- 2.1 The intent and spirit of the Contract is to provide all the details for the Works herein specified to be fully completed within the duration of the Contract.
- 2.2 It is hereby understood that the Contractor, in accepting the Contract, agrees to furnish any and everything necessary for such intent notwithstanding any omission in the Contract.

All matters omitted from the Contract which may reasonably be inferred to be obviously necessary for the efficient and stable completion of the Works shall be deemed to be included in the Contract and the Contractor shall be held responsible for any errors or losses which the Contractor may make due to such omissions as above.

3.0 PERFORMANCE OF WORKS

Unless otherwise provided for, the Works shall be performed by the Contractor in compliance with S/W, GCC, SCC and the Specifications in this Bidding Documents issued by the RSPCB /NTPC or their amendments, clarifications or errata as applicable and Contract to be concluded between the RSPCB /NTPC and the Contractor.

Unless otherwise agreed or stated, the Contractor shall bear all the cost and take all the responsibilities for the performance of all the Works.

4.0 USE OF CONTRACT DOCUMENTS AND INFORMATION

- 4.1 The Contractor shall not, without the RSPCB/NTPC's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the RSPCB /NTPC, Consultant and their authorized personnel and body in connection therewith, to any person other than a person employed by the Contractor in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
- 4.2 The Contractor shall not, without the RSPCB /NTPC's prior written consent, make use of any documents or information enumerated here above except for purposes of performing the Contract.
- 4.3 Any document other than the Contract itself, enumerated hereinabove shall remain the property of the RSPCB /NTPC and shall be returned to the RSPCB/NTPC on completion of the Contractor's performance under the Contract if so required by the RSPCB/NTPC.

5.0 LOCATION

As defined by the RSPCB in Rajasthan:

One each at Bharatpur, Sawai Madhopur, Karouli, Dholpur, Sri Ganga Nagar, Hanumangarh, Bhilwara, Raj Samand, Balotra, Barmer, Jalore, Chittorgarh, Pratapgarh, Banswara, Jaisalmer, Dausa, Tonk, Nagaur, Bundi, Baran, Jhalawar, Sirohi, Sikar, Churu, Jhunjhunu, Dungarpur, 3 at Jaipur, 02 at Kota and 4 at Jodhpur.

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6.0 LANGUAGE AND CALENDAR

6.1 Language

All documents and correspondence related to the Contract shall be made in English.

6.2 Calendar

All dates, months, years and terms referred in the Contract shall relate with the Gregorian Calendar, unless otherwise mentioned specifically.

7.0 SITE CONDITION

7.1 Site Condition

The Contractor shall study the existing Site Conditions, referring to the Bidding Documents carefully in order to familiarize themselves with the Works. The Contractor should ascertain all particulars of the location and Site conditions at their own expenses.

7.2 Access to Site

The RSPCB will give the Contractor access to the Sites in order to perform the Works during the period of validity of the Contract unless otherwise provided.

8.0 COUNTRY OF ORIGIN

8.1 All the Equipment supplied under the Contract shall have their origin in the eligible countries.

8.2 For the purposes of this Clause, "Origin" means the place where the Equipment were produced or manufactured. The Equipment is produced or manufactured when, though manufacturing, processing, or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics in purpose or utility from its components.

8.3 The origin of Equipment is distinct from the nationality of the Contractor.

9.0 SPECIFICATION OF EQUIPMENT

9.1 Equipment

The Contractor shall supply all the Equipment specified in the package quoted as per the package wise Equipment List of Attachment 1S of S/W.

All the Equipment to be supplied under the Contract shall be new and unused.

9.2 Specification of Equipment

The performance, materials, duty, workmanship, operating conditions and design conditions for the Equipment shall meet and comply with the Specifications.

The Specifications indicate the principal and minimum technical requirements for each equipment. The details of the Equipment shall be fully examined and suitably selected through the detailed engineering and design without sacrifice in quality of serviceability of the Equipment.

The figures of dimension and weight shown in the Specifications are indicatively presented as approximate figures. These figures may not necessarily and exactly be applied for the selection of the Equipment, but the Contractors shall meet the principal and minimum requirements shown in the Specifications. Any Bidder offering better specification than the minimum prescribed shall be considered as technically qualified.

10. CODE AND STANDARD

10.1 Code and Standard

All ambient Gas Analysers and Dust Monitor shall conform to the US EPA reference or equivalent method. A proof of approvals and certificates of the above compliance along with copy of the Test Report (in English) from internationally reputed agencies such as US EPA, TUV / UAB of Germany, Env't Canada, Env't. Japan, EEC etc. shall be furnished.

10.2 Metric System

All dimensions and performance of the Equipment shall be stated in metric system, unless otherwise specified in the Specifications.

11.0 ELECTRICAL RATINGS

11.1 Electrical Rating

The Equipment shall conform to the following ratings and standards wherever applicable.

- 1) All the electrically operated equipment specified herein shall be single phase, 230 Volts +/- 10 volts AC and 50 Hz +/- 3% unless otherwise specified in the Specifications.
- 2) Electrical plugs for the Equipment shall conform to local regulations and standards.

11.2 Precaution against Voltage Fluctuation

Adequate automatic voltage regulator for the Equipment shall be arranged by the Contractor wherever indicated in the Specifications. The Contractor shall pay due attention to that electrical voltage fluctuation exerts a serious influence and damage upon functioning of the equipment. If any failure, the loss will be incurred by contractor/bidder.

12.0 NAME PLATE

Nameplate shall be affixed on a suitable place of the Equipment in accordance with the provision of SCC.

13.0 PACKING AND MARKING

13.1 Packing

- 1) Transportation by air cargo

The Contractor shall pack and transport the Equipment in the double carton, approved by airline and deliver separately to the designated Site in complete condition.

- 2) Transportation by vessel

The Equipment shall be packed and transported for seaworthy shipment in such a manner that they are carried to the Sites in complete condition. The packages shall be made

shockproof, waterproof, moisture proof and any other protection against rough handling, exposure to extreme temperature, salt, precipitation, open storage and other severe tropical conditions during transit to each final Site. These Equipments shall be transported by container vessel and packed separately for the each designated Site.

13.2 **Marking**

The outside of the package shall be marked in accordance with SCC in such a manner that they are clearly visible, protected against loss and resistance to external influences.

13.3 **Packing List**

Contents of each package and/or the Equipment shall be itemized on a detailed list showing the exact weight, and extreme outside dimensions of length, width and height of each package and/or the Equipment. One copy of the detailed packing list indicating name of components, assembly number and quantity which corresponds to those of the Equipment in each package shall be enclosed in each package.

Enclosed in one package, there shall also be a master packing list summarizing and identifying each individual package. Packing list shall be placed in a waterproof cover and secured against any external influence of the package.

14.0 **SHIPMENT**

14.1 **Shipment**

14.2 Deleted

14.3 Deleted

On requirement RSPCB may provide a user certificate consists of the locations details for installation of CAAQMS.

14.4 **Inland Transportation**

The Contractor shall be fully responsible for the delivery of all the Equipment to the Sites.

The Contractor shall arrange at his option and cost for the transportation to each Site for the equipment.

Transportation of Radioactive material if any shall be carried out by the contractor and contractor will obtain statutory clearances for the same.

14.5 **Handling and Storage**

The Contractor shall protect the Equipment from any damage and avoid overloading. Particular attention shall be given to the perishable Equipment and those which must be kept dry, cool or from exposure to direct sunshine and moisture.

In case a part of the RSPCB's facilities is necessary to be occupied by the Contractor for temporary storage or installation use, the Contractor shall obtain the written approval from the RSPCB for temporary occupation and protect facilities against any damages. Charges payable for this facility to the RSPCB for this shall be fixed by the RSPCB.

15.0 PROTECTION AND SAFETY

The Contractor shall be totally responsible for all the reasonable precautions against fire in respect of the Works, temporary works, offices, storage yards and other places and things connected therewith.

The Contractor shall comply with all rules, regulations and orders which have been made by the Government of India, the RSPCB/NTPC or any other competent authority and the contractor shall provide sufficient fire-fighting protection in respect of the safety of the property and personnel of the RSPCB.

16.0 WORKS SCHEDULE

The time schedule for the Works to be carried out by the Contractor is specified in SCC.

The Contractor shall complete the Works in accordance with the Works schedule specified here above.

17.0 PROJECT FORMATION

17.1 Owner

The authorized personnel of the RSPCB for the Project who is responsible for any coordination with the Contractor is:

**Member Secretary or Authorized Representative,
Rajasthan State Pollution Control Board,
4, Institutional Area, Jhalana Doongri,
Jaipur, India**

18.0 WARRANTY / O & M CONTRACT

18.1 All the CAAQMS's and Mobile AAQMS's shall be under O&M Contract from the date of commissioning of the CAAQMS's. The details terms and conditions and scope of work during O&M Contract period shall be as specified in the Scope of Work, Section – II of this document.

18.2 However the Contractor shall warrant to the RSPCB that the Equipment to be supplied under the Contract is new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. This warranty includes all spare parts and services to keep the instruments and equipment in operating condition. In case O & M is not awarded / terminated the equipment shall remain warranted for 10 years from date of commissioning of the station.

The Contractor shall further warrant to the RSPCB that the Equipment complies strictly with the Specifications and has no defect, arising from design, materials, or workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied Equipment in the conditions prevailing to the final Sites.

18.3 Period of O&M Contract

This O&M Contract shall remain operative for the period specified in SCC after the successful installation & commissioning of the stations by the Contractor.

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18.4 In Case of Faulty Equipment

If any part of the Equipment breakdowns or fails due to faulty or improper design, materials, workmanship, manufacture, fabrications or instructions, or fails to meet the requirements of the Specifications, then the Contractor or his O&M partner shall promptly notify the manufacturer in writing of any claims arising under this clause.

Contractor or his O&M partner shall ensure that within the period specified in Scope of Work for O&M Contract in Section- II of the document and with all reasonable speed, the repair or replacement of the defective Equipment or improper parts thereof is carried out at the Contractor's expenses.

In the event that any part of the Equipment becomes defective due to no fault of the Contractor, such as voltage fluctuations, misuse and negligence, the Contractor will be indemnified by the RSPCB in respect of repair thereof.

18.5 Manufacturer's Warranty

The contractor must take into account any manufacture's standard Warranty on the equipment supplied before quoting for O&M cost for the years for which such Warranty is applicable.

19.0 INSURANCE

The Equipment supplied under the Contract shall be fully insured (Comprehensive) in Indian Rs against loss or damage incidental of manufacture or acquisition, transportation, storage, shipment, delivery, installation and training involved with the Works naming the RSPCB as the beneficiary, in the manner specified in the SCC, until issuance of taking over certificate.

20.0 INSTALLATION

20.1 All the Equipment shall be installed and brought into suitable conditions for operation by the Contractor at the sites designated by the RSPCB. The Contractor shall make all the necessary and proper adjustments and arrangements, including, but not restricted to, the utility supplies and connections, foundation and erection works specified in order to install the Equipment in adequate conditions for operation.

All matters omitted from this Clause which may reasonably be incurred to be obviously necessary for the proper installation and operation of the Equipment shall be deemed to be included in this installation works, and the Contractor shall be held responsible for any errors or defects which the Contractor may make due to such omissions thereof.

20.2 Only the best installation practices are to be applied, and all the installation works must be done to the satisfaction of the RSPCB/NTPC and the Contractor shall carry out his works in a neat and proper workmanlike manner. The installation shall be planned and carried out in no way to damage installation materials and the Equipment.

20.3 All the installing Equipment, tools, materials, labour, logistics and all the other requirements for installation shall be provided by the Contractor.

20.4 Prior to the establishment of Equipment layout and installation plan, the Contractor shall verify, check and inspect the designs and specific site conditions of monitoring stations and laboratories where the Equipment are to be installed so as to make good arrangement for installation and utility assembly in consultation with the RSPCB/NTPC.

21.0 INSPECTION AND TEST

- 21.1 The RSPCB/NTPC shall have the right to inspect and test the Equipment to confirm their conformity to the Specifications without any extra charge to the RSPCB by the Contractor. The Contractor shall notify the RSPCB/NTPC in writing, in a timely manner (at least 21days in advance), of the schedule of inspections and test.
- 21.2 The inspections and test shall be conducted on the premises of the Contractor and/or the Manufacturers and the Sites. If conducted on the premises of the Contractor and/or the Manufacturers, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the Consultant for the inspections and test at no charge to the RSPCB.
- 21.3 Should any inspected or tested Equipment fail to conform to the Specifications, the RSPCB/NTPC may reject the Equipment, and the Contractor shall either replace the rejected Equipment or make alternations necessary to meet the Specifications requirements free of cost to the RSPCB.
- 21.4 No pre dispatch inspection is envisaged for equipment of foreign origin and contractor shall furnish factory test / inspection reports as furnished below of the manufacturer along with the dispatch documents. However, the RSPCB/NTPC reserves the right to appoint at its cost, any inspection agency (other than suggested by contractors) which will be binding on the contractor.
- Performance Test Certificate of all analyzer/ UPS/ 1.2 mm pre-coated GI Sheet of container, NIST traceability for gas Aluminum cylinders/ Permeation tube
 - Certificate of Traceability
 - Verification of System Completeness
 - Product Certificate

These reports will be submitted before release of payment otherwise payment will be withheld.

- 21.5 For the equipment of Indian origin, contractor should submit check list for equipment for approval of NTPC/RSPCB. For container, contractor should take prior approval of the drawing from NTPC/RSPCB. Contractor should notify date of pre-dispatch inspection to the NTPC/RSPCB at least 15 (fifteen) days ahead of inspection.

The RSPCB/NTPC's right to inspect, test and, where necessary, reject the Equipment after the Equipment's arrival in India shall in no way be limited or waived by reason of the Equipment having previously been inspected, tested and passed by the RSPCB/NTPC prior to the Equipment's shipment from the country of origin.

22.0 TRAINING

- 22.1 The Contractor shall provide the RSPCB staff with the training as specified in clause 10.0 of S/W for the Equipment & Technical Specification.
- 22.2 The Contractor shall furnish the schedule and program of the training to the RSPCB/NTPC within 30 days after the notification of award in such a manner that proper training is imparted to RSPCB staff members.

23.0 COMPLETION

The Contractor shall complete all the Works by the date as specified in SCC.

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23.1 Taking Over

Upon successful completion of delivery, installation, inspection and training of the Equipment to and at the designated Sites and O&M of the CAAQMS& Mobile AAQMS for the period specified in SCC, the Contractor shall notify the RSPCB/NTPC in writing that all the Works under the Contract have been completed at least 30 days before expiry of O&M Contract period.

Immediately after completion of O&M Contract period as specified in SCC, the RSPCB will take over the stations or make alternate arrangement for their O&M.

24.0 SUBMISSION OF DOCUMENTS

The Contractor shall submit the documents specified in SCC to the NTPC/RSPCB. The Contractor shall prepare all the documents in English.

Besides the documents thereof, the Contractor shall submit the notices, reports, and other documents when deemed necessary, in accordance with the direction of the RSPCB/NTPC.

25.0 PAYMENT

25.1 Payment

The method, terms and conditions of payment to be made to the Contractor under this Contract shall be as specified in SCC.

The Contractor's request(s) for payment for, as appropriate, the Equipment delivered and the Works performed and fulfillment of other obligations stipulated in the Contract shall be made to the RSPCB in writing, accompanied by documents specified in SCC.

25.2 The payment shall be made promptly by the RSPCB after submission of required documents along with acceptance certificate.

25.3 Currency of Payment

The currency in which payment is made to the Contractor under this Contract shall be in Indian Rs.

26.0 PRICES

Prices charged by the Contractor to the RSPCB for the Equipment delivered and the Works performed under the Contract shall not vary from the prices quoted by the Contractor in the Financial Bid.

27.0 PERFORMANCE SECURITY

27.1 Performance Security

The Contractor within thirty (30) days from the date of notification of award shall furnish a Bank Guarantee from a scheduled bank as per SCC Clause 15.1.

27.2 Return of Performance Security

The performance security will be discharged by the RSPCB and returned to the Contractor not later than forty five (45) days on completion of the Contractor's performance obligations under the Contract, including obligations, unless specified otherwise in SCC.

28.0 ASSIGNMENT

The Contractor shall not assign in whole or in part, its obligations to perform under this Contract, except with the RSPCB/NTPC's prior written consent.

29.0 SUBCONTRACTORS

29.1 The Contractor shall notify the RSPCB/NTPC in writing of all the Manufacturers awarded under this Contract and any other subcontractors involved with performance of the Works if not already specified in the Bid. Such notification, in the original Bid or later, shall not relieve the Contractor from any liability or obligation under the Contract.

29.2 The Contractor shall not be allowed to sub-contract works to any sub-contractor/ sub-vendor from a country which shares a land border with India unless such sub-contractor is registered with the competent Authority.

The Competent Authority for the purpose of registration shall be as mentioned in the Annexure-I of SCC.

However, the said requirement of registration will not apply to sub-contractors from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects. The Contractor may apprise itself of the updated lists of such countries available in the website of the Ministry of External Affairs, Government of India.

30.0 DELAYS IN THE CONTRACTOR'S PERFORMANCE

30.1 Delays in the Contractor's Performance

Delivery of the Equipment and performance of the Works shall be made by the Contractor in accordance with the time schedule specified in SCC.

30.2 Notification of Delay

If at any time during performance of the Contract, the Contractor and/or the Manufacturer should encounter conditions impeding timely delivery of the Equipment and performance of the Works, the Contractor shall promptly notify the RSPCB/NTPC in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Contractor's notice, the RSPCB/NTPC shall evaluate the situation and may at its discretion extend the Contractor's time for performance, with or without liquidated damages, in which case the extension shall be ratified by the RSPCB/NTPC by amendment of the Contract.

