Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi 110032

Project: Upgradation of CCR (Central Control Room) Software for providing Graded Response to control Air Pollution., Tender Notice No. : C-12013/24/2017-18/Tech/Sr. No.1

1. Important Information and Dates

Stage-I: Finalized

1	Opening of EOI for Project Tender	11.03.2017
2	Last Date of Submission of EOI proposal alongwith eligibility criteria & Other required documents	05.04.2017 (11.04.2017 - List of EoI Eligible firms published on CPCB website www.cpcb.nic.in)
Stage –II: Starting		
3	Opening of Tender with Request for Proposal (RFP) for EoI Eligible Firms	13.04.2017
4	Pre Bid for finalization of RFP document	17.04.2017 4:00pm at CPCB HO
5	Amendments to RFP document & uploading of Tender for bids submission	24.04.2017
6	Last Date of Submission of Proposals/Bids (only from the EOI eligible firms)	11.05.2017* on or before 3:00 pm (tentative shall be confirmed)
7	Date of opening of Technical Bids	15.05.2017 4:00pm (Tentative shall be confirmed)
8	Venue	Central Pollution Control Board, 5th Floor Committee Room, IT Division, Parivesh Bhawan, East Arjun Nagar, Delhi-32
9	Release of list of technically shortlisted firms	26.05.2017
10	Date of Technical Presentations of the Action Plan	02.06.2017 (time shall be confirmed)
11	Release of list of Technically qualified firms and opening of financial proposals	07.06.2017
12	EMD Value (Exemption applicable as per MSME & NSIC etc as per Govt.of India Rules)	**Rs. 80,000/- (Rs. Eighty thousand only) IN FAVOUR OF "CENTRAL POLLUTION CONTROL BOARD" payable at DELHI.
13	Tender Document Fee	** Rs. 1000/- (Rs. One thousand only)

**EoI Eligible firms have to submit tender fee and EMD on or before due date

Request for Proposal

for

Upgradation of "CCR (Central Control Room) Software" for providing Quick Graded Response to control Air Pollution.

Tender Notice No. : C-12013/24/2017-18/Tech/Sr. No.1

13.04.2017

CENTRAL POLLUTION CONTROL BOARD

Parivesh Bhawan, East Arjun Nagar

Delhi -110032

April'2017 (Ver-5.0)

Revision and Signoff Sheet

Upgradation of "CCR (Central Control Room) Software" for providing Quick Graded Response to control Air Pollution.

Change Record

Date	Author	Version	Change reference
15.01.2017	Aditya Sharma Scientist 'D' IT Division,CPCB	2.0	Initial draft for review/discussion
15.02.2017	Aditya Sharma Scientist 'D' IT Division,CPCB	3.0	Revised Document
08.03.2017	Aditya Sharma Scientist 'D' IT Division,CPCB	4.0	Revised Document
13.04.2017	Aditya Sharma Scientist 'D' IT Division,CPCB	5.0	

Reviewers

Name	Version approved	Position	Date
Sh. A. Sudhakar	2.0	Incharge Information Technology Division, CPCB	23.01.2017
Sh. A. Sudhakar	3.0	Incharge Information Technology Division, CPCB	15.02.2017
Sh. A. Sudhakar	4.0	Incharge Information Technology Division, CPCB	08.03.2017
Sh. A. Sudhakar	5.0	Incharge Information Technology Division, CPCB	13.04.2017

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Upgradation of "CCR (Central Control Room) Software" for providing Quick Graded Response to control Air Pollution.
Tender Notice No. : C-12013/24/2017-18/Tech/Sr. No.1

CENTRAL POLLUTION CONTROL BOARD
(Ministry of Environment and Forests, Govt. of India)
Parivesh Bhawan, East Arjun Nagar, Delhi-110032
+91 22308902, 43102300, 43102296

1. Introduction

With the increase in anthropogenic activities, a large number of pollutants are being discharged into the environment in the form of Air Pollution. Various air pollutants are defined in two categories i) Primary Pollutants ii) Secondary Pollutants. Primary pollutants are Carbon Monoxide, Sulphur dioxide, Nitrogen dioxide, Particulate Matter etc. which are emitted directly from a source. While secondary pollutatns like ozone, Hydrocarbons etc. are the pollutants which are formed when primary pollutants reacts in the atmosphere. Ministry of Environment, Forest & Climate Change had identified 12 parameters and defined their prescribed standards basedon health criteria of human beings. National Ambient Air Quality Standards were notified as NAAQS 2009. Eight out of 12 parameters can be monitored through identified continuous ambient air quality monitoring technologies.

