CSIR - NATIONAL PHYSICAL LABORATORY
(Council of Scientific & Industrial Research)
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From: Director, CSIR-NPL
Ref. No.: 14-IV/RASD(60)13-PB/PIC Dt: …….

Dear Sirs,

Sub.: INVITATION FOR PRE-INDENT CONFERENCE –Intimation Regarding

National Physical Laboratory (NPL), a premier R&D unit of Council of Scientific & Industrial Research, intends to establish a facility for **"Continuous Ambient Air Monitoring Station (CAAMS)"** for continuous monitoring of greenhouse gases and air pollution in western Himalayan area which will have provision for continuous measurements of ambient concentrations of CO_2, CH_4, CO, $NO/NO_2/NH_3$, SO_2, O_3 & BC housed in an appropriate shelter with control climate and equipped with automatic Weather Station, gas calibration system, power backup and system for data acquisition & transmission to Central Server at CSIR-NPL (as per pointer advertisement placed at **Annexure -II**).

In this regard, a **Pre-Indent Conference (PIC)** is being organized to finalize the broad technical specifications of the required system(s) as mentioned above. Prospective OEMs or their Authorized Distributors, System Integrators having specialization and experience of such installations and their maintenance thereof are invited to make presentations followed by discussions on technology, design, features, utility, technical parameters and other related Techno-commercial issues. The credentials, technical capability, financial standing & track record of vendors, will be evaluated, based upon PIC discussions and documents submitted by the interested parties. For this purpose brief details and purpose of requisite equipment is enclosed at **Annexure –I.**

Further the detailed scope of PIC and other conditions can be seen on NPL website: **http://www.nplindia.org** under "Tenders/Pre-Indent" → "Pre-Indent Conference Notifications" link. Parties willing to participate must send a formal communication to Controller of Stores & Purchase (emails: cosp@nplindia.org / spo@nplindia.org), in advance. The schedule for PIC will be as follows (as per pointer advertisement placed at Annexure -II):

Date & time of PIC**: 16.07.2013 at 10.00 AM (IST) onwards.**
Venue: Conference Room, 2nd Floor, Main Building, CSIR-NPL, New Delhi -110012.

Interested parties willing to take part in the above said PIC are requested to submit the documents to prove their Technical Capabilities, Client List, Financial Capabilities, Experience and Credentials at the time of attending of PIC along with Vendor Registration Form as per Annexure -III. A Line of confirmation in this regard may be sent.

Thanking you,

Yours Faithfully,

Encl: A/A

(Tariq Badar)
Controller of Stores & Purchase

Ref. No.: 14-IV/RASD(60)13-PB/PIC

***Draft Specifications of* Continuous Ambient Air Monitoring Station (CAAMS)**

CSIR-National Physical laboratory (CSIR-NPL) intends to establish a facility for continuous monitoring of greenhouse gases and air pollution (CAAMS) in western Himalayan area (in or around Almora district of Uttrakhand state) which will have provision for continuous measurements of ambient concentrations of CO_2, CH_4, CO, $NO/NO_2/NH_3$, SO_2, O_3 & BC housed in an appropriate shelter with control climate and equipped with Automatic weather Station, gas calibration system, power backup and system for data acquisition & transmission to central server at CSIR-NPL.

The Manufacturer of Ambient Air Monitoring System should have world-wide recognition and experience in designing and establishment of such system to provide high quality greenhouse gas and air pollution measurement data. The System should be designed to minimize the time spent on maintenance and calibration.

During designing and establishing the CAAMS, following criteria /features must be adopted and the manufacturers/bidders must comply with the same in order to provide high quality data.