30.3 Liability of Liquidated Damages

Except as provided under Clause 31.0 of GCC, a delay by the Contractor in the performance of its delivery obligations shall render the Contractor liable to the imposition of liquidated damages pursuant to Clause 32.0 hereunder, unless an extension of time is agreed upon pursuant to Sub-clause 30.2 here above without the application of liquidated damages.

31.0 LIQUIDATED DAMAGES

If the Contractor fails to perform the Works within the period specified in Clause 11.0 of SCC, the RSPCB shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in SCC. Once the

maximum is reached, the RSPCB/NTPC may consider termination of the Contract pursuant to Clause 35.0 of GCC.

32.0 SUSPENSION OF WORK

The Contractor shall not suspend the whole or any part of the Works without notice to the RSPCB/NTPC in writing. The Contractor thereupon shall do all possible endeavors to reduce any expenses or costs resulting from the suspension. Such suspension shall not nullify the Contract.

33.0 TERMINATION FOR DEFAULT

33.1 Termination for Default

The RSPCB, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Contractor, may terminate this Contract in whole or in part:

- 1) If the Contractor fails to perform any or all of the Works within the period specified in Clause 11.0 of SCC, or extension thereof granted by the RSPCB pursuant to Clause 30.0 of GCC
or
- 2) If the Contractor fails to perform any other obligations under the Contract.
- 3) If the Contractor, sub-contracts any part of the works in violation of the provision of GCC Clause 29.2.

33.2 Liability for Excess Cost for Unperformed Work

In the event the RSPCB terminates the Contract in whole or in part pursuant to Sub-clause 35.0 hereabove the RSPCB may procure at the risk and cost of the contractor, upon such terms and in such manner as it deems appropriate, the equipment/ works similar to those undelivered/ unperformed and the Contractor shall be liable to the RSPCB for any excess costs for such similar equipment/ works. However, the Contractor shall continue performance of the Contract to the extent not terminated.

34.0 FORCE MAJEURE

34.1 Notwithstanding the provisions of Clauses 32.0, 33.0 and 35.0 in GCC, the Contractor shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

34.2 For the purposes of this Clause, "Force Majeure" means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the RSPCB in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

34.3 If a Force Majeure situation arises, the Contractor shall promptly notify the RSPCB/NTPC in writing of such condition and the cause thereof. Unless otherwise directed by the RSPCB/NTPC in writing, the Contractor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

35.0 TERMINATION FOR INSOLVENCY

The RSPCB at any time will terminate the Contract by giving written notice to the Contractor if the Contractor becomes bankrupt or otherwise insolvent. In this event, termination will be without

compensation to the Contractor, provided that such, termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the RSPCB.

36.0 RESOLUTION OF DISPUTES

36.1 Settlement of Disputes

Any dispute(s) or difference(s) arising out of or in connection with the Contract shall, to the extent possible in the first instance be resolved amicably between the Contractor and the Owner's Engineer.

If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Contractor may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given.

Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.

In the case of dispute or difference arising between the Purchaser and a Domestic Contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of three arbitrators one each to be appointed by the Purchaser and the Contractor. The third arbitrator shall be chosen by the two arbitrators so appointed by the parties and shall act as presiding arbitrator. In case of failure of the two arbitrator appointed by the parties to reach upon a consensus within a period of 30 days on the appointment of the presiding arbitrator, the presiding arbitrator shall be appointed by the President of the Institution of Engineers (India).

If one of the parties fails to appoint its arbitrator within thirty days after receipt of the notice of the appointment of its arbitrator by the other party, then the Presiding Arbitrator nominated by President of the Institution of Engineers (India), both in case of the foreign contractor as well as Indian Contractor, shall appoint the arbitrator. A certified copy of the order of the President of the Institution of Engineers (India), making such an appointment shall be furnished to each of the parties.

Arbitration proceedings shall be held at Jaipur, India, and the language of the arbitration proceedings and that of documents and communications between the parties shall be English.

The decision of the majority of arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation etc. of its proceedings as also the fees and expenses paid to the arbitrator appointed by such party or on its behalf shall be borne by each party itself.

Where the value of the contract is Rs. 10 million and below, the disputes or differences arising shall be referred to the Sole Arbitrator. The sole Arbitrator should be appointed by agreement between the parties; failing such agreement, by the appointing authority namely the President of the Institution of Engineers (India).

37.0 TAXES AND DUTIES

Goods & Services Tax (GST) will be paid extra as applicable by RSPCB.

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38.0 INJURY AND DAMAGE

38.1 Injury or Death of Persons

The Contractor shall be liable for and shall indemnify the RSPCB against any liability, loss claim or proceedings whatsoever arising under any statute or law in respect of personal injury or death or any disability caused by the carrying out of the Works unless due to any act or neglect of the RSPCB, or of any person for whom the RSPCB is responsible.

Without prejudice to the Contractor's liability to indemnify the RSPCB, the Contractor shall maintain and cause any manufacturers and subcontractors to maintain such insurance as necessary to cover the liability of the Contractor or, as the case may be, of such Manufacturers and subcontractors, in respect of personal injuries or deaths arising out of or in the course of or caused by the carrying out of the Works.

38.2 Damage to Property

The Contractor shall be liable for and indemnify the RSPCB against, and insure and cause any Manufacturers and subcontractors to insure against, any expense, liability, loss claim or proceedings in respect of any damage whatsoever to any real or personal property for any one occurrence in so far as such damage arises out of or in the course of or by reason of the carrying out of the Works and is due to any negligence, omission or default of the Contractor or any person for whom the Contractor is responsible or any Manufacturers and subcontractors or person for whom the Manufacturers and subcontractors are responsible.

39.0 ROYALTY AND PATENTS

39.1 The Contractor shall pay all royalties and licenses fees for the use of any patented item, whether it may be an invention, method, arrangement, article, process or appliance used in connection with the performance of the Contract. The Contractor shall indemnify and save harmless the RSPCB against any and all costs, damages and expenses of any nature or kind whatsoever which may arise out of or result from a claim by any person, firm or corporation that the manufacture, purchase, use or sale of any of the inventions, methods, arrangements, articles, processes or appliances used in connection with the performance of this Contract infringes any patent or such other rights. The Contractor shall, at the request of the RSPCB, defend the RSPCB against any suit brought to enforce any such claim at the Contractor's expense.

39.2 In case any such patented item used on or in conjunction with the Works is in suit held to constitute and infringement of its use enjoined, the Contractor shall either secure for the RSPCB the right to continue using the said item by suspension of the injunction, by procuring for the RSPCB a license or otherwise, or will replace such items with a non-infringing item or modify it so that it becomes non-infringing or with the RSPCB's approval remove the said enjoined item and refund to the RSPCB the sums paid thereof.

40.0 EFFECTIVENESS

This Contract shall come into force and effect on the date of the Letter of Award and shall be in force until the Works have been completed and all the payments have been made to the Contractor, including the payments for O&M contract period.

41.0 LAWS AND REGULATIONS

The formation, validity and performance of this Contract shall be governed as to all matters by and under the laws and regulations of India and courts in Jaipur shall have exclusive jurisdiction in all matters arising under this Contract.

The Contractor shall respect and abide by all laws and regulations of India and shall make its best effort to ensure that the personnel of the Contractor and their dependents, while staying in India, shall respect and abide by all laws and regulations of India. The Contractor shall protect, absolve and indemnify the RSPCB and their representatives from any claim, loss or damage arising from any non-compliance alleged or proved, without claiming them for payment.

42 NOTICES

Any notice given by one party to the other pursuant to this Contract shall be sent to the other party in writing or by email and confirmed in writing to the other party's address specified in SCC.

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

VOLUME I
SECTION VI
SPECIAL CONDITIONS OF CONTRACT (SCC)



Rajasthan State Pollution Control Board



CONSULTANT: NTPC LIMITED
(A Government of India Enterprise)

SECTION VI
SPECIAL CONDITIONS OF CONTRACT

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SPECIAL CONDITIONS OF CONTRACT (SCC)

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Wherever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. The corresponding clause number of the GCC is indicated in parentheses, if applicable.

1.0 CLIMATE CONDITION

Precaution and protection against the specific climate conditions in India such as heavy rain, high temperature, high humidity, gales, excessive sunshine, flooding or any other climate conditions which could cause damage upon the Equipment or otherwise interfere with the execution of the works shall be taken. The Equipment to be supplied shall be tropicalized.

2.0 CONSUMABLES AND SPARE PARTS

2.1 Supply of Consumables and Spare Parts

The Contractor shall provide the consumables and spare parts as per requirement of Operation & maintenance of CAAQMS Stations & Mobile AAQMS

2.2 After Sales Services

The Contractor shall guarantee the availability of all consumables, spare parts, maintenance and repair work for each Equipment and IT hardware (server, communication links etc.) and requisite software along with equipments at cost basis for at least seven (7) years O&M period as specified in Clause 7.0 of SCC, unless otherwise specified in the Specifications.

Contractor should submit certificates from the manufacturers in support of available service centers and availability of spares parts and consumable in India as per Attachment no. 3AT of Section III.

3.0 NAME PLATE (GCC CLAUSE 12)

The Contractor shall affix the name plate with the following description in English on all the Equipment:

- 1) Name of the station
- 2) Name of the Equipment
- 3) Manufacturing date
- 4) Production serial number
- 5) Equipment model number
- 6) Name of manufacturer
- 7) Ratings of the Equipment
- 8) Logo of RSPCB and CPCB

4.0 MARKING (GCC SUB-CLAUSE 13.2)

The Contractor shall mark the following information in the sequence described below and in a frame commensurate with the size of packing and/or the Equipment.

- 1) Consignee: (Address of RSPCB), India
- 2) Name of the Works: Supply and O&M of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) for RSPCB at
- 3) Name of the Project: Supply and O&M of Continuous Ambient Air Quality Monitoring Station (CAAQMS) for RSPCB at.....

- 4) Contract number:
- 5) Contractors name:
- 6) Item, and if applicable, package number in sequence, and quantity per package and/or Equipment:
- 7) Description of Equipment:
- 8) Net and gross weight and cubic measurement:
- 9) Shipper's name and/or marks:
- 10) Caution marks, if applicable:
- 11) Other markings required by the RSPCB:

5.0 SHIPMENT (GCC CLAUSE 14.0)

The Contractor shall be responsible for the delivery of the Equipment to each Site designated by RSPCB and for the coverage of freight, insurance premiums up to handling over the Equipment at Sites, inland transportation and temporary storage.

5.1 Deleted

5.2 The Contractor shall submit the following documents to NTPC/RSPCB, with a copy to the Insurance Company upon delivery of the Equipment to the transporters:

- i) Four copies of the Supplier's invoice showing the Equipment's description, quantity, unit price and total amount
- ii) Acknowledgement of receipts of goods from the consignee i.e. receipted delivery note, railway receipt (RR), or lorry receipt (LR)
- iii) Supplier's and/or Manufacturer's warranty certificate
- iv) Factory test & inspection certificate issued by the competent authority.
- v) Insurance certificate
- vi) Certificate of country of origin

The above documents shall be received by the NTPC/RSPCB before arrival of the Equipment and, if not received, the Supplier shall be responsible for any consequent expenses.

6.0 WORKS SCHEDULE (GCC CLAUSE 16.0)

6.1 Supply, Installation, Commissioning and other incidental services:

All the equipment shall be received at Continuous Ambient Air Quality Monitoring Station site, within 13 weeks from the date of Notification of Award and are to be installed and commissioned within 15 weeks from date of receipt at site. Mobile vans are to be delivered at RSPCB headquarter in Jaipur.

All the equipment of the awarded package shall be commissioned within 28 weeks from the date of notification of award including all the incidental services i.e. training etc.

6.2 O&M Contract

The contractor shall carry out Operation & Maintenance of Air Monitoring Stations and Mobile AAQMS for a period of seven (7) years from the date of commissioning of the station. Operation & maintenance contract may be extended further for a period of 5 years through mutual agreement between RSPCB & the Supplier depending on the performance of Contractor.

7.0 WARRANTY / O & M CONTRACT (GCC CLAUSE 18)

7.1 Period of O&M Contract

The complete CAAQMS and Mobile AAQMS shall be under Operation & Maintenance Contract from the date of commissioning of the station and maintenance of all the equipment including supply of all material shall be the responsibility of the Contractor during the validity of Operation & Maintenance Contract. The Contractor shall, in addition, comply with the performance guarantees if specified under the Contract. If, for reasons attributable to the Contractor, these guarantees are not attained in whole or in part, the Contractor shall make such changes, modifications, and/or additions to the Equipment or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own costs and expenses and to carry out further performance test.

8.0 INSURANCE (GCC CLAUSE 19.0)

- A) The insurance (Comprehensive) shall be in an amount of equal to One Hundred Ten (110) percent of the value of the Equipment up to handing over of the Equipment to RSPCB on "All Risks" basis, including war risks and strikes, naming the RSPCB as the beneficiary.
- B) The Contractor shall take the comprehensive all risk insurance cover for the complete station/mobile AAQMS during O&M period including statutory insurance of Contractor's personnel. The value shall be 110% of the total value of the stations depreciated annually as per standard norms.

9.0 INSTALLATION (GCC CLAUSE 20.0)

Contractor shall depute Engineer/ supervisor for on-site assembly, installation, commissioning and start up of the supplied equipment. Contractor shall also furnish tools required for assembly, commissioning and maintenance of equipment during O&M period.

10.0 INSPECTION AND TEST (GCC CLAUSE 21.0)

10.1 Unpacking Inspection

Unpacking inspection shall be performed by the Contractor to inspect whether all the items and quantity of the Equipment have been delivered in conformity with the Equipment and packing list without any damage during the shipment.

The Contractor shall submit the unpacking inspection report to the RSPCB/NTPC.

10.2 Site Inspection

The Contractor shall carry out site inspection of the Equipment at each Site/ Mobile AAQMS at the completion of installation works to confirm that the installation works and the function of the Equipment is satisfactory for the requirements specified in S/W and the Specifications.

The Contractor shall carry out the functional test to ensure that the consumables and spare parts are good for the operation, maintenance and replacement in future.

As a result of site inspection, the Equipment regarded as unsatisfactory or unacceptable by the RSPCB shall be promptly remedied by the contractor. The Contractor shall submit the site inspection report to RSPCB/NTPC.

10.3 Performance Test

The Contractor shall carry out the performance test to inspect and witness the function of each of the equipment supplied under the awarded package at site.

Performance test shall be carried out in accordance with relevant clause of S/W for all the Equipment supplied.

In case the Equipment for performance test requires the supplemental and/or supporting Equipment, the Contractor shall carry out the performance test including such Equipment.

Performance test will be considered to be complete only after successful completion of performance test of each equipment pertaining to respective packages.

In case of results of such performance test found to be unsatisfactory by the NTPC/RSPCB, same shall be promptly remedied by the Contractor.

The Contractor shall prepare the performance test procedures for approval by the NTPC/RSPCB at least thirty (30) days prior to the testing schedules.

The Contractor shall submit the performance test report to the NTPC/RSPCB.

11.0 COMPLETION (GCC CLAUSE 23.0)

The supplier has to install and commission CAAQMS and Mobile AAQMS along with training to lab personnel within period of 28 weeks from date of issue of Notification of Award, if it is not completed within 28 weeks, LD clause will be applicable as per clause 16.0 of SCC.

12.0 SUBMISSION OF DOCUMENTS (GCC CLAUSE 24.0)

12.1 Work Program

Within thirty (30) days from the notification of award of the Contract, the Contractor shall submit the detailed Works program and schedule to NTPC/RSPCB indicating the following items:

- a. Equipment supply program and Equipment layout plan(if applicable).
- b. Design drawings and utility list, if required.
- c. Subcontractor list for installation work of the Equipment, if not already specified in the Techno-commercial Bid.
- d. Program for factory, pre-shipment, unpacking and site inspections and performance test.
- e. Installation program including personnel organization chart of the Contractor.

The Contractor shall be responsible for any discrepancies, errors or omissions or delay in delivery and submission of the work program, and any expenses resulting there from shall be borne by the Contractor.

12.2 Other Documents

The Contractor shall submit the following documents within forty five (45) days after the Notification of Award.

Item	Number of Documents to be submitted to NTPC/RSPCB per station
Catalogues, product data and test reports	4
Installation manuals	4
List of consumables and spare parts	4
Manufacturer's specifications	4
Training program	4

Besides the documents here above, the Contractor shall submit the following documents to RSPCB at the designated time for submissions as follows:

Item	Number of Documents per station	Time of Submission
Inspection report	2	At the time of completion of factory, pre-shipment unpacking and site inspections (if applicable)
Training manual	10	At the time of commencement of installation of Equipment
Operation and maintenance manual	10	At the time of commencement of installation of Equipment
Training program	1	By the time of completion of installation of Equipment
Report of performance test	1	At the time of completion of performance test
Video CD (Optional)	1	By the time of commencement of training
List of Equipment supplied	2	At the time of completion of the Work

Besides the documents here above, the Contractor shall submit the notices, reports, and other documents when deemed necessary, in accordance with the direction of the NTPC/RSPCB.

13.0 PAYMENT (GCC CLAUSE 25.0)

13.1 Method of Payment

The payment shall be made in Indian Rupees by means of an irrevocable Letter of Credit (LC) for equipment against dispatch.

Other payment shall be made through EFT/Cheque only.