Since, air pollution is increasing day by day, Central Government, State Governments, Municipal Corporations, Indian Meterology Department (IMD) and other agencies are installing & operating, Continuous Air Quality Monitoring Stations called as Continuous Ambient Air Quality Monitoring Stations (CAAQMS) & Manual Ambient Air Quality Monitoring Stations. The Manual air quality monitoring stations are being installed under National Ambient Monitoring Program (NAMP) of Central Pollution Control Board (CPCB). Continuous ambient air quality monitoring stations are generating data on real time basis (i.e. every minute data is recorded and transmitted) and manual monitoring stations installed under NAMP generate air quality data on twice a week basis. Both kinds of stations have their benefits and shortcomings.

CAAQMS are Operated with Sophesticated Electronic Instruments based on Instrumentation techniques like Gas Filter Co-relation technique, Pulsed Fluoroscense technique, Chemi-luminiscense techniques etc. These instruments work continuously on 24x7 basis, minute to minute records get generated & recorded in the data logger/station computer at the station. **NAMP Stations** are manual air quality monitoring stations operated with High Volume Samplers (HVS) for 24 hours and air is passed through a filter paper. Filter paper is then weighed and through graviemetric analysis, level of particulates matter is calculated. PM_{10} gets measured if PM_{10} head is used in HVS and $PM_{2.5}$ gets measured if $PM_{2.5}$ head is used in HVS is used. The technique take atleast 24 hours to arrive at particulate matter measurements while gaseous parameters can be measured in 4/8 hrs. basis. The filter papers have to be desiccated to remove the moisture and then weighed to arrve at actual measurements. The results are being sent through email or hard copies. Since, the CAAQMS are based on continuous measurement principles, data becomes available for every minutes and based on 15 minutes intervals, the hourly AQI is generated. This AQI is being used for the generation of **National Air Quality Index(NAQI)** which has taken a center stage in terms of measuring daily air pollution levels.

National Air Quality Index (NAQI)

1. Air Quality Index is a tool for effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.

2. There are six AQI categories, namely Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as health breakpoints). AQ sub-index and health breakpoints are evolved for eight pollutants (PM_{10}, $PM_{2.5}$, NO_2, SO_2, CO, O_3, NH_3, and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed.

3. Based on the measured ambient concentrations of a pollutant, sub-index is calculated, which is a linear function of concentration (e.g. the sub-index for PM2.5 will be 51 at concentration 31 µg/m3 , 100 at concentration 60 µg/m3 , and 75 at concentration of 45 µg/m3). The worst sub-index determines the overall AQI.

AQI categories and health breakpoints for the eight pollutants are as follow in the Table 1.

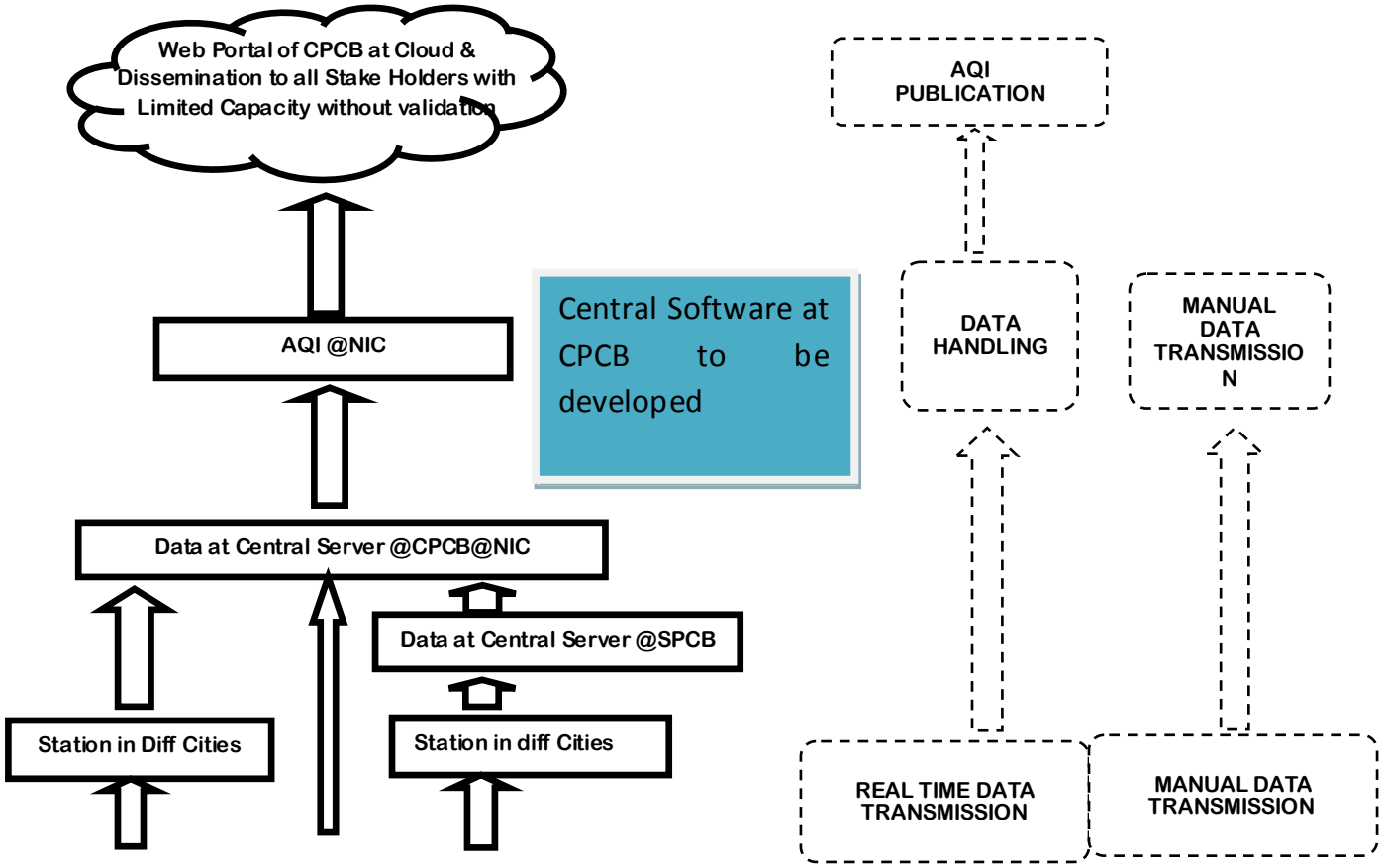
Table 1: AQI Categories and Health Breakpoints