1. Since the system is to be operated in remote location, it is highly desirable that the manufacturer of the prime analysers ($NO/NO_2/NH_3$, CO, O_3, etc.) must have enough expertise on operation and maintenance of such monitoring system & on data reporting of the pollutants. Also, the preference will be given to the manufacturer who has ISO9000 /ISO9001 /ISO17025 Quality Accreditation /NATA accreditation & has executed projects of Ambient Air Quality Monitoring in India. Details of such projects must be enclosed in the offer.
2. The CO, O_3, $NO/NO_2/NH_3$, Gas calibrator, zero air generator, Data Acquisition Systems and Data Collection and Reporting software should preferably be manufactured by one manufacturer to provide substantial control over the quality of the system and to allow the design of the system to be best suited for application. The analysers used in the monitoring system must function efficiently in the temperature range of 2^0C - 48^0C.
3. An approval certification of appropriate authorities (as stated in the specifications viz. US-EPA, etc) must be enclosed as qualifying requirement for bid.
4. All analysers in the system must have technical sophistication to be connected digitally to Data Acquisition System.
5. The Data Acquisition System must have features like automatic data validation software complete with data capture percentage.
6. Analysers for the measurements of species like $NO/NO_2/NH_3$, O3, and CO should have RS 232, RS 422 and USB ports.
7. The Data Acquisition System should operate on MS-Windows 7/or better Platform and be of a “Client/Server” configuration for improved reliability.
8. Real time or averaged data must be viewed quickly and easily through a remote CLIENT interface on the central computer.
9. The Data Acquisition System features should include nested calculations, vector averaging and rolling averages.
10. The System must support remote communication with full user interface from location anywhere in the world.
11. Data Evaluation and Reporting Software must have been upgradeable to a multi-user version.
12. The Data Evaluation and Reporting Software must be able to collect and process data from a wide variety of data acquisition systems & analysers.
13. The engineer responsible for installation and commissioning of the station must provide on site training for operation, maintenance & data validation as per ISO9001/ISO17025 Quality Accreditation/ NATA accreditation procedure. The hands-on experience and understanding on how the system is integrated are also to be provided by the vendor.

Note: Supplier should categorically provide detail feedback on each and every point mentioned above (Total 13) in chronicle order related to compliance (yes) /non-compliance (no) or any other explanation/justification in a tabular form.

A. SPECIFICATIONS FOR OZONE ANALYSER -1		
1	General Range	User selectable and automatic
2	Concentración Range	0-1000 ppb
3	Lower Detectable Limit	≤0.5 ppb
4	Zero drift	< 1 ppb for 30 days
5	Response time	Programmable (10 s to 80 s)
6	Averaging time	Programmable (1 min to 24 hrs)
7	Internal memory	Suitable for data storage (more than 5 MB)
8	Data storage	Built in analyzer (should store 1 min average for more that 5 day)
9	Port & compatibility	RS-232 or RS-422 or USB; and Compatible with MS-Windows 7 or higher version
10	Power supply	230V ± 10% AC & 50Hz ±5% Frequency
11	Manual	Instruction & operation manuals
12	Calibration unit	In Built calibration unit with internal zero span check feature
13	Approval	US-EPA approved

B. SPECIFICATIONS FOR NO-NO2-NH3 ANALYSER -1		
1	General Range	User selectable and automatic
2	Concentration Range	0-0.05 to 100 ppm
3	Lowest detectable limit	≤1.0 ppb for NH3 & ≤0.5 ppb for NOx
4	Zero drift	<1 ppb
5	Response time	Programmable (30 s to 90 s)
6	Averaging time	Programmable (1 min to 24 hrs)
7	Internal memory	Suitable for data storage (more than 5 MB)
8	Data storage	Built in analyzer (should store 1 min average for more that 5 day)
9	Port & compatibility	RS-232 or RS-422 or USB; and Compatible with MS-Windows 7 or higher version
10	Power supply	230V ±10% AC & 50Hz ±5% Frequency
11	Manual	Instruction & operation manuals
12	Calibration unit	Inbuilt unit for zero gas calibration and NO_X (preferable as permeation bench)
13	Approval	US-EPA approved

C. SPECIFICATIONS FOR CO -ANALYSER -1		
1	General Range	User selectable and automatic
2	Concentration range	0-100 ppm
3	Lowest detectable limit	≤0.4 ppm
4	Zero drift	<0.1 ppm per day
5	Span Drift	1% of FS per day
6	Response time	Programmable (10 s to 80 s)
7	Averaging time	Programmable (1 min to 24 hrs)
8	Internal memory	Suitable for data storage (more than 5 MB)
9	Data storage	Built in analyzer (should store 1 min average for more that 5 day)
10	Port & compatibility	RS-232 or RS-422 or USB ; and Compatible with MS-Windows 7 or higher version
11	Power supply	230V ±10% AC & 50Hz ±5% Frequency
12	Manual	Instruction & operation manuals
13	Calibration unit	Inbuilt unit for zero gas calibration with solenoid valve for external span gas cylinder
14	Approval	US-EPA approved