13.2 Terms and Conditions of Payment

- (a) Terms and conditions of payment for goods and services shall be as follows-
- i) **On Delivery:** Eighty (80)% of the contract price along with applicable taxes & duties shall be paid (through LC) on receipt of Goods and upon submission of the documents specified in Clause 5.2 of SCC, and
 - ii) **On Final Acceptance:** Balance Twenty (20) percent of contract price of the equipment after satisfactory completion of installation & commissioning including Training (to be certified by the RSPCB) of all the Equipment of the particular package at specified site/ mobile AAQMS and submission of acceptance certificate as per Attachment 3 of SCC.
- (b) Payment of Operation and Maintenance charges:
- O&M cost of each year shall be paid after end of every quarter in equal installments based on submission of required air quality report along with data obtained from calibration documentation. Any penalties applicable, if any, as referred in Scope of Work for O&M Contract and as per Notification of Award of contract shall be deducted from the quarterly payment.
- (c) i) The LC will be confirmed at Supplier's cost if requested specifically by the supplier;
- ii) If LC is required to be extended / reinstated for reasons not attributable to the Purchaser, the charges thereof shall be to the suppliers account.
- iii) Any expenditure for the operation of LC shall be borne by the beneficiary-

14.0 PRICES (GCC CLAUSE 26.0)

The prices quoted shall be firm throughout the tenure of the Contract. Any increased cost incidental to the performance of the Works due to any economic dislocation or to any other causes such as currency restriction, price hike of the Equipment, wage hike for labour or, revaluation of the currency cannot be claimed by the Contractor to the RSPCB.

15.0 PERFORMANCE SECURITY (GCC CLAUSE 27.0)

15.1 Performance Security

The amount of performance security shall be in split as follows:

- (i) 20% of the value of contract for supply part valid up to 90 days after successful installation and commissioning of all 35 CAAQMS& 2 Mobile AAQMS.
- (ii) 15% of the value of the contract for O&M services valid up to 90 days beyond O&M period of 7 years.
- (iii) CPG for supply part shall remain valid till submission of CPG for O&M part of Contract and on submission of CPG for O&M part, CPG for supply part shall be released.

The Performance Bank Guarantee shall be in the name of RSPCB

However, in case of delay in completion of Installation and Commissioning, the validity of all the contract performance securities shall be extended by the period of such delay.

16.0 LIQUIDATED DAMAGES (GCC CLAUSE 31.0)

16.1 Rate

The Contractor shall pay to the RSPCB as liquidated damages a sum equivalent to One and half (1.5) percent of the contract price (supply portion) of each station for per week of delay in commissioning of each station.

16.2 Maximum Deduction

The total liquidated damages on account of delay in supplies payable to the RSPCB shall not in any case exceed ten (10) percent of the Contract price of supply portion only (Excluding O&M charges).

16.3 In addition to above Liquidated damages for delay, the Contractor is liable to pay penalty on account of failure of systems during O&M period as elaborated in clause 11.5 of Section – II (Scope of work) of this document.

17.0 NOTICES (GCC CLAUSE 42.0)

Any notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the party to whom the communication is addressed or when sent by registered mail / email to such party at the following address:

17.1 Owner

The authorized personnel of the RSPCB for the Project who is responsible for any coordination with the Contractor is:

**Member Secretary or Authorized Representative,
Rajasthan State Pollution Control Board,
4, Institutional Area, Jhalana Doongri,
Jaipur, India**

17.2 Consultant

The authorized personnel of the Consultant responsible for any coordination with the Contractor is:

**Project Manager,
Consultancy Wing,
NTPC Ltd,
EOC Annexe Building,
A-8A, Sector-24, Noida-201301.INDIA**

**Form of Bank Guarantee for Performance Security
(For Supply part)**

(to be stamped in accordance with Stamp Act, if any, of the Country of the issuing Bank)

Bank Guarantee No.

Date :

Ref. No.:.....

To,

**The Member Secretary,
Rajasthan State Pollution Control Board,
4, Institutional Area, Jhalana Doongri,
Jaipur, India.**

Dear Sirs

THIS AGREEMENT is made on the -----day of----- 2021 between -----[Name of the Bank and address] -----(hereinafter called "the Guarantor") of the one part and Member Secretary, Rajasthan State Pollution Control Board, Jaipur, India (hereinafter called "RSPCB") of the other part.

WHEREAS

- (1) This agreement is supplemental to a contract number(insert Contract Number)..... (hereinafter called "the Contract") made between [name and address of Contractor] (hereinafter called "the Contractor") of the one part and the RSPCB of the other part whereby the Contractor agreed and undertook to execute the works of Supply and O&M of Continuous Ambient Air Quality Monitoring Station (CAAQMS) and Mobile AAQMS for RSPCB as against the Contract for the sum of Indian Rs..... [amount in words in Indian Rs.]..... being the Contract Price; and
- (2) The Guarantor has agreed to guarantee the due performance of the Contract in the manner hereinafter appearing.

NOW, THEREFORE, the Guarantor hereby agrees with the RSPCB as follows;

- (a) If the Contractor (unless relieved from the performance by any clause of the Contract or by statute or by the decision of a tribunal of competent jurisdiction) shall in any respect fail to execute the Contract or commit any breach of his obligations there under then the Guarantor will indemnify and pay the RSPCB the aggregate sum of Indian Rs.....[amount of Guarantee shall be 20% of the value of contract](in words) , provided that the RSPCB or his Authorized Representative has notified the Guarantor to that effect and has made a claim against the Guarantor before the expiry of 90 days after successful installation and commissioning all 35 CAAQMS & 2 Mobile AAQMS .
- (b) The guarantor shall not be discharged or released from his guarantee by an arrangement between the Contractor and the RSPCB, with or without the consent of the Guarantor, or by any alteration in the obligations undertaken by the Contractor, or by any forbearance on the part of the Contractor, whether as to payment, time, performance, or otherwise, any notice to the Guarantor of any such arrangement, alteration, or forbearance is hereby expressly waived.

This guarantee shall be valid up to 90 days after successful installation and commissioning of all 35 CAAQMS & 2 Mobile AAQMS as specified in the contract.

Given under our hand on the date first mentioned above.

SIGNED BY -----
for and on behalf of the
Guarantor
(Seal of Guarantor)

in the presence of

(Witness)

**Form of Bank Guarantee for Performance Security
(For O&M part)**

(to be stamped in accordance with Stamp Act, if any, of the Country of the issuing Bank)
Bank Guarantee No. -----

Date : -----

Ref. No.:-----

**To,
The Member Secretary,
Rajasthan State Pollution Control Board,
4, Institutional Area, Jhalana Doongri,
Jaipur, India.**

Dear Sirs

THIS AGREEMENT is made on the -----day of----- 2021 Between -----[Name and address of the bank]----- (hereinafter called "the Guarantor") of the one part and Member Secretary, Rajasthan State Pollution Control Board, Jaipur, India (hereinafter called "RSPCB") of the other part.

WHEREAS

- (1) This agreement is supplemental to a contract number -----(insert Contract Number) (hereinafter called "the Contract") made between [name and address of Contractor]----- (hereinafter called "the Contractor") of the one part and the RSPCB of the other part whereby the Contractor agreed and undertook to execute the works of Supply and O&M of Continuous Ambient Air Quality Monitoring Station (CAAQMS) & Mobile AAQMS for RSPCB as against the Contract for the sum of ----- [amount in Indian Rs] being the Contract Price; and
- (2) The Guarantor has agreed to guarantee the due performance of the Contract in the manner hereinafter appearing.

NOW, THEREFORE, the Guarantor hereby agrees with the RSPCB as follows;

- (iv) If the Contractor (unless relieved from the performance by any clause of the Contract or by statute or by the decision of a tribunal of competent jurisdiction) shall in any respect fail to execute the Contract or commit any breach of his obligations there under then the Guarantor will indemnify and pay the RSPCB the aggregate sum of [amount of Guarantee shall be 15% of the value of the contract for O&M charges][in words], such sum being payable in Indian Rupees, provided that the RSPCB or his Authorized Representative has notified the Guarantor to that effect and has made a claim against the Guarantor before the expiry of 90 days after O&M period of seven years.
- (b) The guarantor shall not be discharged or released from his guarantee by an arrangement between the Contractor and the RSPCB, with or without the consent of the Guarantor, or by any alteration in the obligations undertaken by the Contractor, or by any forbearance on the part of the Contractor, whether as to payment, time, performance, or otherwise, any notice to the Guarantor of any such arrangement, alteration, or forbearance is hereby expressly waived.

This Bank Guarantee shall be valid up to 90 days beyond O&M period of 7 years

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section VI (SCC)	Page 11 of 17
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Given under our hand on the date first mentioned above.

SIGNED BY -----
for and on behalf of the
Guarantor
(Seal of Guarantor)

in the presence of

(Witness)

FORM FOR CONTRACT AGREEMENT FOR SUPPLY AND OPERATION & MAINTENANCE OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS)& MOBILE AAQMS

This operation and Maintenance Agreement (“Agreement”) is made on this ----- day of----- by and between:

Rajasthan State Pollution Control Board, India which term shall include permitted assigns and successors (Hereinafter called as “RSPCB” or “the Owner”).

And

M/s. ----- a company incorporated ----- with Regd. Office at ----- which term shall include permitted assigns and successors (hereinafter called as “Contractor” or “the Contractor”)

RECITALS

Whereas the Owner had invited Bids under reference ----- for supply and Operation & Maintenance Continuous Ambient Air Quality Monitoring Station located atBharatpur, Sawai Madhopur, Karouli, Dholpur, Sri Ganga Nagar, Hanumangarh, Bhilwara, Raj Samand, Balotra, Barmer, Jalore, Chittorgarh, Pratapgarh, Banswara, Jaisalmer, Dausa, Tonk, Nagaur, Bundi, Baran, Jhalawar,Sirohi, Sikar, Churu, Jhnhunu, Dungarpur, 3 at Jaipur, 02 at Kota and 4 at Jodhpurand 2 nos Mobile AAQMS

and M/s ----- had submitted their bid against the aforesaid invitation to bid and Owner has accepted the bid of M/s ----- and has decided to entrust the job of supply and Operation & Maintenance (O&M) of the thirty five continuous Ambient Air Quality Monitoring Station&2 nos Mobile AAQMS located at..... to the Contractor vide Letter of Award ref.----- dated ----- at a total Contract Price for complete scope of work of ----- (Contract Price in Words and Figures) (Hereinafter “the Contract Price”).

Whereas the Contractor has accepted the Letter of Award issued by the Owner in writing vide its letter no.----- dated ----- and has furnished Contract Performance Security for an amount of Rs. ----- [Rupees-----only] and which is initially valid up to ----- and Owner has accepted the said Contract Performance Security.

Whereas, Contractor is having expertise in the business inter alia, of supplying and operation & maintenance of Continuous Ambient Air Quality Monitoring Stations/mobile AAQMS and the owner has engaged the Contractor to supply and perform operation and maintenance of said Continuous Ambient Air Quality Monitoring Stations/mobile AAQMS upon the terms & conditions set forth in this Agreement and the Letter of Award referred above issued by the Owner including all the documents referred in the above Letter of Award.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS;

- 1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

CAAQM & MOBILE AAQM Stations for RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Section VI (SCC)	Page 13 of 17
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2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
 - i) Scope of Works;
 - ii) Financial Bid;
 - iii) Technical Specifications;
 - iv) General Conditions of Contract;
 - v) Special Conditions of Contract; and
 - vi) The Notification of Award(s).

This Contract sets forth the entire contract and agreement between the parties pertaining to the supply of the Goods described herein and Operation & Maintenance of the Continuous Ambient Air Quality Monitoring Stations/Mobile AAQMS and supersedes any and all earlier verbal or written agreements pertaining to the supply of the Goods.

This Contract 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.

3. In consideration of the payments to be made by RSPCB to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the RSPCB to perform the Works and to remedy defects therein conformity in all respects with the provisions of the Contract.
4. The RSPCB hereby covenants to pay the Contractor in consideration of the performance of the Works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
5. Any notice under the Contract shall be in the form of letter or email. Notices to either party shall be given at such address or addresses as such party shall specify from time to time by written notice to the other. In the absence of such notice to the contrary, notice to the RSPCB, shall be properly addressed to:

**The Member Secretary,
Rajasthan State Pollution Control Board,
4, Institutional Area, Jhalana Doongri,
Jaipur, India**

And notice to the Contractor shall be properly addressed to:

[Contractor's address and electronic transmission address]

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.

Signature of RSPCB's Authorized
Representative

Signature of Contractor

Signed, Sealed and Delivered by the said

(For the RSPCB) in the presence of

Signed, Sealed and Delivered by the said

(For the Contractor) in the presence of

**PROFORMA OF CERTIFICATE FOR ISSUE BY THE RSPCB
AFTER SUCCESSFUL COMMISSIONING OF EQUIPMENT**

No.:

Date:

M/s

Subject: Certificate of Commissioning of equipment.

1. 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/mobile AAQMS.....
- c) Description of the equipment
- d) Package No.
- e) Quantity
- f) Name of the transporter
- g) RR No. dated
- h) Name of the consignee
- i) Date of commissioning and performance test

2. Details of recoveries to be made on that account:

Sl. No.	Description	Amount to the recovered

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

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

- a) He has adhered to the time schedule specified in the contract in dispatching the documents drawing pursuant to Technical Specifications.
- b) He has supervised the commissioning of the item in time i.e. within the period specified in the contract form the date of intimation by the Purchaser in respect of the installation of the plant.
- c) Training of personnel has been done by the contractor specified in the contract.
- d) In the event of documents/drawings having not been submitted by the 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.....

ANNEXURE - I TO SCC)

F.No.6/18/2019-PPD
Ministry of Finance
Department of Expenditure
Public Procurement Division

161, North Block,
New Delhi
23rd July, 2020

Order (Public Procurement No. 1)

Subject: Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017

Attention is invited to this office OM no. 6/18/2019-PPD dated 23rd July 2020 inserting Rule 144 (xi) in GFRs 2017. In this regard, the following is hereby ordered under Rule 144 (xi) on the grounds stated therein:

Requirement of registration

1. Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority, specified in **Annex I**.
2. This Order shall not apply to (i) cases where orders have been placed or contract has been concluded or letter/notice of award/ acceptance (LoA) has been issued on or before the date of this order; and (ii) cases falling under **Annex II**.

Transitional cases

3. Tenders where no contract has been concluded or no LoA has been issued so far shall be handled in the following manner: -
 - a) *In tenders which are yet to be opened, or where evaluation of technical bid or the first exclusionary qualifying stage (i.e. the first stage at which the qualifications of tenderers are evaluated and unqualified bidders are excluded) has not been completed: No contracts shall be placed on bidders from such countries. Tenders received from bidders from such countries shall be dealt with as if they are non-compliant with the tender conditions and the tender shall be processed accordingly.*
 - b) *If the tendering process has crossed the first exclusionary qualifying stage: If the qualified bidders include bidders from such countries, the*

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entire process shall be scrapped and initiated *de novo*. The *de novo* process shall adhere to the conditions prescribed in this Order.

- c) As far as practicable, and in cases of doubt about whether a bidder falls under paragraph 1, a certificate shall be obtained from the bidder whose bid is proposed to be considered or accepted, in terms of paras 8, 9 and 10 read with para 1 of this Order.

Incorporation in tender conditions

4. In tenders to be issued after the date of this order, the provisions of paragraph 1 and of other relevant provisions of this Order shall be incorporated in the tender conditions.

Applicability

5. Apart from Ministries / Departments, attached and subordinate bodies, notwithstanding anything contained in Rule 1 of the GFRs 2017, this Order shall also be applicable
 - a. to all Autonomous Bodies;
 - b. to public sector banks and public sector financial institutions; and
 - c. subject to any orders of the Department of Public Enterprises, to all Central Public Sector Enterprises; and
 - d. to procurement in Public Private Partnership projects receiving financial support from the Government or public sector enterprises/ undertakings.
 - e. Union Territories, National Capital Territory of Delhi and all agencies/ undertakings thereof

Definitions

6. "Bidder" for the purpose of this Order (including the term 'tenderer', 'consultant' 'vendor' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency, branch or office controlled by such person, participating in a procurement process.
7. "Tender" for the purpose of this Order will include other forms of procurement, except where the context requires otherwise.
8. "Bidder from a country which shares a land border with India" for the purpose of this Order means

- a) An entity incorporated, established or registered in such a country; or
- b) A subsidiary of an entity incorporated, established or registered in such a country; or
- c) An entity substantially controlled through entities incorporated, established or registered in such a country; or
- d) An entity whose *beneficial owner* is situated in such a country; or
- e) An Indian (or other) agent of such an entity; or
- f) A natural person who is a citizen of such a country; or
- g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

9. "Beneficial owner" for the purpose of paragraph 8 above will be as under:

- (i) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), has a controlling ownership interest or who exercises control through other means.

Explanation—

- a. "Controlling ownership interest" means ownership of, or entitlement to, more than twenty-five per cent of shares or capital or profits of the company;
- b. "Control" shall include the right to appoint the majority of the directors or to control the management or policy decisions, including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

- (ii) In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

- (iii) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;

- (iv) Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

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(v) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

10. "Agent" for the purpose of this Order is a person employed to do any act for another, or to represent another in dealings with third persons.

Sub-contracting in works contracts

11. In works contracts, including turnkey contracts, contractors shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority. The definition of "contractor from a country which shares a land border with India" shall be as in paragraph 8 above. This shall not apply to sub-contracts already awarded on or before the date of this Order.

Certificate regarding compliance

12. A certificate shall be taken from bidders in the tender documents regarding their compliance with this Order. If such certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law.

Validity of registration

13. In respect of tenders, registration should be valid at the time of submission of bids and at the time of acceptance of bids. In respect of supply otherwise than by tender, registration should be valid at the time of placement of order. If the bidder was validly registered at the time of acceptance / placement of order, registration shall not be a relevant consideration during contract execution.


Government E-Marketplace

14. The Government E-Marketplace shall, as soon as possible, require all vendors/ bidders registered with GeM to give a certificate regarding compliance with this Order, and after the date fixed by it, shall remove non-compliant entities from GeM unless/ until they are registered in accordance with this Order.

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Model Clauses/ Certificates

15. Model Clauses and Model Certificates which may be inserted in tenders / obtained from Bidders are enclosed as **Annex III**. While adhering to the substance of the Order, procuring entities are free to appropriately modify the wording of these clauses based on their past experience, local needs etc. without making any reference to this Department.