AQI Category	AQI	Concentration range*							
		PM_{10}	$PM_{2.5}$	NO_2	O_3	CO	SO_2	NH_3	Pb
Good	0 - 50	0 - 50	0 - 30	0 - 40	0 - 50	0 - 1.0	0 - 40	0 - 200	0 - 0.5
Satisfactory	51 - 100	51 - 100	31 - 60	41 - 80	51 - 100	1.1 - 2.0	41 - 80	201 - 400	0.5 - 1.0
Moderately polluted	101 - 200	101 - 250	61 - 90	81 - 180	101 - 168	2.1 - 10	81 - 380	401 - 800	1.1 - 2.0
Poor	201 - 300	251 - 350	91 - 120	181 - 280	169 - 208	10 - 17	381 - 800	801 - 1200	2.1 - 3.0
Very poor	301 – 400	351 - 430	121 - 250	281 - 400	209 - 748*	17 - 34	801 - 1600	1200 -1800	3.1 - 3.5
Severe	401 - 500	430 +	250+	400+	748+*	34+	1600+	1800+	3.5+

* CO in mg/m^3 and other pollutants in $\mu g/m^3$; 2h-hourly average values for PM_{10}, $PM_{2.5}$, NO_2, SO_2, NH_3, and Pb, and 8-hourly values for CO and O_3.

2. Existing System Architecture

CPCB has developed a software in year 2006 (upgraded it year 2009) called as CAAQM Software, where real time data from nearly 54 CAAQM Stations installed all over the country is being collected continuously on 15 minutes basis. The data is collected in *.CSV format through a simple protocol available at CPCB website http://cpcb.nic.in/Protocol_CAAQM.pdf. The schematic details of existing system is given in figure 1.



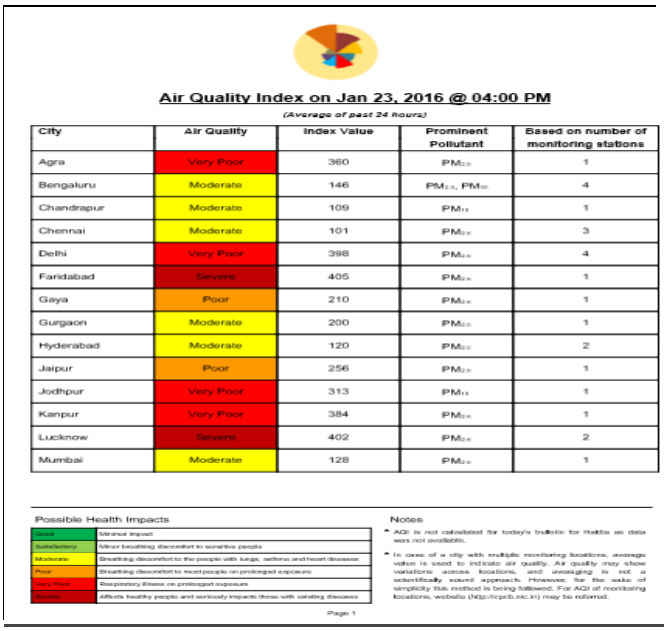
Continuous Ambient Air Quality Monitoring Station (CAAQMS)