D. SPECIFICATIONS FOR SO_2 ANALYSER -1		
1	General Range	User selectable and automatic
2	Concentration Range	0-1000 ppb
3	Lowest detectable limit	≤0.5 ppb
4	Zero drift	<0.2 ppb per day
5	Response time	Programmable (30 s to 80 s)
6	Averaging time	Programmable (1 min to 24 hrs)
7	Internal memory	Suitable for data storage (more than 5 MB)
8	Data storage	Built in analyzer (should store 1 min average for more that 5 day)
9	Port & compatibility	RS-232 or RS-422 or USB; and Compatible with MS-Windows 7 or higher version
10	Power supply	230V ±10% AC & 50Hz ±5% Frequency
11	Manual	Instruction & operation manuals
12	Calibration unit	Inbuilt unit for zero gas calibration
13	Approval	US-EPA approved

E. SPECIFICATIONS FOR BLACK CARBON ANALYSER -1		
1.	Technique	Filter based absorption photometer
2.	Determination of BC concentration	BC mass concentration should be derived from mass absorption cross section (MAC). For this it should be certified that provision for co-existence of light scattering particles is made to eliminate them by heating the inlet
3	Detection limit (LOD)	~0.05 ug/m3 at one minute averaging @0.8L/min.
4	General Range	0.5µg/m^3 - 10 mg/m^3
5	Temperature of the filter and light detection part	Should be maintained properly at 50^0C to avoid error.
6	Flow air sample	Control by a mass flow controller.
7	Flow Rate	~0.7 liter/minute
8	Collection filter	Fibreglass
9	Power supply	230V ±10% AC & 50Hz ±5% Frequency
10	Port & compatibility	RS-232 or RS-422 or USB; and Compatible with MS-Windows 7 or higher version
11	Manual	Instruction & operation manuals
12	Operating software	Should be compatible with MS-Windows 7 or higher version
13	Calibration unit and accessories	Calibration automatic and all necessary accessories like pump, heater, software with CD, etc should be supplied to make instrument operational

F. SPECIFICATIONS FOR Laser Based Carbon dioxide (CO2) Analyzer -1		
1.	Technique	Laser based
2.	Detection Range	10-600 ppm or better
3.	Detection limit (LOD)	10 ppm
4.	Power supply	230V ±10% AC & 50Hz ±5% Frequency
5.	Port & compatibility	USB or RS-232 or RS-422; and Compatible with MS-Windows-7 or higher version
6.	Manual	Instruction & operation manuals

G. SPECIFICATIONS FOR Laser Based Methane (CH4) Analyzer -1		
1.	Technique	Laser based
2.	Detection Range	500-10000 ppb
3.	Detection limit (LOD)	500 ppb
4.	Power supply	230V ±10% AC & 50Hz ±5% Frequency
5.	Port & compatibility	USB or RS-232 or RS-422; and Compatible with MS-Windows-7 or higher version
6.	Manual	Instruction & operation manuals

H. SPECIFICATIONS FOR ZERO GAS GENERATOR -1		
1	Outflow Generator	1 to 5 Liter Minute^{-1}
2	Outlet Pressure	Adjustable between 0.1 and 2 Bar
3	Purity	>99.999%
4	Power Supply	230V ±10% AC & 50Hz ±5% Frequency
5	Manual	Instruction and Operation Manual
Scrubbers		
	Hopcalite	Removal of CO (<0.1 ppb)
	Purafil	Removal of NO, NO_2, NOx (<0.1 ppb)
	Charcoal	Removal of SO_2, H_2S, Ozone (<0.1 ppb)
	Molecular Sieve	Removal of H_2O (Dew point -15 C)
	Power	230 ± 10 V AC & 50 ± 5 Hz frequency
	Pressure	Up to 200 KPA
	Flow	0-9 LMP