(Sanjay Prasad)

Joint Secretary (PPD)

Email ID: js.pfc2.doe@gov.in

Telephone: 011-23093862

To

- (1) Secretaries of All Ministries/ Departments of Government of India for information and necessary action. They are also requested to inform these provisions to all procuring entities.
- (2) Secretary, Department of Public Enterprises with a request to immediately reiterate these orders in respect of Public Enterprises.
- (3) Secretary DPIIT with a request to initiate action as provided under Annex I
- (4) Chief Secretaries/ Administrators of Union Territories/ National Capital Territory of Delhi

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Annex I: Competent Authority and Procedure for Registration

- A. The Competent Authority for the purpose of registration under this Order shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT)*.
- B. The Registration Committee shall have the following members*:
- i. An officer, not below the rank of Joint Secretary, designated for this purpose by DPIIT, who shall be the Chairman;
 - ii. Officers (ordinarily not below the rank of Joint Secretary) representing the Ministry of Home Affairs, Ministry of External Affairs, and of those Departments whose sectors are covered by applications under consideration;
 - iii. Any other officer whose presence is deemed necessary by the Chairman of the Committee.
- C. DPIIT shall lay down the method of application, format etc. for such bidders as stated in para 1 of this Order.
- D. On receipt of an application seeking registration from a bidder from a country covered by para 1 of this Order, the Competent Authority shall first seek political and security clearances from the Ministry of External Affairs and Ministry of Home Affairs, as per guidelines issued from time to time. Registration shall not be given unless political and security clearance have both been received.
- E. The Ministry of External Affairs and Ministry of Home Affairs may issue guidelines for internal use regarding the procedure for scrutiny of such applications by them.
- F. The decision of the Competent Authority, to register such bidder may be for all kinds of tenders or for a specified type(s) of goods or services, and may be for a specified or unspecified duration of time, as deemed fit. The decision of the Competent Authority shall be final.
- G. Registration shall not be granted unless the representatives of the Ministries of Home Affairs and External Affairs on the Committee concur*.
- H. Registration granted by the Competent Authority of the Government of India shall be valid not only for procurement by Central Government and its agencies/ public enterprises etc. but also for procurement by State Governments and their agencies/ public enterprises etc. No fresh registration at the State level shall be required.

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- I. The Competent Authority is empowered to cancel the registration already granted if it determines that there is sufficient cause. Such cancellation by itself, however, will not affect the execution of contracts already awarded. Pending cancellation, it may also suspend the registration of a bidder, and the bidder shall not be eligible to bid in any further tenders during the period of suspension.
- J. For national security reasons, the Competent Authority shall not be required to give reasons for rejection / cancellation of registration of a bidder.
- K. In transitional cases falling under para 3 of this Order, where it is felt that it will not be practicable to exclude bidders from a country which shares a land border with India, a reference seeking permission to consider such bidders shall be made by the procuring entity to the Competent Authority, giving full information and detailed reasons. The Competent Authority shall decide whether such bidders may be considered, and if so shall follow the procedure laid down in the above paras.
- L. Periodic reports on the acceptance/ refusal of registration during the preceding period may be required to be sent to the Cabinet Secretariat. Details will be issued separately in due course by DPIIT.

[*Note:

- i. In respect of application of this Order to procurement by/ under State Governments, all functions assigned to DPIIT shall be carried out by the State Government concerned through a specific department or authority designated by it. The composition of the Registration Committee shall be as decided by the State Government and paragraph G above shall not apply. However, the requirement of **political and security clearance as per para D shall remain and no registration shall be granted without such clearance.**
- ii. Registration granted by State Governments shall be valid only for procurement by the State Government and its agencies/ public enterprises etc. and shall not be valid for procurement in other states or by the Government of India and their agencies/ public enterprises etc.]

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Annex II: Special Cases

- A. Till 31st December 2020, procurement of medical supplies directly related to containment of the Covid-19 pandemic shall be exempt from the provisions of this Order.
- B. *Bona fide* procurements made through GeM without knowing the country of the bidder till the date fixed by GeM for this purpose, shall not be invalidated by this Order.
- C. *Bona fide* small procurements, made without knowing the country of the bidder, shall not be invalidated by this Order.
- D. In projects which receive international funding with the approval of the Department of Economic Affairs (DEA), Ministry of Finance, the procurement guidelines applicable to the project shall normally be followed, notwithstanding anything contained in this Order and without reference to the Competent Authority. Exceptions to this shall be decided in consultation with DEA.
- E. This Order shall not apply to procurement by Indian missions and by offices of government agencies/ undertakings located outside India.

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Annex III

Model Clause /Certificate to be inserted in tenders etc.

(While adhering to the substance of the Order, procuring entities and GeM are free to appropriately modify the wording of the clause/ certificate based on their past experience, local needs etc.)

Model Clauses for Tenders

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
- II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. "Bidder from a country which shares a land border with India" for the purpose of this Order means: -
 - a. An entity incorporated, established or registered in such a country; or
 - b. A subsidiary of an entity incorporated, established or registered in such a country; or
 - c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
 - d. An entity whose *beneficial owner* is situated in such a country; or
 - e. An Indian (or other) agent of such an entity; or
 - f. A natural person who is a citizen of such a country; or
 - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
- IV. The *beneficial owner* for the purpose of (iii) above will be as under:
 1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation—

 - a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company;

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- b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
 3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
 4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
 5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.
- VI. *[To be inserted in tenders for Works contracts, including Turnkey contracts]* The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

Model Certificate for Tenders (for transitional cases as stated in para 3 of this Order)

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I hereby certify that this bidder is not from such a country and is eligible to be considered."

Model Certificate for Tenders

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the

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Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

Model Certificate for Tenders for Works involving possibility of sub-contracting

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

Model Certificate for GeM:

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this vendor/ bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this vendor/ bidder fulfills all requirements in this regard and is eligible to be considered for procurement on GeM. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

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F.No.6/18/2019-PPD
Ministry of Finance
Department of Expenditure
Public Procurement Division

161, North Block
New Delhi
23rd July, 2020

Order (Public Procurement No. 2)

Subject: Exclusion from restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017 –regarding.

In Order (Public Procurement No. 1) dated 23rd July 2020, orders have been issued requiring registration of bidders from a country sharing a land border with India in order to be eligible to bid in public procurement.

2. Notwithstanding anything contained therein, it is hereby clarified that the said Order will not apply to bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects.

3. Updated lists of countries to which lines of credit have been extended or in which development projects are undertaken are given in the website of the Ministry of External Affairs.



(Sanjay Prasad)

Joint Secretary (PPD)

Email ID: js_pfc2_doe@gov.in

Telephone: 011-23093882

To,

- (1) Secretaries of All Ministries/ Departments of Government of India for information and necessary action. They are also requested to inform these provisions to all procuring entities.
- (2) Secretary, Department of Public Enterprises with a request to immediately reiterate these orders in respect of Public Enterprises.
- (3) Chief Secretaries/ Administrators of Union Territories/ National Capital Territory of Delhi

VOLUME II

TECHNICAL SPECIFICATIONS



RSPCB

RAJASTHAN STATE POLLUTION CONTROL BOARD

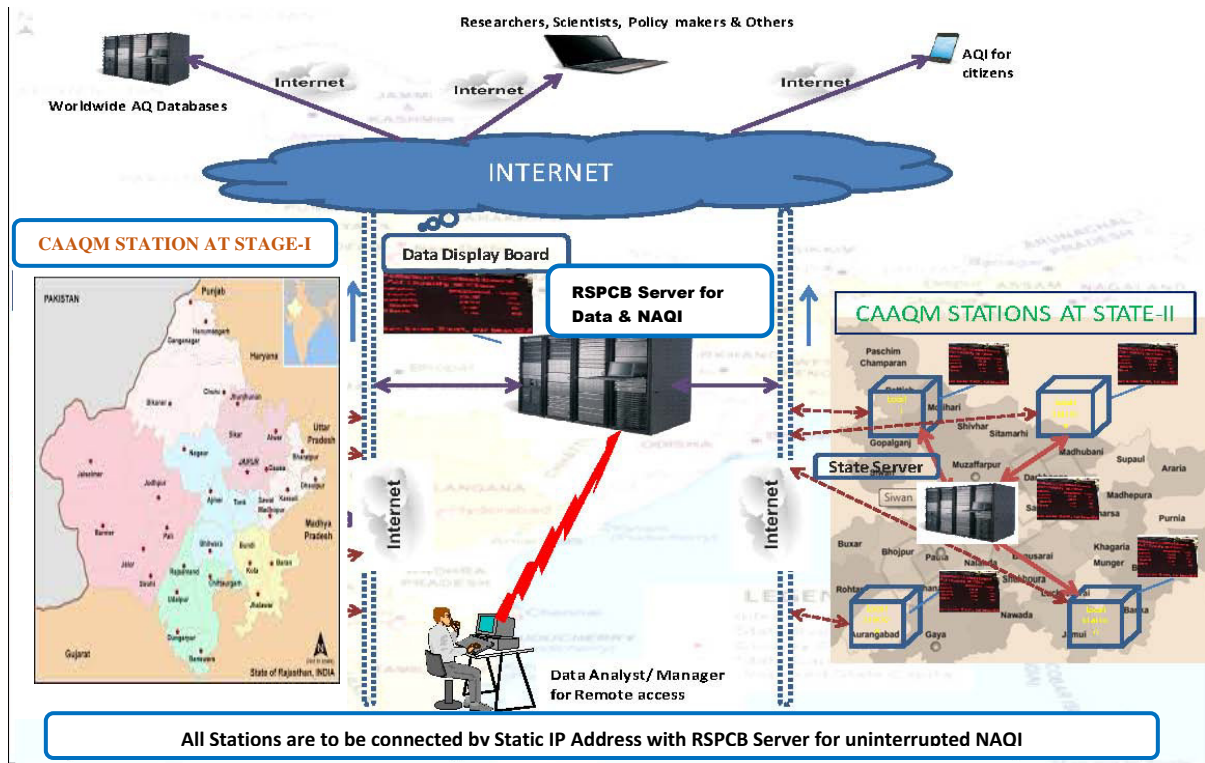


CONSULTANT: NTPC LIMITED (A Government of India Enterprise)

Technical Specifications of this Package (CW-CM-11080-C-O-M-001) shall be as per Technical Specification of Rajasthan State Pollution Control Board (RSPCB) attached herewith.

CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS FOR RSPCB	Bidding Doc. No.: CW-CM-11080-C-O-M-001	Volume-II
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TECHNICAL SPECIFICATIONS FOR CONTINUOUS AMBIENT AIR QUALITY MONITORING (CAAQM) STATION(REAL TIME)



Rajasthan State Pollution Control Board

4, Jhalana Industrial Area, Jhalana Doongri, Jaipur
Rajasthan-302004

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BILL OF QUANTITY (BOQ)

A) MINIMUM REQUIREMENTS FOR AAQM STATION

The equipment's are intended for total 35 number Continuous Ambient Air Quality Monitoring (CAAQM) Station. The system should be completely functional. Any balance of material not specified but required for the purpose of intent of the contract must be supplied by the vendors.

Brief Description	Qty. in Nos./Station	Total Quantity
CAAQM STATION – HOUSING/CONTAINER		
Housing/Container for Continuous Ambient Air Quality Monitoring (CAAQM) Station including sampling system, internal fittings, instrument racks, electrical and gas line fittings, tools (electrical & mechanical), & Security cabin	1 No.	35 Nos.
Split Air Conditioner (2 Ton Capacity)	2 Nos.	70 Nos.
Split Air Conditioner (1 Ton Capacity)	1 No.	35 Nos.
Online UPS 10 KVA, capacity (Three Phase I/P and Single Phase O/P, with 02 hrs backup) (for Air Conditioner)	1 No.	35 Nos.
Online UPS 5 kVA, capacity (Single Phase I/P & Single phase O/P, with 02 hrs backup) (01 for Analysers & 01 for Server at Central Station)	1 Nos.	36 Nos.
Sampling System	1 No.	35 Nos.
19" Rack	3 Nos.	105 Nos.
Ambient SO ₂ , Analyser	1 No.	35 Nos
Ambient NO-NO ₂ -NO _x , Analyser	1 No.	35 Nos.
Ambient NH ₃ , Analyser	1 No.	35 Nos.
Ambient CO, Analyser	1 No.	35 Nos.
Ambient O ₃ , Analyser	1 No.	35 Nos.
Ambient BTX, Analyser	1 No.	35 Nos.
Continuous PM ₁₀ Monitoring Analyser(β-RAY)	1 No.	35 Nos.
Continuous PM _{2.5} Monitoring Analyser(β-RAY)	1 No.	35 Nos.
Multi Point Gas Calibration System	1 No.	35 Nos.
Meteorological, Flow and Electronics Calibration	1 No.	35 Nos.
Meteorological System comprising of sensors for (A) Wind Speed, (B) Wind Direction, (C) Ambient Temperature, (D) Relative Humidity, (E) Solar Radiation, (F) Barometric Pressure & (G) Rainfall, mounted on (H) Telescopic Crank-up Meteorological Tower	1 No.	35 Nos.

Brief Description	Qty. in Nos./Station	Total Quantity
Data acquisition and handling system at stations	1 No.	35 Nos.
Work Station Computer at stations (for AQI Preparation)	1 No.	35 Nos.
Manageable CISCO Switch (Rack Mountable)	1 No.	35 Nos.
Remote Monitoring Tool/Software (For Stations and Central locations) with access through Mobile App. for Central Station	1 No.	35 Nos.
42 U Industrial Rack (For Central Station at SPCB)	1 No.	01 No.
Rack Server (For Central Station at SPCB)	1 No.	01 No.
Access Point (AP) (For Central Station at SPCB)	1 No.	01 No.
Unified Threat Management (UTM) device (For Central Station at SPCB)	1 No.	01 No.
Connectivity for Data Transfer (Station)	1 No.	35 Nos.
DATA ACQUISITION SOFTWARE FOR STATION (CAAQM)	1 No.	35 Nos.
DATA ACQUISITION SOFTWARE FOR CENTRAL STATION AT SPCB	1 No.	1 No.
DISPLAY BOARD DATA TRANSMISSION DEVICE, DAY LIGHT, AND NIGHT VISIBLE DATA DISPLAY SYSTEM Details of Display board is as follows: 35 at the stations+ 33 at the different city areas		68 Nos
RCC foundation, pillars miscellaneous works including Caging , civil & electrical work (for CAAQM stations as well as Data Display Boards)	Actual	Actual

B) MINIMUM REQUIREMENTS FOR MAAQM VAN

The equipment's are intended for two number Mobile Ambient Air Quality Monitoring (MAAQM) VAN. The system should be completely functional. Any balance of material not specified but required for the purpose of intent of the contract must be supplied by the vendors.

	Qty. in Nos./Van	TOTAL QUANTITY
CAAQM STATION – HOUSING/CONTAINER		
Housing/Container for Continuous Ambient Air Quality Monitoring (CAAQM) Station including sampling system, internal fittings, instrument racks, electrical and gas line fittings, tools (electrical & mechanical), etc.	1 No.	2 Nos.
Split Air Conditioner (2 Ton Capacity)	2 Nos.	4 Nos.
Split Air Conditioner (1 Ton Capacity)	1 No.	2 Nos.
Online UPS 5 KVA, capacity (Single Phase I/P and Single Phase O/P, with 02 hrs backup) (for Air Conditioner)	1 No.	2 Nos.

	Qty. in Nos./Van	TOTAL QUANTITY
Online UPS 5 kVA, capacity (Single Phase I/P & Single phase O/P, with 02 hrs backup) (01 for Analysers & 01 for Server at Central Station)	2 Nos.	3 Nos.
Sampling System	1 No.	2 Nos.
19" Rack	3 Nos.	6 Nos.
Ambient SO ₂ , Analyser	1 No.	2 Nos.
Ambient NO-NO ₂ -NO _x , Analyser	1 No.	2 Nos.
Ambient NH ₃ , Analyser	1 No.	2 Nos.
Ambient CO, Analyser	1 No.	2 Nos.
Ambient O ₃ , Analyser	1 No.	2 Nos.
Ambient BTX, Analyser	1 No.	2 Nos.
Continuous PM ₁₀ Monitoring Analyser(β-RAY)	1 No.	2 Nos.
Continuous PM _{2.5} Monitoring Analyser(β-RAY)	1 No.	2 Nos.
Multi Point Gas Calibration System	1 No.	2 Nos.
Meteorological, Flow and Electronics Calibration	1 No.	2 Nos.
METEOROLOGICAL SYSTEM		
Meteorological System comprising of sensors for (A) Wind Speed, (B) Wind Direction, (C) Ambient Temperature, (D) Relative Humidity, (E) Solar Radiation , (F) Barometric pressure & (G) Rainfall, mounted on (H) Telescopic Crank-up Meteorological Tower	1 No.	2 Nos.
Data acquisition and handling system at stations	1 No.	2 Nos.
Work Station Computer at stations (for AQI Preparation)	1 No.	2 Nos.
Manageable CISCO Switch (Rack Mountable)	1 No.	2 Nos.
Remote Monitoring Tool/Software (For Stations and Central locations) with access through Mobile App. For Central Station	1 No.	2 Nos.
Rack Server (For Central Station at SPCB)		1No
DATA ACQUISITION SOFTWARE FOR STATION (CAAQM)	1 No.	2 Nos.
DATA ACQUISITION SOFTWARE FOR CENTRAL STATION AT SPCB	1 No.	1 Nos
DATA DISPLAY BOARD(1.5Ftx3Ft) mounted on Mobile Van	1 No.	2 Nos.
PETROL GENERATOR SET-10 KVA	1 No.	2 Nos.
Vehicle model number TATA LPT 709Ex 2/Mahindra Loading or equivalent of reputed make along with vehicle frame (Chassis build up) air conditioned and thermally stable instrument cabin. Arrangements like Thermally Stable Housing (Body Built up)for installation of Continuous Ambient air quality Monitoring analysers with Sampling line, Internal fittings, Instruments racks, Electrical and Gas line Fittings, Tools (electrical and mechanical).	1 No.	2 Nos.