DATA GENERATION

Figure 1: Schematic presentation of Existing System

The data is being picked up from each location through webservices. CPCB operated stations and SPCBs operated stations including DPCC (Delhi Pollution Control Committee) are connected with CPCB however, IMD is yet to be onboard. The data gets generated at each monitoring station through USEPA/MCERTS/TUV certified methodology based instruments' continuous operation. This consolidated data is being fed to another software system called AQI Software operated on Ubuntu platform, on every 15 minutes basis, which is developed by IIT Kanpur for the calculation of Air Quality Index (AQI). CAAQM software and AQI software are placed in NIC domain and data communication occurs between them continuously. Daily Bulletin automatically generated at 4:00 pm and placed on CPCB website for information to public. Table 2 depicts the Daily bulletin being developed automatically as on date.

Table 2: Daily AQI Bulletin



Air Quality Index on Jan 23, 2016 @ 04:00 PM

(Average of past 24 hours)

City	Air Quality	Index Value	Prominent Pollutant	Based on number of monitoring stations
Agra	Very Poor	360	$PM_{2.5}$	1
Bengaluru	Moderate	146	$PM_{2.5}$, PM_{10}	4
Chandrapur	Moderate	109	PM_{10}	1
Chennai	Moderate	101	$PM_{2.5}$	3
Delhi	Very Poor	398	$PM_{2.5}$	4
Faridabad	Severe	405	$PM_{2.5}$	1
Gaya	Poor	210	$PM_{2.5}$	1
Gurgaon	Moderate	200	$PM_{2.5}$	1
Hyderabad	Moderate	120	$PM_{2.5}$	2
Jaipur	Poor	256	$PM_{2.5}$	1
Jodhpur	Very Poor	313	PM_{10}	1
Kanpur	Very Poor	384	$PM_{2.5}$	1
Lucknow	Severe	402	$PM_{2.5}$	2
Mumbai	Moderate	128	$PM_{2.5}$	1

Possible Health Impacts

Good	Minimal impact
Satisfactory	Minor breathing discomfort to sensitive people
Moderate	Breathing discomfort to the people with Lungs, asthma and heart diseases
Poor	Breathing discomfort to most people on prolonged exposure
Very Poor	Respiratory illness on prolonged exposure
Severe	Affects healthy people and seriously impacts those with existing diseases

Notes

- AQI is not calculated for today's bulletin for Haldia as data was not available.
- In case of a city with multiple monitoring locations, average value is used to indicate air quality. Air quality may show variations across locations, and averaging is not a scientifically sound approach. However, for the sake of simplicity this method is being followed. For AQI of monitoring locations, website (http://cpcb.nic.in) may be referred.

Page 1

The data from Manual NAMP stations is being collected through EWQDES (Environmental Water Quality Data Entry System) available on CPCB website which is prepared inhouse. The data is being

entered through template for air and water quality, manually by nearly 32 States where these NAMP stations are operating. The collected information is then manually used for making payments to each SPCB based on amount of data, quality of data collected depending upon their category as decided by CPCB. Hence, involving manual procedure the data is collected and payments are made for the submitted data. The process so done manually is to be automated through the proposed system.

CPCB is operating a Mobile APP called Sameer through which the AQI generated is being made available to the public and current air quality status of various locations being monitored for ambient air quality is provided. It also provides a mechanism to general public to lodge their complaint related to air pollution which are being transmitted to respective agencies responsible for the action over complaints.

3 General Requirements

As per Hon'ble Supreme Court directives the Central Pollution Control Board, has to establish a Central Control Room, where air quality data generated from all Continuous & Manual Ambient Air Quality Monitoring Stations being operated in Delhi NCR irrespective of agency operating these stations have to be collected at a single location. The collected data is to be converted into Air Quality Index - One Number One color. Based on AQI status of a particular area and the most significant pollutants levels, Graded Response is to be generated by Central Pollution Control Board. As per **Graded Response** – direction from CPCB is to be issued. Local Authorities have to take up the special activities in their area to mitigate the higher air pollution levels based on graded response and action points suggested by CPCB. In emergency like situations Central Control Room will be operating continuously and will have to keep on monitoring the AQI levels and issue advisories for different parts of the city different advisories. Mechanism will be put in place for all local authorities of different regions (which are responsible for the air pollution control related activities) to get the action points based on graded response generated by CPCB and to collect the responses of agencies after taking those actions. Data which is to be collected at one location has to be put to use for decisions in Central Control Room (CCR). Presently various agencies are operating in Delhi-NCR like East Delhi Municipal Corporation EDMC, Soth Delhi Municipal Corporations SDMC, North Delhi Municipal Corporations North-MCD, New Delhi Municipal Corporation NDMC, Delhi Contonment area, Rajasthan State Pollution Control Board, Haryana State Pollution Control Board, Punjab State Pollution Control Board etc. There are 22 towns covering Delhi NCR Regions. To take actions on local levels there has to be Control Rooms developed through which the local air pollution control activities could be taken up and Graded Response could be implemented. The information related to a specific control room has to be generated through the software under development.