I SPECIFICATIONS FOR MULTI POINT GAS CALIBRATOR (MGC) -1		
1	Power Supply	230V ±10% AC & 50Hz ±5% Frequency
2	Weight	< 20 kg
3	Pressure	Ajustable Between 0.1 and 2 bar
4	Dilution	From High Concentration Span Gas to Diluted Gas using Mass Flow Controller
5	Manual	Instruction and Operation Manual
6	Calibration Gases, Cylinders & Regulator	Cylinder of Capacity 10 liter with SS Regulator and single cylinder for all the calibration gases. Separate cylinders for calibration must be provided

J. Specifications for Automatic Weather Station (AWS) = 1
1. Data Logger
Provision for storing and archiving the data from all sensors through software to central server in desired format
2. Wind Speed Sensors:
Range: 0 to 125 mph
Resolution: better than 0.1 mph
Accuracy: ±1mph
3. Wind direction
Range: 0 to 360º
Resolution: better than 0.1 %
Accuracy: ± 3%
Starting threshold: 1.2 mph
4. Temperature
Range: -40º to 60º C
Resolution: better than 1º C
Accuracy: ±1º C
5. Relative Humidity
Range: 0 to100 % RH
Accuracy: ± 3 % or less
6. Pyrradiometer
Spectral Sensitivity: 0.3 to >30 µm
Azimuth response: < 5% of the value
Cosine response: < 5% of the value, zenith angle 0° to 80°
Response time: < 25 sec (95%), < 45 sec (99%)
Measuring range: 0-1500 Wm^{-2}
Resolution: < 1 Wm^{-2}
Stability: < 3% per year (temporary operation)
Temperature effect: < 2% of the value between 20°C to + 40°C
Linearity: < 2% in the range 0.5-1330 Wm^{-2}
Impedance: 190 ohm/receiver plate
Output: 15 $\mu VW^{-1}m^{-2}$
temperature range :-40°C to 60°C
7. Rain Gauge
Resolution: 0.05 cm tip^{-1} or better
Accuracy: ± 1 %
8. Tripod /stand with mounting rod:
Height 36” or as per standard IMD norms.

K. SPECIFICATIONS FOR LOCAL AND CENTRAL DATA ACQUISITION, CONTROL SYSTEM & REMOTE NETWORKING

1	GPRS /3G Modems as required. Please note that internet connectivity may not be available in remote stations. However, internet facility will be provided by NPL at the central station at NPL.
2	GPRS /3G networking with minimum memory to store all the local station data for the period of 6 months,with capability of acquiring real time and store data from local station to centralization by GPRS /3G network with software for the data analysis and visualization.

LOCAL STATION: 1

1. Should connect through RS232 and USB communication ports.
2. Should able to transmit data and /remote control via broadband/GSM network. (Network connection & installation will be provided by the vendor)
3. Should provide GUI windows based application software for continuous air monitoring.
4. Should provide calibration windows for analyzer calibration from computer.
5. Main window for real time display major parameters & status of all analyzers & sensors.
6. Control panel window for control of each analyzer.
7. Real time status and diagnostics for maintenance people.
8. Programmable down loading of data.
9. Should provide data storage capacity for at least 3 years.

CENTRAL STATION: 1

a) The software should have all advance features to enable remote automatic data collection from each station and should provide full control over data loggers from anywhere including real time viewing, status and diagnostic information.

b) Data communication and acquisition system should handle the data transmission /reception from remote monitoring stations, receive incoming messages / signals from remote site using SCP/SFTP protocol.

c) Central station software should manage remote air quality-monitoring stations.

d) Should provide data management, analysis and reporting.

e) Should compatible with MS Windows 7 or higher version

f) Should provide data storage capacity for at least 2 years.

g) The remote control ability on the client server model as such should look and realize exactly the same when used from a remote location as it does when used on site. It should be a separate process that is independent of what is being displayed on the logger.

h) Multiple clients should be able to connect to the server from different locations at a time to allow remote computer to view the data being logged in real time.

i) The customized software interface program should be provided which can store and transmit the data in the real unit as well as to the Display servers in the format (probably in 'csv') as per the requirement of display pany. This need to be updated every 30 minutes to 1 hour in real time.

j) This software as well as standard data acquisition software should be maintained regularly and should have enough licences to load in real and proxy servers.