TECHNICAL SPECIFICATIONS

1. CAAQM STATION –HOUSING/ CONTAINER

1.1 **Housing/Container:** It 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 analyzers are easily accessible from front & back for calibration and maintenance.

1.1.1 **Dimensions:** Inside length: 4200 mm
Inside width: 3500 mm
Inside height: 2500 mm (As per the Drawing given)

1.1.2 **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 (IS277). 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.

1.1.3 **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

1.1.4 **Floor:** The floor will be laid in frame of 600 x 600 mm centre to centre 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 galvanised MS Plate shall be provided.

1.1.5 **Outer Door:** One door of size 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.

1.1.6 **Electric Power Supply Box:** 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 (max 35 °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

1.1.7 Partitioning for Calibration Gas Cylinders, Meteorological Mast and UPS:

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 AC 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 cylinders 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. Sun shades 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. Rain water spout shall be fixed at top with rain water down pipe at two corners. The external lights of the station should be Solar operated.

1.1.8 Station Furnishing:

- (i) 19" racks – 03 Nos.
- (ii) Fire extinguishers – 02 Nos. (Clean Agent – 2 KG each)
- (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 Board
 - d) Revolving tilting chair – 02 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 (Length suitable with 1 feet width steps)

- c) Sensor for measuring the inside temperature of the station and Display
- d) Hygrometer for measurement of Humidity inside the station and Display
- e) Mounting bracket for the ladder
- f) No smoking stickers
- g) Vacuum cleaner with minimum 100 watt power
- h) Tool Kit having following tools:
 - 1. One screw driver set
 - 2. One Digital multi-meter (Philips, Micro or equivalent make)
 - 3. One box spanner set
 - 4. One D spanner set
 - 5. One watch maker set
 - 6. One Hammer set
 - 7. One precision screw driver set
 - 8. One pliers set
 - 9. One Tong tester
 - 10. One Soldering Iron with stand
- i) One Emergency LED Cluster light
- j) 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 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.

1.1.9 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 (concrete ratio of 1:2:4). Outer wall of the foundation to be plastered with 1:4, Cement: Sand ratio and same has to be painted with weather proof coat.

Top of the platform: RCC 150 mm with concrete ratio of 1:1:2 and to plaster and painted with weather proof paint.

Staircase: RCC Steps 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

1.1.10 Security Cabin

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.

2. SPLIT AIR CONDITIONER

2.1 SPLIT AIR CONDITIONER (2.0 TON CAPACITY)

2.1.1 Type & Capacity: 2 Nos. split type, 2 ton capacity AC, roof mounted of 5 star rating/Inverter Type with an automatic timer. Separate Automatic Voltage stabilizer will be provided with each unit.

2.1.2 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° Celcius during all the time including peak summer months.

- (i) Cooling Capacity: 7000 W
- (ii) Star Rating: BEE 5 star/Invertor Type
- (iii) Indoor Noise Level: 40db
- (iv) Control Type: Remote
- (v) Compressor: Rotary
- (vi) Refrigerant: Eco Friendly
- (vii) Feature: filter clean Indicator, defrosting Sensor
- (viii) Power supply: 230 volts □ 10volts AC and 50 Hz ±3%
- (ix) Standard Warranty
- (x) Remote: LCD Wireless.

2.2 SPLIT AIR CONDITIONER (1.0 TON CAPACITY)

2.2.1 Type & Capacity: 1 Nos. split type, 1 ton capacity AC, roof mounted of 5 star rating/Invertor Type with an automatic timer. Separate Automatic Voltage stabilizer will be provided with each unit.

2.2.2 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° Celsius during peak summer months.

- (a) Cooling Capacity: 3400 W
- (b) Star Rating: BEE 5 star/Invertor Type
- (c) Indoor Noise Level 40db
- (d) Control Type: Remote
- (e) Compressor: Rotary
- (f) Refrigerant: Eco Friendly
- (g) Feature: filter clean Indicator, Pre-coated Aluminium fins etc.
- (h) Power supply: 230 volts □ 10volts AC and 50 Hz □ 3%.
- (i) Standard Warranty
- (j) Remote: LCD Wireless.

3. ONLINE UNINTERRUPTED POWER SUPPLY (UPS)

3.1 ONLINE UPS 10 kVA, CAPACITY (Three Phase I/P &Single Phase O/P, with 02 hours backup) (for Air Conditioner)

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

a)	Capacity	:	10.0 kVA
b)	Technology	:	PWM using IGBT / MOSFETS
c)	Crest Factor	:	More than 3: 1
d)	Input	Voltage	: 415 V AC
		Voltage Range	: ± 25%
		Frequency	: 50 Hz ± 3%
e)	Output	Voltage	: 230 V AC

		Voltage regulation	: ± 1%
		Frequency	: 50 Hz
		Frequency regulation	: ± 0.01%
		Waveform	: Pure sine wave
f)	Battery	Battery type	: Sealed maintenance free
		Back up time	: 2 Hour at full load
		Battery Capacity	: For required backup time
		Recharge time:	: 5 hrs to 90% after complete discharge
g)	Distortion		: Less than 1% on linear load
h)	Power factor		: 0.9 to 1
i)	Indicator		: L.E.D. – Battery Charge, Load level, on Line, over load, on battery, replace battery
j)	Alarm :		: Audible alarm for battery backup, battery
k)	Protections	Surge	: Surge Suppression meets BIS or
		Overload	: Fuse & current limited
		Short circuit	: Fuse & current limited & cut – off
		Battery low cut – off	: No battery drain after cut - off
l)	Overload		: 110% for continuous load
m)	Efficiency		: More than 90%
n)	Environment	Operating Temp	: 0 – 50° C
		Operating Hum.	: 10% to 95% (Non condensing)
		Audible Noise	: Less than 45 db (at 1 meter)

3.2 ONLINE UPS 5 KVA, CAPACITY (Single Phase I/P & Single phase O/P, with 02 hours backup) (01 for Analysers & 01 for Server at Central Station) :-

Single phase 5 kVA UPS along with Automatic Delayed Restoration Device (ADRD) with 2 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
3.2.6	Battery	Voltage regulation	: ± 1%
		Frequency	: 50 Hz
		Frequency regulation	: ± 0.01%
		Waveform	: Pure sine wave
		Battery type	: Sealed maintenance free

		Back up time : Battery Capacity : Recharge time:	Hours at full load For required backup time 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, on Line, over load, on battery, replace battery
3.2.10	Alarm		: Audible alarm for battery
3.2.11	Protections	Surge :	backup, battery low and fault Surge suppression meets BIS or
		Overload :	International standard Fuse & current limited
		Short circuit :	Fuse & current limited & cut – off
		Battery low 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 Temp. : Operating Humidity : Audible Noise :	0 – 500 C 10% to 95% (Non condensing) Less than 45

4. CONTINUOUS AMBIENT AIR QUALITY MONITORING ANALYSERS for SO₂, NO-NO₂-NO_x, NH₃, CO, O₃ and BTX

4.1 (General Specifications for all Analysers)

- 4.1.1 All ambient Gas Analysers and Dust Monitor shall conform to the US EPA reference or equivalent method. A proof of approvals and certificates of the above compliance along with copy of the Test Report (in English) from internationally reputed agencies such as US EPA, TUV / UAB of Germany, Emt Canada, Emt. Japan, EEC etc shall be furnished.
- 4.1.2 The analyzers should be 19" rack mounting model with facilities for fixing the analyzers from front side.
- 4.1.3 The front panel preferably have ON / OFF Switch.
- 4.1.4 The display of the entire important status signal viz. Sample flow, temperature, concentration, range selection, manual / auto mode, zero / span mode and all error messages should be on front panel.
- 4.1.5 The analyzers should operate at operating voltage 230 volts \pm 10 volts AC and 50 Hz \pm 3% frequency. The power supply input to be protected against spikes from and to the analyzer by an LC filter. The power connection cable should be CEE type complete with 15 Amperes plug adaptable to Indian mains socket.
- 4.1.6 The analyzers 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% of operational time.
- 4.1.7 The Manufacturer shall provide comprehensive hands-on training for operational & preventive maintenance for one week in the respective State for three persons per station.

4.1.8 The analyzers should complete with calibration system. The calibration system should be delivered along-with respective span gas cylinder / permeation tubes. The span gas concentration should be within 60 – 90% of first measuring range. The analyzer must have zero point internal calibration system and in agreement with minimum detection limit of each analyzer. The calibration procedures are to be integrated into the software system for automatic calibration & remote calibration.

CALIBRATION GAS CYLINDER

4.1.9 The supplier has to supply the calibration gas cylinder (highly polished aluminium 10 liters water capacity), along with SS Regulator, traceable to NIST for each components (SO₂, NO, CO, NH₃, Benzene & Toluene) along with SS regulator for the multipoint calibration. The synthetic air and N₂ cylinder (99.99% purity with certificate) should be in Carbon Steel cylinder of 47 Liters water capacity along with SS Regulator.

4.1.10 The analyzers shall be supplied with all ancillaries necessary for operation with pump (preferably in built) 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 analyzers should be provided before solenoid valve to protect frequent chocking of solenoid valve.

4.1.11 The connector systems for out-going signal for recording and the computer terminal should be on back panel with screw type connecting pins.

4.1.12 All ambient gas analyzers shall be approved by the USEPA / TUV. However, in case of BTX and Ammonia Analyzer specifications as given will be considered. 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 analyzers shall be micro – processor controlled with automatic calibration using an external dilution calibrator and calibration standards. All analyzers 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.

4.1.13 The manufacturer shall specify the cross sensitivity of measurement for all the analyzers.

4.1.14 Each set of analyzers shall be supplied with two copies of elaborate operation manuals comprising details as below:

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. Parts (V) Standard Operating Procedure (SOP) for each analyzer.

Parts (VI) List of equipments and other accessories along with contact details of supplier.

4.1.15 Digital Output:

a) Multi drop RS 232 port shared between gas Analyzers, Dust Analyzer (PM_{2.5}& PM₁₀), Meteorological Sensors and computer for data, status and control. Communication should have a USB port, TCP/IP Ethernet connection

4.1.16 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:

- i. Operating procedures for all analyzers and meteorological sensors
- ii. Calibration procedures
- iii. Calibration schedule
- iv. Maintenance procedures
- v. Maintenance schedule
- vi. Data validation procedures
- vii. Quality Assurance procedures
- viii. Sample quality assurance documentation
- ix. Sample Air Quality Report

The calibration procedures for analyzers shall conform to US EPA methodologies and shall include daily calibration checks, by weekly precision checks and linearity checks every six weeks. All analyzers shall undergo full calibration in every three months. 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 Real Time basis through automated system and 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, minimum, maximum, standard deviations, total data captured and percent data capture. It should also have stat validation mechanism and delayed data check mechanism. The Air Quality Report shall also include wind roses where wind speed and direction are measured.

4.2 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:

- | | | |
|-------|-------------------------------|--|
| 4.2.1 | Height of the sampling system | : Approx. 1.0 meter above the roof |
| 4.2.2 | Roof entry cut out | : Stainless Steel |
| 4.2.3 | Conduit | : Stainless Steel |
| 4.2.4 | Inner sampling system | : Borosilicate glass |
| 4.2.5 | Sampling head | : Stainless Steel |
| 4.2.6 | Manifold | : 10 port for tubes 6 x 1 mm, self-tightening. |

4.2.7 Sample air flow sensor

Uni-directional sample air flow measuring device should be installed at the sampling system to measure the flow of ambient air through sampling system. The output of signal should be connected to computer to ascertain the continuous flow of sample from ambient air. The suction pump operational status should also be connected to the computer as a separate channel.

4.3 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 lifting 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.

5. AMBIENT AIR QUALITY MONITORING ANALYSERS (GAS)

5.1 AMBIENT SULPHUR DIOXIDE (SO₂) ANALYSER

01.	Principle	:	UV Fluorescence
02.	Measurement	:	SO ₂ in Ambient Air
03.	Display	:	Digital
04.	Ranges	:	Auto ranging 0 - 200 ppb
05.	Lower Detectable Limit	:	1 ppb
06.	Noise Level	:	0.5 ppb
07.	Zero Drift	:	<1ppb/24 Hrs. compensation with automatic zero
08.	Span Drift	:	<1 ppb in 24 hrs.
09.	Linearity	:	± 1% of full scale
11.	Response Time	:	120 sec or less
12.	Calibration	:	Please see Multi-calibration section (Sl. No. 7) and also calibration section in General Specifications(4.1.7 to 4.1.9)
13.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
14.	Digital Output	:	Multiple drop RS 232, USB port /TCP/IP ,Ethernet

5.2 AMBIENT OXIDES OF NITROGEN (NO-NO₂-NO_x) ANALYSER

01.	Principle	:	Chemiluminiscence
02.	Measurement	:	NO-NO ₂ - NO _x in Ambient Air
03.	Display	:	Digital
04.	Ranges	:	Auto ranging 0-2000 ppb
05.	Lower 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.	Linearity	:	+ - 1% of full scale
10.	Response Time	:	120 sec or less
11.	Calibration	:	Please see Multi-calibration section (Sl. No. 7) and also calibration section in General Specifications (4.1.7 to 4.1.9).
12.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
13.	Digital Output	:	Multi drop RS 232 port, USB port /TCP/IP ,Ethernet

5.3. AMBIENT AMMONIA ANALYSER (NH3)

01.	Principle	Chemiluminescence (NH ₃ conversion to NO by oxidation. NO ₂ also converted to NO. The difference obtained by measuring NO in output of two sample stream as equal to NH ₃)
02.	Measurement	NH ₃ in Ambient Air
03.	Display	Digital
04.	Ranges	Auto ranging 0-1000 ppb
05.	Lower 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 ₃ /NO converter	Quartz at approx. 1000 °C
10.	Linearity	+ - 1% of full scale
11.	Response time	180 second
12.	Rise / fall Time of (95% the final value)	< 30 Sec
13.	Calibration	Please see Multi-calibration section (Sl. No. 7) and also calibration section in General Specifications (4.1.7 to 4.1.9).
14.	Analog Output	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
15.	Digital Output	Multi drop RS232 port, USB port/TCP/IP, Ethernet

5.4 AMBIENT CARBON MONOXIDE (CO) ANALYSER

01.	Principle	:	Non Dispersive Infra-Red (NDIR) with Gas Filter Correlation/ Cross Flow Modulation Method
02.	Measurement	:	CO in Ambient Air
03.	Display	:	Digital
04.	Ranges	:	Auto ranging 0 - 100 ppm.
05.	Lower Detectable Limit	:	0.1 ppm
06.	Noise Level	:	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.	Linearity	:	Continuous + 1%
10.	Response Time	:	30 seconds or less
11.	Calibration	:	Please see Multi-calibration section (Sl. No. 7) and also calibration section in General Specifications (4.1.7 to 4.1.9).
12.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
13.	Digital Output	:	Multiple drop RS 232port, USB port /TCP/IP,Ethernet

5.5. AMBIENT OZONE (O3) ANALYSER

01.	Principle	:	UV Photometric / Chemiluminiscence
02.	Measurement	:	O3 in Ambient Air
03.	Display	:	Digital
04.	Range	:	Auto ranging 0 - 500 ppb
05.	Lower Detectable Limit	:	1.0 ppb
06.	Noise level	:	+ - 0.5 ppb
07.	Zero Drift	:	< 1/2% per month
08.	Span Drift	:	< 1% per month
09.	Linearity	:	Continuous + 1%
10.	Response Time	:	30 seconds or less
11.	Calibration	:	With built in Zero and span generator and also see Multi-calibration section (Sl. No. 7)
12.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
13.	Digital Output	:	Multiple drop RS 232 port, USB port /TCP/IP ,Ethernet

5.6 AMBIENT BTX ANALYSER

5.6.1 GENERAL

A complete analyzer system comprising of sampling pump, transfer line, 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. Continuous unattended measurement system of individual BTX should work without external cryogenic cooling. System should have protocol compatible to communicate & transfer data to DAS. 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.

5.6.2 TECHNICAL SPECIFICATIONS

A single stage membrane Pump collect ambient sample automatically an inbuilt adsorption trap. Subsequent, the sample will be dissolved and injected on wide bore capillary gas chromatographic separation. 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 should be in stainless steel and flow & pressure sensor to be preferred with digital display.

5.6.3 DETECTOR

Photo Ionization Detector (**PID**) having approval from EPA/TUV or equivalent International Agency. 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.

5.6.4 MINIMUM SPECIFICATIONS

Principal	:	Based on gas Chromatographic separation and Photo Ionization Detector (PID)
Measurement	:	Benzene, Toluene, Ethyl-benzene, m.p-Xylene and O-Xylene.
Display	:	Digital
Range	:	0 - 100 ppb (0.32 – 325 μ g/m ³)
Lower detectable limit	:	0.2 ppb (0.65 μ g/m ³) for 15 min cycle for Benzene
Temperature Range	:	5 - 35oC or more
Repeatability	:	Retention Time : <0.1% RSD Concentration: <1.0% RSD
Typical Cycle Time	:	Total Cycle Time should not exceed 15min i.e. Sample Collection Time -15 min approx. Analytical Time- 15 min approx.
Sample Volume	:	1 liter for 15 min cycle.
Desorption tube	:	Carbotrap
Pre concentration	:	Carbopack
Calibration	:	The Analyzer should be capable to calibrate through Multi Calibration System also. Please see Multi- calibration section (Sl. No. 7) And also calibration section in General Specifications (4.1.7 & 4.1.9).
Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
Digital Output	:	Multi drop RS 232 port, USB port /TCP/IP ,Ethernet

6. CONTINUOUS AMBIENT AIR QUALITY MONITORING ANALYSERS (PARTICULATES)

6.1 CONTINUOUS PM₁₀ MONITORING ANALYSER (β -RAY ATTENUATION)

Based on the principle of β -ray attenuation, particulate sampled through the instrument and collected on fiberglass filter tape. Before and after sampling, β - ray radiation is measured by scintillation/G.M. counter. An internal microprocessor handles all sequences and automatically calculates the concentration of PM₁₀.