Till date real time data generated is directly fed to the AQI generating system thereby some time wrong AQI data gets generated. Now it is proposed to have a full fledged data validation mechanism

in place. The data validation would be done at CAAQM Station or at Central Server (where data from many stations will be collected) and Software operating at CCR will keep on picking up data in a routein after every 15 minutes from each of the station computer and central server location as well. This will enable validated data to be collected and integrated into the system dynamically.

4 Capabilities to be Enhanced

Hence, It is proposed to upgrade the existing Air Pollution Monitoring Software with enhanced capabilities of:

- **collecting data from all Air Quality Monitoring Stations (manual + Continuous) in the country**
- **collecting AQI, Forecasting, Weather, Mixing height, and other relevant data**
- **displaying information speicically designed for a specific agency with respect to its location, forecast, graded response according to AQI levels in different locations under its control area**
- **generating Action points based on Graded Response to be initiated by different agencies involved**
- **collecting Responses on Action taken by different agencies**
- **facilitating Scientific data depiction at Central Control Room (CCR) for task force to take air pollution control action**
- **transferring public complaints received at CPCB through Web APP Sameer to respective nodal agencies**
- **collecting public complaints and redressal information at central control room for cor-relating with ambient air quality**
- **monitoring public complaints redressal mechanism of different agencies**
- **collection of public complaints at a single location**
- **collecting validated data on every hour basis from remote locations connected**
- **generating payment module**

This software will replace the existing CAAQM software.

5 Specific activities proposed for Upgradation in software

A. Data Acquisition through automated system

a. Air Quality Data for CAAQMS from all agencies like CPCB, DPCC, SPCB, IMD & Other agencies at a single location i.e. at CPCB, CCR
b. Air quality data from manual stations
c. Specific area-wise Weather data from IMD
d. Specific Station-wise Weather data from CAAQMS
e. Mixing Height data through SODAR system of CPCB & NPL
f. Forecast data from IMD for 24 and 48 Hours Forecast

g. AQI data from AQI software of CPCB

B. Air Quality data (Collected from various locations in the country) transfer to IMD for Forecast Data Generation

C. National and area specific information generation & Dissemination

a. AQI From both Continuous & Manual air quality monitoring stations

b. Specific stations data for specific area under the control of different agencies

c. Grouping function for Delhi-NCR - similar grouping facility in the country

d. At Central Control Room (CCR)/specific agency/specific location based data mgmt

D. Data Analysis System at CCR for different parts of country including NCR

a. Air Quality Data & other related data collected at Central software of CPCB to be displayed scientifically in a defined manner to decide further course of action connected with graded response and action points

E. Graded Response Generation and transmission to different agencies to take action on ground based on CPCB matrix available through Mobile APP(to be developed) and website software(to be developed)

a. State Pollution Control Boards

b. Municipal Corporations

c. PWD

d. Traffic Police

e. NHAI

f. Others

F. Collection of actions taken (responses) by different agencies through Mobile APP & Website software & through emails

G. Review of AQI Levels post actions taken on ground by Agencies involved

H. Issue of Revised Graded Response in time bound manner

I. Archiving of Graded Responses and AQI Levels variation including time taken to control air pollution levels

J. Development of a discussion forum (to be developed) similar to whatsapp group for discussion of issues within the group

K. Development of IVR software module (to be developed) for providing information of collected air quality data to public

L. Repository of AQI, Graded Response, Action Points, Revised action Points, Response of various agencies datewise, response wise, air quality levels wise, specific agency wise etc.

Proposed System needs to generate data in report formats. The data is to be compared with prescribed standards for different types of areas (Sensitive or Residential/Industrial) for different parameters with different timescales like 1hour, 8 hours, 24 hours, annual average etc. as defined in

the NAAQS 2009. The system has to generate alarms on exceedance of limits of a specific parameter for a given period of time. The reports to be generated shall contain various tables, graphs, texts, formulae, etc. using standard statistical tools. These should also include Mean, Mode, Median, Daily, Yearly, Monthly, Diurnal variation etc. Since, this software is going to replace the existing software, all the capabilities of existing software needs to be developed alongwith many more capabilities. The details of such capabilities will be defined at the time of Software Requirement Specifications (SRS) preparation. The Schematic representation of the data flow in the Proposed Software is shown in Figure 3. Here all the stake holders will be able to access the data through user id and password.