(a) Configuration of remote data acquisition machine -1

A. **PROCESSOR:** 2nd Generation Intel® Core™ i5-2400 Processor (3.10GHz,6MB) or higher
B. **Chipset:** Intel(R) Q67 Express Chipset
C. **OPERATING SYSTEM:** Genuine Windows(R) 7 Professional 64bit (English) or Microsoft Windows 8 Professional 64bit (English)
D. **MICROSOFT SOFTWARE:** Licensed Microsoft(R) Office Professional
E. **DISPLAY:** 17in HAS Wide Monitor, VGA/DVI
F. **MEMORY:** 4GB (2x2GB) Non-ECC DDR3 1333MHz SDRAM Memory
G. **HARD DRIVE (PRIMARY):** 1TB 7200 RPM 3.5" SATA Hard Drive
H. **OPTICAL DRIVE:** 16X Max DVD-ROM Drive
I. **KEYBOARD:** USB Keyboard
J. **MOUSE:** USB MOUSE with PADS
K. **CARD READER:** 19-in-1 Media Card reader
L. **SOFRTWARES and SYSTEM RECOVERY:** Windows(R) 7 Professional 64bit Media Kit (Multi-Language).
M. **USB Ports:** Total 4; **Multimedia:** Multimedia Speaker with MIC

(b) Configuration of central data acquisition machine/workstation - 1

N. PROCESSOR: 2nd Generation Intel® Core™ Intel Core i7 (3.4 GHz or Higher) **Chipset:** Intel(R) Q67 Express Chipset

O. OPERATING SYSTEM: Genuine Windows(R) 7 Professional 64bit (English) or Microsoft Windows 8 Professional 64bit (English)

P. MICROSOFT SOFTWARE: Licensed Microsoft(R) Office Starter 2010 or later edition

Q. DISPLAY: 21.5 in TFT Flat Monitor

R. MEMORY: 4GB (2x2GB) Non-ECC DDR3 1333MHz SDRAM Memory

S. HARD DRIVE (PRIMARY): 1TB 7200 RPM 3.5" SATA Hard Drive

T. OPTICAL DRIVE: 16X DVD-ROM Drive

U. KEYBOARD: USB Keyboard

V. MOUSE: USB MOUSE with PADS

W. CARD READER: 19-in-1 Media Card reader

X. SOFRTWARES and SYSTEM RECOVERY: Windows(R) 7 Professional 64bit Media Kit (Multi-Language).

Y. USB Ports: Total 4; **Multimedia:** Multimedia Speaker with MIC

(c) Configuration of SFTP/SCP server at Central Data Location - 1

Z. PROCESSOR: Intel Xeon (Quad Core) Processor 3.1 GHz

AA. OPERATING SYSTEM: CentOS Linux

BB. RAM: 8 GB RAM

CC. HDD: 3 HDD of 500 GB TB SATA

DD. HDD Controller : supporting RAID 5

EE. DISPLAY: 21.5in TFT Flat Monitor

FF. Dual Power supply (Redundant Power Supply included)

GG. Gigabit Ethernet Port, SATA DVD ROM

HH. USB Keyboard, USB Mouse

II. Compatible to be fit in 19 inch Rack (Rail kit should be included)

JJ. 3 year onsite warranty

GENERAL CONDITIONS:

1. All the softwares required for operation for the system as a whole, should be provided also in their installer form (Along with soft copy of their manuals) in a external media(CD/DVD-ROMs).
2. All the necessary cables, connectors, manuals or any other hardware and software should be bundled and included for all operations listed above.
3. All SIM recurring rental and modem charges (for first year) will be borne by vendor

L. SPECIFICATIONS FOR UPS /AIR CONDITIONER /RACK	
1	Supply and commissioning of online Branded UPS With Minimum 4 Hour Battery Backup For all analyzer and accessories of adequate capacity to be provided with wiring and all necessary electrical work
2.	Supply and commissioning of online 10 KVA Branded UPS With Minimum 4 Hour Battery Backup with wiring and all necessary electrical work (1 Number only)
3.	Supply and commissioning of Branded Air Conditioner System split type of two ton capacity for remote stations with wiring and all necessary electrical work (2 units)
4.	Supply and commissioning of standard mounting rack to accommodate all analyzers and necessary accessories (cylinders, calibrator, etc) with sample handling, moisture removal manifold system, power distribution board, exhaust /cooling, dust filter, telescopic poles, etc.