01.	Principle	:	β -ray attenuation
02.	Particle Size Cut Off	:	0 - 10 Microns
03.	Measuring Range	:	0 – 1000 μ g/m ³
04.	Resolution	:	1% of the measurement range
05.	Lower Detection Limit	:	< 4.8 μ g/m ³ (1 hour)

06.	Detector	:	Plastic Scintillator/GM Counter/Silicon- Semiconductor base
07.	Air Flow Rate	:	16.7 Liters / minute
08.	Filter Material	:	Glass Fiber Filter
09.	Display	:	LED / LCD
10.	Sampling Head	:	Dynamic heated sampling head for measurement of PM ₁₀ , with adjustable temperature 20 – 70 °C
11.	Calibration	:	Reference membrane facility should be provided for calibration of analyzer.
12.	Compatibility	:	Analyzer should be compatible with protocols of DAS system to be used in station.
13.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
14.	Digital Output	:	Multi drop RS 232 port USB port /TCP/IP /Ethernet
15.	Roll Length	:	Minimum 20 meters
14.	Measurement cycle time	:	1 hour

6.2 CONTINUOUS PM_{2.5} MONITORING ANALYSER (β-RAY ATTENUATION)

Based on the principle of β -ray attenuation, particulate sampled through the instrument and collected on fiberglass filter tape. Before and after, sampling β - ray radiation is measured by scintillation / G.M. counter. An internal microprocessor handles all sequences and automatically calculates the concentration of PM_{2.5}.

01.	Principle	:	β -ray attenuation
02.	Particle Size Cut Off	:	0 – 2.5 Microns
03.	Measuring Range	:	0 – 1000 µg/m ³
04.	Resolution	:	1% of the measurement range
05.	Lower Detection Limit	:	< 4.8 µg/m ³ (1 hour)
06.	Detector	:	Plastic Scintillator / GM Counter /
07.	Air Flow Rate	:	16.7 Liters / minute
08.	Filter Material	:	Glass Fiber Filter
09.	Display	:	LED / LCD
10.	Sampling Head	:	Dynamic heated sampling head for measurement of PM _{2.5}
11.	Calibration	:	Reference membrane facility should be provided for multipoint calibration of analyzer.
12.	Compatibility	:	Analyzer should be compatible with protocols of DAS system to be used in station.
13.	Roll Length	:	Minimum 20 meters
14.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
15.	Digital Output	:	Multi drop RS 232 port ,USB port /TCP/IP ,Ethernet
16.	Measurement Cycle Time	:	1 hour

Note: A distance of around 1.5 meter should be maintained between two sampling heads of PM_{2.5} and PM₁₀ samplers.

7. MULTICALIBRATOR

Calibration system should provide for the calibration of the ambient air quality monitoring analysers (Gas).

7.1 MULTI POINT GAS CALIBRATION SYSTEM:

1. The Gas Calibration System should be capable to do the following:
 - i. Multipoint calibration using automatic dilution system for the calibration of SO₂, NO, CO, NH₃ and BTX analyser.
 - ii. Auto calibration (user selectable).
 - iii. Generate zero air of 99.9% purity (High Performance Zero Air Generator to be provided).
 - iv. Gas Phase Titration (GPT) with O₃ generator having 100% converter efficiency for conversion of NO₂ to NO.
 - v. Calibration using permeation tubes for which at least two chambers based Permeation system has to be provided.
 - vi. The Permeation System should be capable to accept permeation tubes up to 6 cm in length and 2cm in diameter with user selectable temperature setting of 40 °C and 50 °C.
2. System should be 19" rack mountable.
3. System should be DAS compatible for remote calibration from Central Server.
4. The system should also have facility for multipoint calibration of Ozone analyzer.

7.2 METEOROLOGICAL, FLOW AND ELECTRONICS CALIBRATION

The supplier should provide calibration devices or calibration check devices for all the meteorological parameters namely temperature, wind speed, wind direction, relative humidity, barometric pressure solar radiation, rain fall as per the specifications of the manufacturers.

8. METEOROLOGICAL SYSTEM

- 8.1 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. The specifications are as follows:

(A) WIND SPEED

Range (Operation)	:	0 – 60 m/s or better
Sustainability	:	Upto 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) WIND DIRECTION

Range	:	0 – 359 degree
Accuracy	:	± 3 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	:	± 0.2 °C or better (with radiation shield)
Response	:	10 seconds in still air
Resolution	:	0.1 °C
Sensor type	:	Resistance type
Response time	:	10 sec or better

(D) RELATIVE HUMIDITY

Range	:	0 to 100% RH
Accuracy	:	± 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 ² or better
Accuracy	:	± 5.0 % or better
Resolution	:	5W/m ²
Sensor type	:	Silicon Photo diode

(F) BAROMETRIC PRESSURE

Range	:	500 to 1300mbar(absolute pressure)
Resolution	:	1mbar
Accuracy	:	+/-4mbar
Altitude Compensation	:	-100 to 2500 meters

(G) RAINFALL

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

(H) 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	:	Galvanised steel or aluminium

Note:

- I. 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.
- II. All the meteorological sensor should be certified/ traceable to World Meteorological Organization (WMO) and software should also have certification from the appropriate international agency.

9. TECHNICAL SPECIFICATIONS FOR THE CONTINUOUS AMBIENT AIR QUALITY

9.1 Monitoring Station (CAAQMS) Mobile Van

A. MOBILE VEHICLE:

Heavy Duty Vehicle with chassis (conformed to latest BS norms) register able and useable in State and also anywhere in State as per existing MV rules from Indian manufacturers suitable to fabricate Continuous Automatic Air Quality Monitoring (CAAQM) container shall be provided. The mobile station shall be equipped with SO₂, NO-NO_x, NH₃, CO, O₃, PM₁₀, PM_{2.5}, BTEX and Meteorological Equipment, data logger, multipoint calibrator, Air conditioners, UPS etc, as required for a complete self-contained mobile air pollution monitoring station.

The Mobile chassis shall have necessary accessories for fitting CAAQMS with adequate suspension to minimize the impact on the instruments while driving the vehicle. Lift jacks shall be provided at all four corners of the vehicle to ensure its stability and leveling while parking at monitoring site.

The van shall be equipped with connection from the Grid supply and accordingly 100 meter cable drum shall be provided, so that cable can be drawn and connected to the mains electrical supply based on the actual site conditions.

Mobile van shall have compartments of air conditioning environment for mounting of analyzer equipments, non air conditioning compartments for storing calibration gases and Batteries. The driver cabin shall be vehicle supplier's standard design . Necessary nos. of entrance as per the requirement shall be provided in the mobile van.

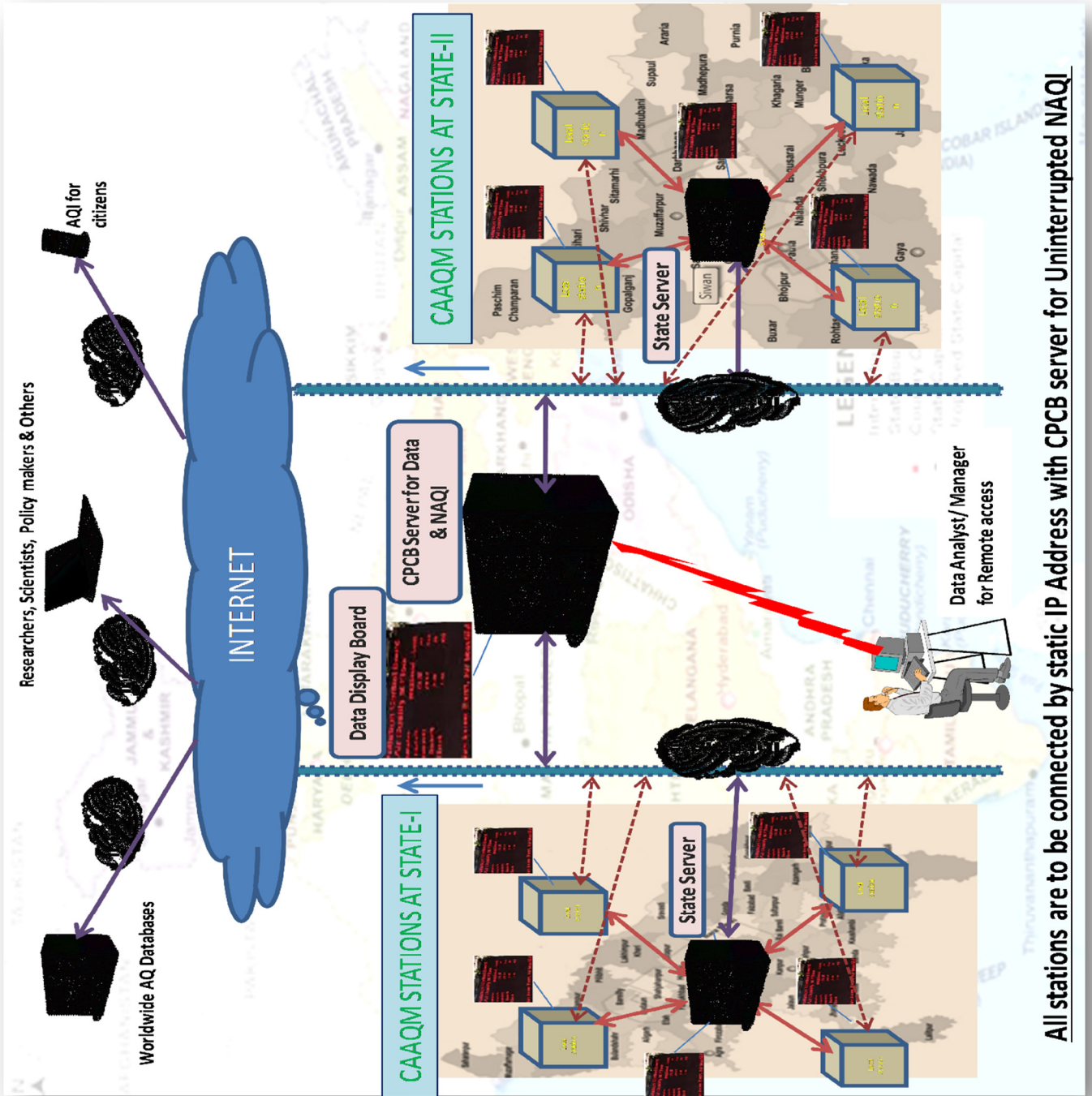
The outer shell of the van shall be with outer layer of 1.2 mm MS sheets, minimum thickness 1.2 mm and inner layer of Anodized Aluminum / MS sheets, minimum thickness 1.2 mm painted material with full rain, sun and environment protection. The PUF insulation shall be provided between inner and outer layer. The thickness of the insulation shall be 40 mm as minimum.

The painting on the interior and exterior wall shall be done as per the PCB requirement. PCB will provide details on the color and artistic works to be done on the mobile van during the painting.

Monitoring Container 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. Necessary number of 19" racks shall be installed inside the container so that the analysers are easily accessible from front & back for calibration and maintenance. All other infrastructure work for setting up the stations viz., flooring mat, paneling, internal wiring for Air conditioning, Inverter and UPS shall be provided by the contractor.

10. DATA ACQUISITION AND COMMUNICATION SYSTEM

10.1 Typical Architecture for Data Connectivity



- This architecture defines data transmission from all connected CAAQM Stations to State Data Center and Central Data Centre in parallel through internet (leased lines) in real time basis.
- All Stations are to be connected by static IP address with CPCB Server (Central Data Server) for uninterrupted NAQI.
- There should also provision in the station itself for data display of Pollutants parameters, Meteorological parameters and NAQI on display system near to Station.
- Each CAAQM Stations measure their respective pollutant and meteorological parameters and get them stored in data logger before transmission.
- From Data logger, data transmits for data display, and also through internet the same data is transmitted to Central server as well as State server for data display at Central level and State level, parallely.
- Data display system at all locations display Pollutant, Meteorological and NAQI data on real time basis of all connected CAAQM Stations.

10.2 Data Acquisition and Handling System at Station

Type 1: System comprises of data logger having DAS and station computer.

Or

Type 2: System comprises of station computer with DAS facilities.

Data logger/DAS with 8 analog, 24 digital inputs. 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, 15 min, ½ hr, 1 hr, 4 hrs, 8 hrs, 24 hrs, 1 month and year. Communication between data logger and station computer should be using standard USB/RS232/RS485/ EthernetConnector. The data logger should have internal battery with charger and if it is PC based UPS serves the purpose.

The data logger/DAS should support LAN and Internal GSM modem/ Wifi for data transfer to central server. Station computer for data logging will be in addition to workstation computer required for calculating AQI, and will be of same or better specifications that of work station computer.

Presently network is envisaged for 250 such stations.

10.3 WORKSTATION COMPUTER FOR AQI

This has to be installed at CAAQM station for the preparation of AQI along with the station computer.

Sr.No	Specifications	
1	CPU	Intel® Core i7 10th generation or higher
2	Memory	8 GB DDR-IV, 3133MHz, or better upgradable up to 32GB
3	Ethernet ports	Integrated intel ® Ethernet LAN 10/100/1000
4	PCI Slots	Two PCIe x16 half height
5	Optical Drive	DVD R/W Internal
6	HDD's	3.5" 1TB, SATA drives
7	Power Supply	Standard suitable power supply
8	Key board	Optical Keyboard same as OEM
9	Mouse	Standard Optical Mouse same as OEM
10	I/O ports	4*USB 3.0

Sr.No	Specifications	
11	Monitor	20" Wide LCD TFT Color Monitor or better
12	Wireless adapter	USB Wireless adapter x 1 no.
13	OS support	Open source Ubuntu latest release
14	Warranty	Warranty is comprehensive on site including spares for 3 / 3 / 3 years
15	Type	Tower type Black in color preferably or as per the fitting in station rack
16	Printer	A4 colour laser printer with minimum colour printing speed of 6 ppm and B/W printing speed of 24ppm or better

Note: The specification mentioned is minimum and bidder to quote suitable computer system, compatible with their software.

**10.4 MANAGEABLE CISCO SWITCH (RACK MOUNTABLE)
Ethernet switch with LAN and WAN ports.**

24 port managed fast/ gigabit Ethernet Cisco Switch with LAN and WAN ports of latest series for installation at respective SPCBs OR better

10.5 REMOTE MONITORING TOOL/SOFTWARE

Remote management software and its licenses for the entire project duration for station computer and central location at SPCB.

10.6 42 U INDUSTRIAL RACK

This is to be installed at respective SPCBs Central station.

Sr. No	Specifications	QTY / site
1	19" Industrial Rack, 42U , Color Black Consisting of:-	1
2	Steel Enclosure, 9 Folded profile of dimensions 800 mm width * 1000 mm Depth * 42 U height, supporting 1000 Kgs load. Bottom cover with knock out holes for cable entry to be provided. Three pairs of horizontal support shall be fitted on both right and left sides.	1
3	Foldable Front & Rear Door to its half size while opening, shall be of 100% perforated. Provision for mounting fans on Rear door with concealed AC wiring.	2
4	Fan 230V, 90 CFM to be mounted on Rear Door.	4
5	AC Main Channel vertical two nos., 12x 5/15 Amps Sock RT-AQMP Make: Anchor with 32 Amps MCB make : Northwest or better	2
6	Horizontal Cable Manager	20
7	Vertical Cable Manager	10
8	Copper based Electrical Grounding / Earthing Strip. Provision for Fifteen (15) points.	1 Set
9	Each set of: a) Castor with Brake -- 2 Nos.	1 Set
	b) Adjustable screw legs --4 Nos. OR	
	c) Base frame – 1 No.	
10	Light provision activation in the rack up on opening of the front/rear door.	1
11	H/W Packet of 20 SRT-AQMP.	2

If anything else is required to setup the system, vendor need to have provision at the time of quoting.

10.7 RACK SERVER

This is to be installed at respective SPCBs Central station

Sr.No	Specifications	
1.	CPU	Single CPU, Intel Xeon Quad Core E51620V3 3.50 GHz or higher, 10MB Cache per socket or higher. The Mother Board should support Dual Sockets.
2.	Memory	32 (32 GB Support for each CPU) DDR-4, 2133MHz, upgradable to 128 GB
3.	Mother Board	Intel motherboard having compatibility to configuration desired
4.	HDD	3*500GB SAS or better
5.	Ethernet Port	2 *Dual port Gigabit NIC Cards with autosensing and on copper (total 4 ports). All four ports supporting iSCSI protocol to connect to iSCSI based SAN storage
6.	PCI Slots	Provision for 2 *PCI express 2 * PCIe X2 or more slots to accommodate additional FC/Gigabit Cards Graphics Adaptors
7.	Optical Drive	DVD R/W 16X Drive or better, External USB based
8.	Form Factor	2U rack model with rail kit or better
9.	Key board	Standard Optical wireless Keyboard
10.	Mouse	Standard Optical Wireless Mouse
11.	I/O ports	2 *USB ports, front & 2USB port Back, 1 VGA Port, 1 external SAS, 1* Serial
12.	Monitor	22" Wide LCD TFT Colour monitor
13.	RAID Controller	RAID 5 minimum
14.	Wireless adapter	USB Wireless adapter x 2 nos.
15.	Antivirus	Standard Antivirus (McAfee / Norton / Trend Micro) for duration of 3 years
16.	Redundant Power Supply & Fans	Redundant Power Supply 1+1, Redundant Fans
17.	Warranty	Warranty is comprehensive 24x7 on site including spares for 3 / 3 / 3 years with 4 hours support

Note: The specification mentioned is minimum and bidder to quote suitable computer system, compatible with their software.