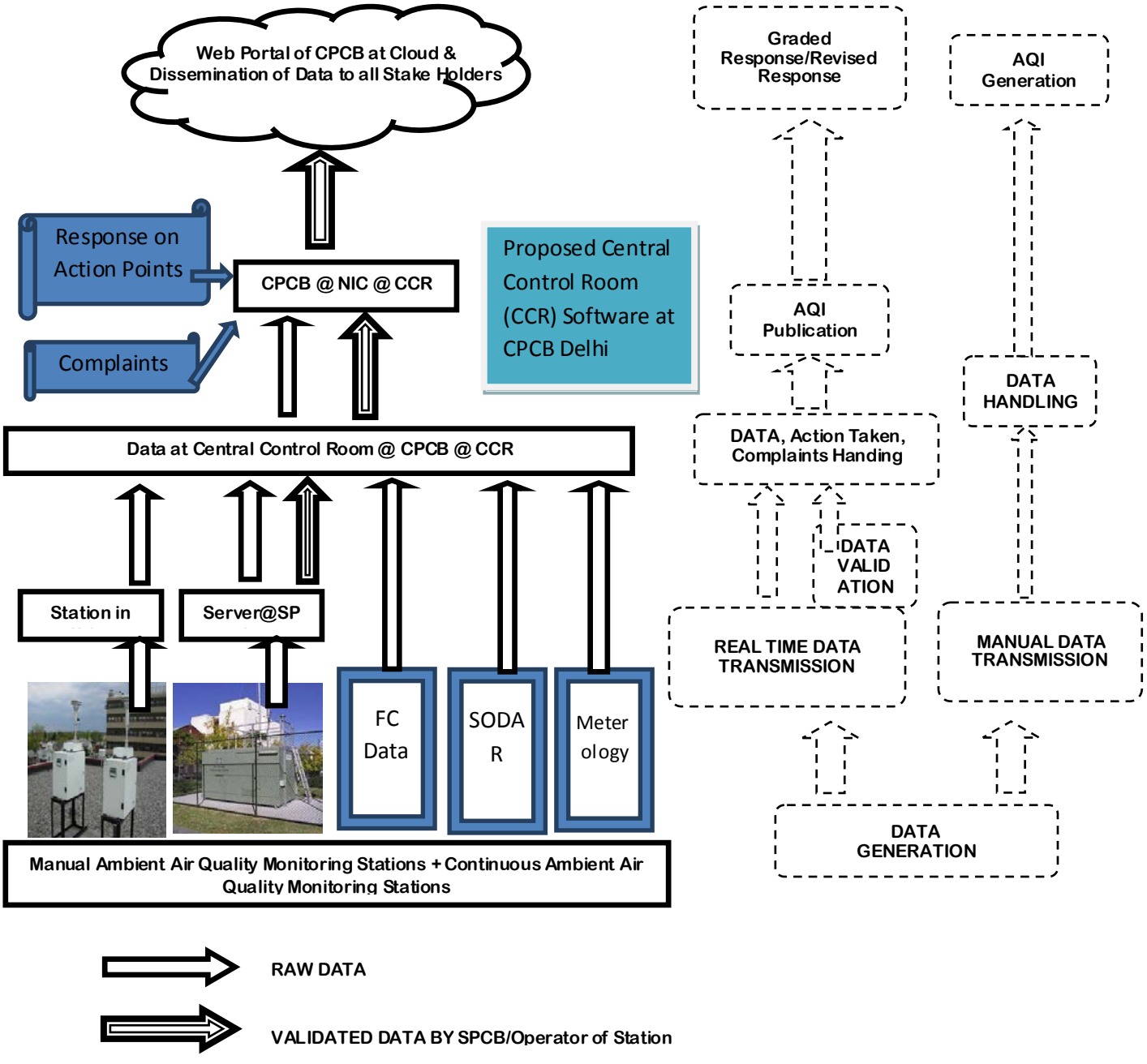


Figure 3: The schematic Presentation of Proposed System

6. Objectives

The overall objectives of the Project are:

I. A Software System Upgradation, capable of data acquisition from heterogeneous ambient air quality monitoring systems
   - Already installed in different locations & Connected
   - Under process of installation like
     - under CPSU (Central Public Sector Undertaking) project,
     - CEPI (Comprehensive Environment Pollution Index) Project,
     - Crtical Area Pollution monitoring Project etc.

II. Continuous development/upgrade of software system

III. **Without technological restrictions** of number of stations or number of channels, which can be hooked into the system for data acquisition.

IV. **Parallel processing** capable software development is required for the expansion of number of station's data collection with more number of servers.

V. Upgrade interface to collect **Mixing height data** from CPCB SODAR & NPL SODAR System on 15 minutes or 60 minutes intervals or as per the result availability.