M. Specifications for walkway shelter		
Sr. No	**Description**	**Specification**
1a	Material of construction (outside)	Mild Steel 1.2mm thickness with pre-coated paint only.
1b	Material of construction (inside)	Marine ply with laminate (12 mm) Boiled Water Resistance Quality
2	Size of Shelter	3 mtr(L) ×3 mtr(W)×2.7mtr(H)
3	Door	One main door Entrance/Exit with proper night latch locks
4	Door Size	900mm(W) × 2000mm(H) with toughened glass.
5	Partition	Separate Compartment for locating UPS &Batteries to be provided.
6	Wall Thickness	80mm with Rockwool/Glasswool.
7	Roof Thickness	100mm with Rockwool/Glasswool.
8	Base Frame	Made of ISMC 100 Channel with 50mm×50mm×4mm Angle
9	Floor MOC	Plywood of 12mm thickness on GI sheet of 2mm thick
10	Flooring	Vinyl sheet pasted on plywood (1.5mm thick)
11	Paint Shade, design and title	Green paint with CSIR-NPL logo drawing on front, sketches on other sides as per the instructions. An SS name plate of size 15"×10"(inches) with given matter engraved to be attached on the front side of the walkway shelter.
12	Hook	I-Hook shall be provided on all the four corner to lift the shelter.
13	Window	Two numbers shall be provided-Doubled glass vacuum type.
14	Illumination	4 Nos tube light- Inside shelter (250-300 Lux at working Level).4Nos bulk head light –Outside shelter with all electric connections.
15	Canopy	Minimum 600mm (W) or more shall be provided at main door and windows for complete protect from rain water.
16	Inside Separation	Sliding Arrangement shall be provided.
17	Roof Design	Shall be designed to take load of Four Persons.
18	Floor Design	Shall be designed to take load of 100kg/square feet
19	Application	Outdoor
20	Location	In the western Himalayan area (In or around Almora in Uttrakhand)
21	Ambient Condition	Temp: Min -20^0 C: Max 50^0 C
22	Other amenities in shelter	One Computer Table (4'×3') with 3 computers chairs (armed and full back) (Standard Brand Godrej or equivalent)
23	Civil work	Specify as per your specification.
24	Additional Civil Work	Quote separately f(as optional) or barricading with RPC pole .barbed wiring and CS exit gate around the shelter.
Note:	1. Three Holes at top shall be provided for Entry of Gas/ Dust Sample Tubes.	
	2. At Bottom There shall be holes for Cable & Drain Tubes Entry/ exit.	

N. Consumables, Spares & Calibration Standards	
Consumables	For three years of operations
Spares	For three years of operations
Calibration Standards for CO_2 & CH_4	NIST/NOAA Traceable standards for CO2 & CH4 in 10 Ltr. Water capacity aluminum cylinders with two stage pressure regulator
Calibration Standards for other species	Standards calibration gases for analyzers (other than CO_2 & CH_4) in 10 Ltr. Water capacity aluminum cylinders with two stage pressure regulator
Training	Professional Level Training of at least four days to four persons. Training should cover operation lifecycle of entire station (including operation of each of the equipment and software). Soft copy of training material should be provided.

O. Warranty & CMC/AMC	
Warranty	Three year onsite warranty of PC & server. One year onsite warranty of rest of equipments including shelter.
CMC (Optional)	For 3 years (after first year of warranty)
AMC (Optional)	For 3 years (after first year of warranty)

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PRE –INDENT CONFERENCE NOTICE No: 10/2013

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Venue: Conference Room, 2nd Floor, Main Building, CSIR-NPL, New Delhi -110012.

Sd/-
(Controller of Stores & Purchase)

VENDOR'S INFORMATION FORM

[The interested party shall fill in this form and should submit at the time of attending PIC. This should be done on the letter head of the firm]

1. Vendor's Legal Name :

2. Vendor's actual or intended Country of Registration :

3. Vendor's Legal Address in Country of Registration :

4. Vendor's Authorization Representative Information

Name :

Address :

Telephone/Fax numbers:

Email Address :