10.8 ACCESS POINT (AP)

This is required alongwith server at respective SPCBs central station.

Sr.No	Specification	
1	Features	1 Ethernet, 1 miniPCIe, USB, Additional memory, Gigabit, High power, Dual chain, Outdoor case
2	CPU	Atheros AR9342 600MHz network processor
3	Memory	64MB DDR onboard memory
4	Ethernet	One Gigabit port with Auto-MDI/X
5	Wireless	Built in 2GHz 802.11b/g/n, 2x RP-SMA connectors
6	Connector type	RP-SMA Female (outside thread)
7	Extras	Beeper, signal and status LEDs, SIM slot (requires 3g miniPCIe card), voltage and temperature sensors
8	Expansion	miniPCIe slot for 802.11 or 3G (using 3G disables the USB port), USB 2.0 port
9	Power options	PoE: 8-30V DC on Ether1 (Non 802.3af). Consumption: 14W at 24V
10	Dimensions	Not more than 400x150x100mm; Weight: 500g
11	OS	of respective OEMs
12	Kit includes	RB912 outdoor unit, PSU, PoE injector, mounting loop, DIN rail mount, mounting ring
13	Frequency Range	2400MHz-2500MHz

10.9 UTM (UNIFIED THREAT MANAGEMENT) DEVICE

This is required at respective SPCBs Central station

Support and Warranty

Appliance should have EAL4+ Certification and ICSA certification for Firewall.

Appliance Throughput

- Firewall throughput of more than 5 Gbps.
- Minimum 1.2 Gbps of Antivirus Throughput
- Minimum 1 million Concurrent sessions
- Minimum 1 Gbps of IPS throughput
- Minimum 45,000 New Sessions/second
- Minimum 800 Mbps of IPsec VPN throughput
- Minimum of 1000 IPsec tunnel support and 50 SSL VPN user support. License for the same should be included in the BOM.
- 810/100/1000 interfaces supporting Hardware Bypass.

General Features

- Should be appliance based and rack mountable

- Identity based Firewall
- Intrusion Prevention System
- Gateway Anti-virus
- Gateway Anti-spam
- Web Content & Application Filtering
- Bandwidth Management
- Inbuilt-on Appliance Reporting
- Network: OSPF, Round Robin load balance, RIPv2, BGP, equal &unequal cost load balance, High Availability, QOS, etc. Round Robin Balance, Server Load Balancing.
- Support for user authentication over SMS.
- Country Based Blocking, FQDN support and should support MIX mode deployment
- 4 Eye Authentication feature for data integrity.

Gateway Antivirus, Anti-Spyware and Anti-Spam

- The proposed Integrated Anti-Virus/Ant-Spyware should have Web coast Checkmark Certification as part of a UTM. Virus, Worm, Trojan Detection and Removal, Automatic Virus signature database update, Real-Time blacklist, MIME header check, Redirect spam mails to dedicated email address, image-spam filter, Spam Notification, Zero hour Virus outbreak protection. Recurrent pattern Detection Technology for AS. Self Service Quarantine area.

Web and Application Filtering:

- The proposed Content Filtering should have at least one Certification as part of a UTM viz. Web coast Checkmark. URL, Keyword, File type block, Block Java applets, cookies, ActiveX, Block malware, phishing, pharming URL, block P2P application, anonymous proxies, Customized block on group basis. System should have Minimum of 70+ categories with more than 100 million URLs supported with more than 5000 application support.

Security Features

- **Intrusion Prevention System (IPS):** The proposed IPS should have Certification as part of a UTM viz. Web coast Checkmark. For different attacks like Mail Attack, FTP Attack, HTTP Attack, DNS Attack, ICPM Attack, TCP/IP Attack, DOS and DDOS Attack, TelNet Attack. Signatures: Default (more than 2000+), Custom , IPS Policies: Multiple, Custom, User-based policy creation, Automatic real-time updates from CR Protect networks, Protocol Anomaly Detection
- **VPN:**
IPsec, L2TP, PPTP and SSL as a part of Basic Appliance, VPN redundancy, Hub and Spoke support, 3DES, DES, AES, MD5,SHA1 Hash algorithms, IPsec NAT Transversal, VPNC Certified.
- **Load Balance:**
For Automated Failover/Failback, Multi-WAN failover, WRR based Load Balancing. High availability: Active-Active. QOS, OSPF, RIPv2, BGP, Policy routing based on Application and User support Round Robin Load Balancing.
- **Bandwidth Management:**
Application and user identity based bandwidth management, Multi WAN bandwidth reporting, Guaranteed and Burstable bandwidth policy. Bandwidth for User, Group, Firewall Rule, URL and Applications.
- **Monitoring and Reporting System:**

Should Include reports for Centralized management, Monitoring & Logging, Command line interface. **Monitoring Gateways, Monitoring suspicious activity and alerts**, Graphical real-time and historical monitoring, email notification of reports, viruses and attacks reports. IPS, Web filter, Antivirus, Anti-spam system reports. IP and User basis report, >40+ Compliance reports and >1000+ drilled down reports on the appliance with 250+ GB of storage.

- **License for UTM (Unified Threat Management)**

Three Years for Gate Way Antivirus, spyware, Anti-Spam, content and application filtering. IPS, reporting and support License period will be counted after activation

10.10 PRINTER SPECIFICATIONS

Three Years for Gate Way Antivirus, spyware, Anti-Spam, content and application filtering

- Colour Laser printer (2 nos. - one A3 & one A4 size)
- Print speed: black-25 ppm & colour-6 ppm (minimum)
- Resolution: 1200 x 1200 dpi
- Processor speed 750 MHz Print or better
- Paper handling input, standard 250-sheet input tray
- Duplex printing Automatic (standard)
- Media sizes supported A3, A4, A5
- wireless connectivity and automatic two-sided printing
- automatically connect to wireless network,
- Easily print from virtually anywhere in the office with Ethernet and wireless connectivity
- Connect via USB, and access tools from PC to manage printer.
- 1,500-page toner cartridge or better

10.11 CONNECTIVITY FOR DATA TRANSFER

A) LEASED LINE CIRCUIT

1Mbps capacity leased line connectivity with 99% uptime service level agreement (SLA) to be provided by the firm at each station location. The leased line may be provided on optical fiber and if optical fiber is not feasible then connectivity can be provided on copper or RF.

B) BROADBAND

1Mbps capacity broadband connectivity from other than one already providing leased line connectivity shall be provided by the firm at each station.

C) GSM /Hotspot Connectivity

Internet connectivity will have to be provided by the firm for the entire project duration at LED location either using GSM / Hotspot /wireless connectivity

11. DATA ACQUISITION SOFTWARE FOR STATION (CAAQM)

The software captures data from all channels in the system and stores in the station Computer.

(i) Data Acquisition

- a) Frequency of data acquisition
 - i) User selectable 1,5,30,60,120 second averaging duration online digitally. Minimum frequency will be subject to capability of analyzer cycle.
- b) Channel size
 - i) 32 Channels or more supported
 - ii) Expandable to 64 channels, if required in future
- c) Data input

Either Analog (0-1 volt/0-10 volt/2-20mA/4-20mA)
or Digital to configure with the PC. The condition is that system
should remotely operatable.

- d) User configurable channels, stations and equipment with communication parameters.
- e) Analyzer data channel should comprise of Name, Units, Communication Address, Validity Range, Operation and Error Status.
- f) Provision to incorporate conversion factors such as PPB to $\mu\text{g}/\text{m}^3$ etc.
- g) Software should be equipped to configure the analyzers with it, irrespective of company make and communication protocol of the analyzer and the output mode i.e. Analog or Digital (RS 232) of the instrument.
- h) The output should be provided in user defined units.

(ii) Data Collection

- a) Average data over user selectable time (1,5,30,60 seconds time interval) period.
- b) 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.
- c) 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.
- d) Calibration parameters
 - i) Provision to entering zero calibration, span calibration values of gas cylinder/permeation to devices
 - ii) Provision for collecting zero calibration, span calibration values (pre calibration & post calibration) in to the database for further analysis.
 - iii) Provisions to collect electronic system pre calibration & post calibration values from the analyser to ascertain the percentage deviation/ correction applied during each calibration and record it in database at station & Central computer.

(iii) Data Storage

- a) Data along-with diagnostic, calibration, alarms should be stored at station computer at a defined path.
- b) Interval of data dumping will be same as defined in the data collection.
- c) System should be capable to keep every second acquired data from 32 channels for a period of minimum five years.
- d) Current data should be stored as per ISO-7168-1:1999I format and should be available in folder named as c:\Data\ at an interval of 15 minutes. As an example c:\data\01.05.2015.xml. the file will be appending without double data entry and as per ISO format.
- e) Data should also be stored for last two years in E:\data\Year\Month\day i.e. e:\data\2015\05\01.05.2015.xml
- f) If data encryption is done, then 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 AQI software, procedure should be available without any licensing. AQI calculating Software will be provided by CPCB/SPCB.

(iv) Data Display (Statistical analysis of data)

- a) Main window for real time display of all measured parameters with status of all analyzers/sensors.
- b) In 4-in-4 graphs and 4-in-1 graph formats
- c) In tables of 4-in-1 format
- d) Real time multi – graphs over user selectable time period i.e. 6.00 AM to 6.00 AM

etc.

- e) Display of graphic & tabular display of the current data.
- f) Graphical form should comprise of 4-4 graphs, 4-1 graphs in user defined format (1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly; user definable time series)
- g) Tabular form should comprise of 4 channel list in user defined format (1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly; user definable time series)
- h) Station instruments basic configuration etc. should be visible on screen continuously.
- 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 of six months.
- 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(National Air Quality Standards) for defined period for the database etc.
- k) Data analysis of diagnostics parameters
- l) Data analysis of Pre calibration and post calibration data (if facility not available, should be developed within six months)
- m) Data analysis of corrections applied of each calibration cycle (if facility not available should be developed within six months)

(v) Data Backup

- a) There should be defined data backup procedure through which data can be extracted from station computer in simple text format/excel/ ISO format(user definable).
- b) There should be defined restore procedure also to restore the data in case of data loss.
- c) A display screen should be available to update the user about data availability.

(vi) Data Validation automatic checks at station 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 alarm the user of system failure and the recorded alarm should be transmitted to central software.
- b) After instruments perform the calibration the results obtained should be recorded and should be transmitted to central computer.
- c) There should be provision of two databases one is raw database and another corrected database.
- d) Validation of data through calibration database Pre calibration & post calibration values collected.

(vii) Calibration of systems

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

(viii) Location of station

- a) Fixed and Mobile Stations location to be recorded and North correction feature should be available.
- b) Latitude and longitude of stations be recorded

- c) The station & display board locations will be finalized during award of the contract.

(ix) Data transfer to Central

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.

(x) Data transfer to Display Boards at Public site

Software should have provisions to connect data output including current pollutants concentration, AQI, advertisement, etc. to the display boards (LEDs) wired or wireless, to be installed at public site. For the purpose Data display device has been recommended in the document.

12. DATA ACQUISITION SOFTWARE AT THE CENTRAL STATION AT SPCB

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. Detailed requirement is as below:

A (i) Software at Central Station

- a) Software should not have any restriction on number of locations and computers either technologically or in terms of licensing (including owner's existing 6 stations).
- 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 maximally 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 dial up systems, broadband connectivity, wireless connectivity, 2G or 3G or any new technology including Mobile App. based monitoring 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.
- 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.

(ii) Data Display at Central Station

- 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 i.e. 6.00 AM to 6.00 AM etc.
- 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 time series)
- g) Display of data using selectable name of different stations.
- h) Generation of Wind Roses, Pollution Roses (minimum 12 directional)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
 - m) Database correction procedure
 - n) 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.
 - o) Data validation trail recording.

(iii) Data Export

- a) Data export in ISO 7168 format is required to be done automatically.
- 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.

(iv) Data Import

- a) In case of communication medium fails 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.

(v) 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.

(vi) Delayed data checks at Central software at SPCB

- a) After instruments perform the calibration the results obtained should be recorded and should be transmitted to central computer and stored.
- b) 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 to the user for 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.
- c) Procedure to correct database through correct ISO 7168 file should be generated at SPCB and it should be synced with Software under development at Central Pollution Control Board (CPCB).

(vii) Data display at SPCB Office / specific location through central software

The software should have capability to display set of data including AQI etc. for all the monitoring locations and cities (user selectable) in the State through slide show mechanism. At each State Pollution Control Board location, central software will be installed. A data display system would also be required at SPCB office for which the software system has to be provided with this facility including Mobile applications.

(viii) Remote Procedures (if not available facility should be developed by the firm)

- a) Central software should have capability to allow to connect any station computer 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 that means each analyser should be controllable separately through remote software being provided with the software system.
- 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 at SPCB location should be active.

(ix) 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) 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.
- d) 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.
- e) Data reports, calibration reports and status reports with user time periods.
- f) Historic multi – curves / graphs over user selectable time period.
- g) 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.).
- h) Diurnal variation, standard deviation, regression and other statistical parameter reporting possibilities with various available mathematical methods.
- i) If required separate report generation procedures have to be developed for which firm will be responsible for project duration.
- j) Daily report from each station should be generated and sent through email for hourly data of each parameter (including meteorological parameters, diagnostics of instruments and calibration of instruments if performed during that day) automatically format for which can be mutually agreed upon.
- k) Data should be downloadable in Excel Sheet, CSV format through user selection.
- l) Provision should be there to use raw as well as validated data for generation of all types of graphics including windroses and pollution roses.

B. SECURITY

- a. Software should be totally secured with protection against virus, malware etc.
- b. Security device like firewall for VPN Tunneling should be installed.

C. OTHER TECHNICAL CONDITIONS

- 1. Compatible Hardware required for data transmission through Data Display Connection Device has to be installed. Suitable technology for data connectivity from various AAQMS stations to the designated display locations through wired/wireless communication should be ensured in such a way that overall 90% data availability should be ensured throughout the day . Data loss will be chargeable as per the penalty clauses mentioned elsewhere in the document.
- 2. Should support the latest formats of Windows 32 bit or 64 bit. Any new patches developed or upgraded software during project duration should be provided without additional cost.

3. Manual of complete system should be provided.
4. Firm should provide the hardware required for data acquisition along with all the software's required like OS, Networking software, Remote functionality software and should maintain hardware and software for project duration.

13. DISPLAY BOARD DATA TRANSMISSION DEVICE

Sr.No.	Item Desc.	Specifications
1.	PROCESSOR	Intel® Atom™ Processor E3815 (1.46 GHz Single Core, 512 KB Cache, 5W TDP) or equivalent Or 900 MHz or higher quad-core ARM Cortex-A7
2.	Memory	Memory slots for MicroSD or full size SD card slot with Memory support for at-least 8 GB
3.	Ports	<ul style="list-style-type: none"> a. One HDMI b. LAN Port for Ethernet Network Connection c. Minimum of 3 USB Port with support for USB 2.0 or USB 3.0.
4.	OS Support	Linux, or Windows OS
5.	Communication Options	<ul style="list-style-type: none"> a. LAN Communication b. Wifi Communication – Wifi Hotspot enabled/ GPRS Comm. Enabled
6.	Power Supply	5 to 12 V DC through 220 V 50Hz AC Supply adapter or USB driven.
7.	Size	Mechanical Chassis Size not to exceed 9” x 6”x 6” with stand alone tower/box.
8.	Operating Environment	Operating Temperature 0° C to +50° C Humidity upto 90%
9.	Device Support	05 Years
10.	Antivirus	It should be secured If Windows than life time antivirus should be there.
11.	General	Supplier will configure and deploy the communication mechanism. Complete manual of the device should be provided.
12.	Accessories	01 Meter HDMI Cable
13.	Internet	To be provided by the vendor either through GSM SIM or through Wifi Enabled Dongles.
14.	Display Board should show	Last data saved.
15.	Display board should show	Last updated time should be displayed
16.	Software	The vendor is responsible to provide software which can download the data from Station computer, AQI, Advertisements etc. store it and display on the Display Board seamlessly.