VI. To Upgrade interface to **pick up AQI Data** from AQI Software operating with Ubuntu platform

VII. To Upgrade interface to **pick up and display** Air Quality Data alongwith weather quality data in a **scientific manner**

VIII. To upgrade an interface to collect air quality data from **manual** air quality monitoring stations and place it in repository.

IX. To upgrade standard interface to collect information (through MobileAPPs operated by different agencies) on **public complaints lodged** by the citizens with any of the agency responsible for action and their **redressal in time bound manner**; like for leaf burning complaint & for construction activity complaint – Municipal Corporation is responsible, Air Pollution from Industry – State Pollution Control Board is responsible etc.

X. To upgrade standard interface to forward information on **Graded Response (GR) generated by CPCB and action points for agencies to take as per GR** in a time bound manner and operate through MobileAPP, Web Application, & emails.

XI. To upgrade standard interface to receive information on **redressal of public complaints** by respective agencies in a time bound manner.

XII. To operate the system through **Mobile APP, Web Application** software including emails for which these Moble APP and web APP to be created.

XIII. Facility for Data validation for agencies involved in air quality monitoring.

XIV. Prescribed standards input procedure required for a category for various parameters to generate exceedances and alarms generation. The data input procedure should be simple and visualization of these limits should be user specific.

XV. To upgrade **report section providing 25(Twenty Five) types of reports** through which data needs to be disseminated in tabular, graphical formats using statistical procedures like minimum, maximum, average, standard deviation, regression etc. The report details shall be provided at the time of SRS generation.

A tool is required to be created, where selection based reports on specific purpose may be created. In general reports are like single station, multi station, single parameter, multi parameter, 24hrly or 8 hrly or 01 hrly reports, auditing reports, calibration reports, exceedance reports, user reports, data availability reports, data delay reports, number of stations reports, different state wise reports, map based reports, specific area specific reports etc. are required to be generated through this system. Wind roses and pollution roses reports are also required to be generated depending upon the data availability in the system. Development of specific reports like health status, calibration status of instruments etc.

XVI. Mechanism of delayed data entries reports on real time basis. The mechanism should provide weekly reports of data entry delayed in the system automatically. These reports will be scrutinized for arriving at solution to the delay in data acquisition.

XVII. To **transfer real time data to AQI software** as being done through existing software.

XVIII. To **transfer real time data to other portals** like NDTV.com or others as required from time to time in a specific format during project duration.

XIX. To upgrade an **auto slide show** like continuous slides in the form of real time data with specific one day or a week option on search & Selection basis on the basis of name of station, state, category (i.e.industrial area or rural area).

XX. To provide link of the software to all stake holders to view controlled data (Air Quality, AQI, Public Complaints, Complaint Redressal etc.) specific to their region.

XXI. To **forward air quality data to IMD** to generate Forecast data.

XXII. To **collect Forecast Data** for weather conditions, air quality from IMD.

7. Scope of Work

The major component of the project are:

A. To update CCR software with logical scientific functions and depiction of air quality data alongwith other important parameters like Mixing Height, Meteorology Data, Weather Data, Forecast data, complaint lodged data, complaint redressal data.

B. Upgradation of software for Air Quality Data collection from existing and new Continuous Ambient Air Quality Monitoring Stations irrespective of agency involved in

data generation (CPCB, DPCC, SPCB, IMD, Municipal Corporations etc.) without delay and without any human intervention.

C. Upgradation of software for Air Quality Data collection from existing and new Manual Ambient Air Quality Monitoring Stations without delay for which a standard template for data entry be devised.
D. Upgradation of software for Air Quality Data Validation mechanism establishment and effective operation.
E. Upgradation of software for transmitting air quality data to AQI generation software & AQI Data collection from AQI generating software developed by IIT.
F. Upgradation of software for transmitting air quality data to IMD and receiving air quality forecast and weather forecast.
G. To collect, collate and disseminate the data in unified format, complaints in a template (to be declared for all stake holders to follow), Graded Responses in a defined template & Responses of stake holders on Action Points raised by CPCB.
H. Five tiers user login management.
I. Software development for agency specific data dissemination
J. Mobile APP development in all three platforms i.e. IoS, Windows & Android
K. Data depiction on Maps
L. Installation of system in NIC domain after CERT-IN empanelled auditing.
M. Dissemination of data at NIC domain without human intervention and without delay with controlled user access.
N. Delay tracking mechanism development and operation from each station and its timely reporting.
O. Development of audit and calibration reports.
P. Application of artificial Intelligence using meaningful filters to use data for logical conclusions.
Q. To keep the stake holder bind to each other without requiring direct dialogue.
R. To maintain everything through the system only.
S. To provide 24x7 support to stake holders to manage its data connectivity.
T. To deploy the software with remote backup procedure etc. at NIC end.
U. To provide training to CPCB officials (Five numbers) for one week for operating the proposed system and integrating new Air Quaity Stations, parameter channels etc.
V. To provide detailed training to **two core team members** of CPCB in programming of the basic technology used to upgrade the software program for a period of atleast one week either at an Institute or at CPCB through certified professionals only.
W. To maintain the system for five years (01yr warranty+ 04 yr Maintainance including development) by assistance and deploying at least one programmer / IT Engineer