14. DAY LIGHT & NIGHT VISIBLE DATA DISPLAY SYSTEM

(A) LOCATION NEAR TO CAAQM STATION

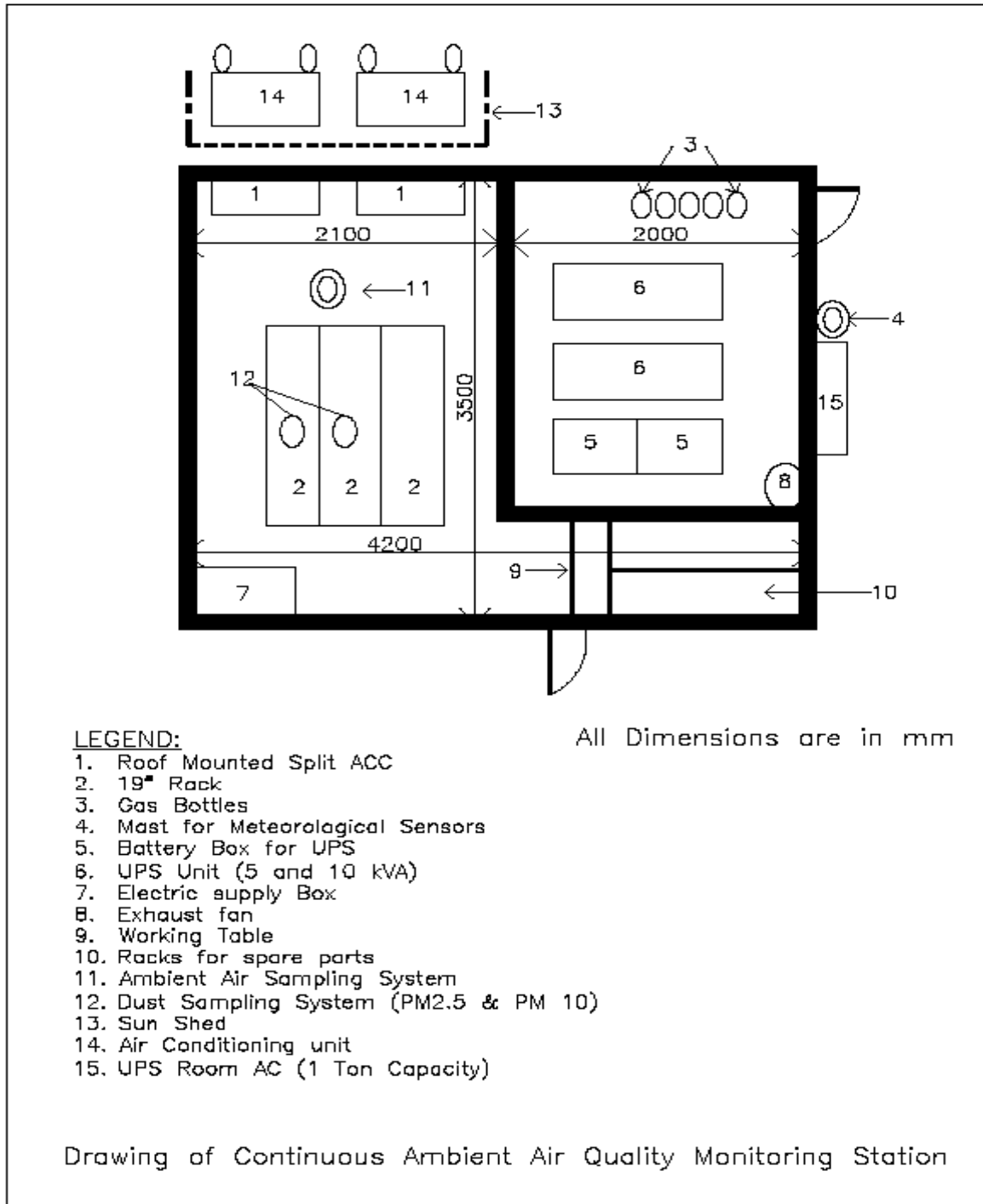
1.	Size of Display System (H X W) feet and Pixel	6 X 8 feet , 16 mm (+/- 0.5 mm) pixel pitch, 3500 m ² minimum pixel Density
2.	Visibility Range	50 Meters (Day time)
3.	Brightness	8500 NIT or higher
4.	Display of Colour Elements	1Red , 1Green, 1Blue pixel
5.	Minimum Life span of the system	LED Life 100000 Hours
6.	Viewing angle	Viewing angle of 140° Horizontal/77° Vertical
7.	Operating and non operating Temperature	-15-550 C
8.	No of Color	281 trillion Colors , 256 brightness level dimming capability
9.	Video processing	24 bit Video processing, 100 % Digital
10.	Diode Density	1100m ² / 1000 ft ² (minimum)
11.	Scan rate and refresh frequency	Scan Ratio 1:1 and with minimum 20000 hz refresh frequency
12.	LED internal and External Cabinet type , Serviceability	Internal LED frame should be made of Aluminium and External cabinet should be factory made without pin holes , LED Display should be serviceable from front and back
13.	Color Temperature - Adjustable	4500 - 9000 K range
14.	Input Power Requirement/ Consumption	120/240v, 50/60Hz , Power consumption 200 W (maximum) / m ²
15.	Type	Discrete Diode
16.	Display Mounting	Structure based upon location. Uni Pole or hanging
17.	General	The system should also have the facility to display the enviromental picture through video camera/vcr/cd player etc. for public awareness.
18.	Power Cable Laying	Depending upon location, cabling is to be done by the firm
19.	Device at station to pick up data and transmit it to LED	Display data connectivity device with GSM SIM has to be installed near by LED board which will pick up data from station computer through Internet. LED to be placed away from through Internet .LED to be placed away from the station premises.
20.	Certification	CE, UL/ULC listed
21.	IP Rating	Display Module IP67, Cabinet IP 65

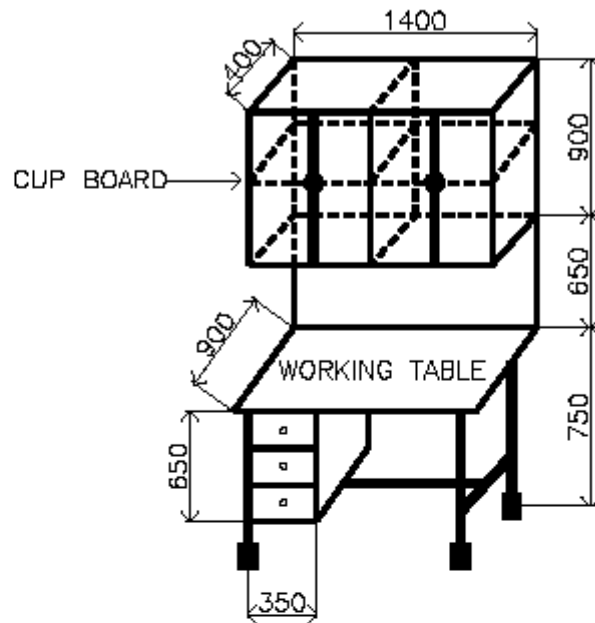
(B) DAY LIGHT & NIGHT VISIBLE DATA DISPLAY SYSTEM**LOCATION FAR AWAY FROM CENTRAL STATION OF STATE POLLUTION CONTROL BOARD (SPCB)**

1.	Size of Display System (H X W) feet and Pixel	8 X 12 feet , 20 mm (+/- 0.6 mm) pixel pitch, 2300 m2 minimum pixel Density
2.	Visibility Range	50 Meters (Day time)
3.	Brightness	8500 NIT or higher
4.	Display of Colour Elements	1Red , 1Green, 1Blue pixel
5.	Minimum Life span of the system	LED Life 100000 Hours
6.	Viewing angle	Viewing angle of 140o Horizontal/59o Vertical
7.	Operating and non operating Temperature	.-15-550 C
8.	No of Color	281 trillion Colors , 256 brightness level dimming capability
9.	Video processing	24 bit Video processing, 100 % Digital
10.	Diode Density	7000m2 (minimum)
11.	Scan rate and refresh frequency	Scan Ratio 1:1 and with minimum 20000 hz refresh frequency
12.	LED internal and External Cabinet type , Serviceability	Internal LED frame should be made of Aluminium and External cabinet should be factory made without pin holes , LED Display should be serviceable from front and back
13.	Color Temperature - Adjustable	4500 - 9000 K range
14.	input Power Requirement/ Consumption	120/240v, 50/60Hz , Power consumption 180 W (maximum) / m2
15.	Type	Discrete Diode
16.	Display Mounting	Structure based upon location . Uni Pole or
17.	General	The system should also have the facility to display the environmental picture through video camera/vcr/cd playeretc. for public awareness.
18.	Power Cable Laying	Depending upon location, cabling is to be done by the firm
19.	Device at station to pick up data and transmit it to LED	Display data connectivity device with GSM SIM has to be installed near by LED board which will pick up data from station computer through Internet. LED to be placed away from through Internet .LED to be placed away from the station premises.
20.	Certification	CE, UL/ULC listed
21.	IP Rating	Display Module IP67, Cabinet IP 65

15. ANNEXURE

(A) Drawing of a CAAQM Station

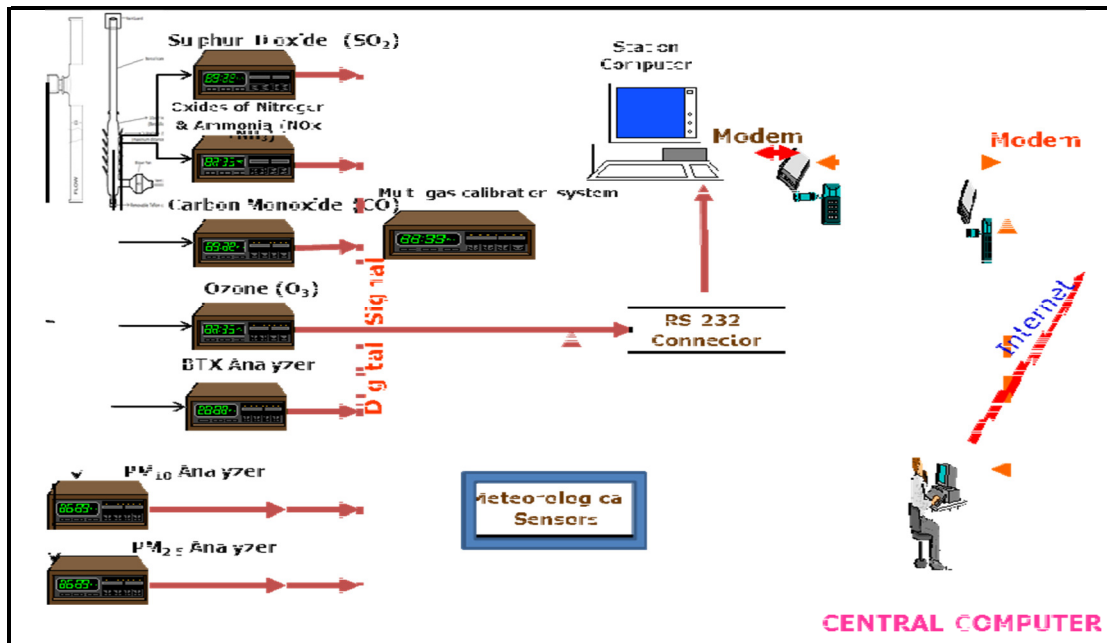




All Dimensions are in mm

Drawing of Cup Board and Working Table

(B) Architecture of CAAQM System



(C) Protocol for Data Transmission from CAAQM Stations

Presently CPCB is operating NAQI network which uses this protocol mentioned below for the data collection at central server to generate NAQI which is made available to the public. The Instrument Supplier will have to generate the data output immediately after installing the CAAQMS at any location in this format so that station gets integrated into the existing system immediately.

However, the proposed procedure given in this document of data management through ISO 7168 format would be applied after proper system checks and setup. In parallel both systems will be operated for nearly six months and finally, ISO based system will be adopted for future data management from CAAQMS in the entire country.

1. Data Format

- Data file on real time basis having 15 minutes average values in a prescribed format attached at Annexure-I should be generated at the station for which Instrument Supplier is responsible.
- File should be updated after every 15 minutes.
- Data intervals like 00:15, 00:30, 00:45, 01:00 should be fixed at the station.
- Station file name should be exactly as the name of the station to be displayed on the web portal. i.e. Sanathnagar, Nehru Nagar. Here precaution is to be taken that no space between words should be given or no special characters should be used.
- File should be recorded in a folder c:\data\sanathnagardata.txt
- File should allow data appending sequentially.
- Date of last file record appended in the file should be recorded and data afterwards be placed in the data file.
- File appending should continue subject to max 97 lines. First in First out mechanism shall be followed in keeping file size to 97 lines.
- Hence, in the specified folder c:\Data\ there will be a single file which will keep appending as per format attached.
- Duplicate entry of any data should not be made in the file.
- System should have capability to create previous record data file for which user will give the date. This is required to have lost data makeup in the final database, if any.

2. Data Mapping

- Protocol for each parameter is fixed as below:
 1. 15 Minutes average value will be provided by the operator of the CAAQMS
 2. Each SPCB will have the parameter as mentioned in the table only. Not even a small gap or space is provided other than the mentioned table is acceptable.

3. Standard Parameter Naming Protocol and Conversion factors Table

Parameters Name	Parameter Abbreviations	Unit	Conversion factors at 25°C
Rack Temperature	Temp	°C	
Carbon Monoxide	CO	mg/m ³	1 ppm=1.145mg/m ³
Sulphur Dioxide	SO ₂	µg /m ³	1ppb=2.62 µg/m ³
Nitric Oxide	NO	µg /m ³	1ppb=1.23 µg/m ³
Nitrogen dioxide	NO ₂	µg /m ³	1ppb=1.88 µg/m ³
Oxides of Nitrogen	NO _x	Ppb	--
Ozone	Ozone	µg /m ³	1ppb=1.96 µg/m ³
Particulate Matter less than 10 Micron size	PM ₁₀	µg /rn ³	--
Wind Speed	WS	m/s	--
Wind Direction	WD	Deg	--
Ambient Temperature	AT	°C	--
Relative Humidity	RH	%	--
Barometric Pressure	BP	mmHg	--
Solar Radiation	SR	W/mt ²	--
Rain Fall	RF	Mm	--
Vertical Wind Speed	VWS	Degree	--
Particulate Matter less than 2.5 micron size	PM _{2.5}	µg /m ³	--
Benzene	Benzene	µg /m ³	1ppb=3.19 µg/m ³
Toluene	Toluene	µg /m ³	1ppb=3.77 µg/m ³
Xylene	Xylene	µg /m ³	1ppb=4.34 µg/m ³
Ethyl Benzene	Eth-Benzene		1ppb=4.34 µg/m ³
M+P_Xylene	MP-Xylene		1ppb=4.34 µg/m ³
Methane	CH ₄	µg /m ³	1ppb=0.65 µg/m ³
Ammonia	NH ₃	µg /m ³	1ppb=0.70 µg/m ³
Formaldehyde	HCHO	µg /m ³	1ppb=1.23 µg/m ³
Mercury	Hg	µg/m ³	1ppb=8.20 µg/m ³

Note: Any other parameter can be added with the prior approval of IT Division only.

4. Internet Connectivity

- Internet connectivity should be available on 24X7 basis for data transmission with an uptime of 99.9%. For this purpose every CAAQM station should have two kinds of connection:
 - i) Leased Line Circuit of at least 01 Mbps capacity
 - ii) Broad Band connectivity through telephone line. Both facilities should be configured in ready to use condition. If possible auto failover should be created.

Note: Connectivity through Data card is not acceptable except in any special circumstances, where both of these types of connectivity's are not available. For such case CPCB IT Division shall be consulted before taking a final decision.

5. Other Information:

1. Area Map showing station location
2. Latitude, Longitude and altitude of the station
3. Photo of station along with nearby areas
4. One page write-up about the station activities in the vicinity of station including major pollution sources like nearby road, rail, restaurants, generator sets, etc.

File Name: sanathnagar

1,2,3,4,5,6,7,8,

Station name, Parameter, Date from, Date to, Value, calibrationflag, maint flag, Remark,
 Sanathnagar,CO,27-04-2015 13:00,27-04-2015 13:15,0.2497,0,0,analyserfaulty,
 Sanathnagar,CO,27-04-2015 13:15,27-04-2015 13:30,0.2470,0,0,analyserfaulty,
 Sanathnagar,CO,27-04-2015 13:30,27-04-2015 13:45,0.2470,0,0,analyserfaulty,
 Sanathnagar,CO,27-04-2015 13:45,27-04-2015 14:00,0.2470,0,0,analyserfaulty,
 Sanathnagar,Ozone,27-04-2015 13:00,27-04-2015 13:15,59.6710,0,0,flowproblem,
 Sanathnagar,Ozone,27-04-2015 13:15,27-04-2015 13:30,59.5960,0,0,analyserfaulty,
 Sanathnagar,Ozone,27-04-2015 13:30,27-04-2015 13:45,59.5960,0,0,analyserfaulty,
 Sanathnagar,Ozone,27-04-2015 13:45,27-04-2015 14:00,59.5960,0,0,analyserfaulty,
 Sanathnagar,NO,27-04-2015 13:00,27-04-2015 13:15,0.5922,0,0,analyserfaulty,
 Sanathnagar,NO,27-04-2015 13:15,27-04-2015 13:30,0.4435,0,0,0,
 Sanathnagar,NO,27-04-2015 13:30,27-04-2015 13:45,0.4435,0,0,0,
 Sanathnagar,NO,27-04-2015 13:45,27-04-2015 14:00,0.4435,0,0,0,
 Sanathnagar,So2,27-04-2015 13:00,27-04-2015 13:15,3.5233,0,0,0,
 Sanathnagar,So2,27-04-2015 13:15,27-04-2015 13:30,3.7278,0,0,0,
 Sanathnagar,So2,27-04-2015 13:30,27-04-2015 13:45,3.5233,0,0,0,
 Sanathnagar,So2,27-04-2015 13:45,27-04-2015 14:00,3.7278,0,0,0,
 Sanathnagar,RT,27-04-2015 13:15,27-04-2015 13:30,33.2260,0,0,0,
 Sanathnagar,RT,27-04-2015 13:30,27-04-2015 13:45,33.2240,0,0,0,
 Sanathnagar,AT,27-04-2015 13:45,27-04-2015 14:00,33.0960,0,0,0,
 Sanathnagar,AT,27-04-2015 14:15,27-04-2015 14:30,33.3740,0,0,0,
 Sanathnagar,RH,27-04-2015 13:15,27-04-2015 13:30,41.3080,0,0,0,
 Sanathnagar,PM10,27-04-2015 13:15,27-04-2015 13:30,30.3000,0,1,analyserfaulty,
 Sanathnagar,PM10,27-04-2015 13:30,27-04-2015 13:45,30.3000,1,0,analyserfaulty,

 Please note:

Here 0-zero stand for normal operation of instruments in calibration flag status
 1-Stands for calibration mode ON and data will not be considered for averaging purpose.
 Same is true for Maintenance mode where 0-normal and 1 maintenance mode ON

References:

Technical Handbook for Installation, Maintenance, Calibration, Data Connectivity and Data Quality Check of Continuous Ambient Air Quality Monitoring System (Real Time)
 Guidelines for the Measurement of Ambient Air Pollutants, Volume-II

National Ambient Air Quality Standards (2009)