X. Daily backup and storage of data to be done automatically.

Y. SMS Gateway Integration

8. System Requirement Specifications

System has to integrate the data in Relational Database Management System (RDBMS) or open source databases with no limitation of volume of data. As the number of Air Quaity Stations could be more than 500 in coming time with number of such stations could go up to 1000. The selection of system should be such that it does not fall short or it fails during deployment. The best possible solution (economic and Technically powerful solution) has to be adapted either through open source or through RDBMS.

The system should be capable to acquire the data on real time basis and should report if delay occurs. It should also be capable to compare the parameter values with respect to prescribed standards alongwith hourly, daily, weekly, monthly, Yearly report periodic generation.

The data collected from different servers belongs to different states. Hence, state-wise data filtering is required. The data may further be filtered based on specific parameter on Google maps. Various modalities will be finalized at the time of actual development.

Migration to new system has to be smooth from the current system where data is being collected presently. Migration has to occur in a phased manner without disturbing the running system. The selected firm will have to operate the entire system in such a manner, that data from Continuous Ambient Air Quaity Monitoring Stations is uninterrupted. The firm selected for developing this software will have to owe the responsibility of connecting each Air Quaity Stations without visiting any Air Quaity Stations for this purpose.

Air Quaity Monitoring Station's visits can be made if required in consultation with CPCB, to understand the mechanism. The facilities as being provided to Scientist'B' level in the CPCB shall be extended to the firm's representatives based on the approval of the Competent Authority in advance.

8.1 Data Acquisition & Availability

a. Integration of data from existing Air Quality Stations (including collecting data from different servers) having data from different locations using web services based software development.

b. Providing dashboard with Statistical summary report on air quality data etc. from a single station or multiple stations in a city with total data availability and %age data availability.
c. Configuring each parameter with every station in RDBMS.
d. Configuring each station and each channel on Google maps/static maps
e. Developing Slide Show Modules specific to a particular agency
f. Providing 95% data availability on real time basis, if the internet connectivity is available at industry.
g. Communication with respective agencies involved in the monitoring and getting the connectivity & Configuration issues resolved.

8.2 Integration of New Station or a new agency

Installation of new station or a new agency is a continuous process. Different make instruments get installed at different locations in the country data from these locations is to be made available on CPCB server. Data collection, transmission and dissemination from all such locations after installation of Air Quality Monitoring Stations will be the responsibility of the firm and continuity of data has to be managed by the firm through out the project duration of 5 (five) years.

8.3 Deployment of system over dynamic Maps

a. Google services have to be used for the purpose.
b. Static maps of Survey of India may also deployed.

8.4 New Pages Development

a. Since the system is still evolving there are requirements all the time to upgrade output in different formats. Hence, development of such five web pages in each year (total 25 web pages) is anticipated.

8.5 Manpower Deliverables

a. One programmer has to be deployed at CPCB on five days a week in office hours at CPCB for the entire project duration.
    i. **Team Member** : B. Tech., IT with at least two years of experience in the software development in open source programming or in the relevant discipline in which software is developed.
b. Support services will have to be provided, which will cater to the needs and co-ordinate between SPCBs/Stake holders and technical team to accomplish the given tasks in a given time frame.

c. Programmers should be capable to operate and create new pages in the system as per requirements of CPCB from time to time.

8.6 Intermediate Software & VM required for data transmission if any

a. Any intermediate software required for data transmission from these industries to central server at VM has to be provided by the firm.

b. VM for a period of maximum one year to operate the software is to be provided by the firm.

8.7 Software Upgradation/ Development Methodology

After the work award the firm will discuss the project requirements with CPCB officials and prepare SRS for the project. The SRS will be accepted by CPCB IT Division and firm will start writing code. The firm will provide Proto type and IT Division will analyse and provide its feedback. There will be three iterations for which firm will provide the change in source code without any additional cost. The firm will make final presentation before the CPCB Committee and Competent Authority, CPCB. Suggestions made by Committee or Authority will have to be incorporated by the firm and the system will be made GO LIVE! in NIC domain after auditing. The firm will provide the VM for initital period and operate the system. NIC domain will be procured by CPCB and thereafter the firm will deploy and operate the software in NIC domain. Any further development required in the software till the project duration will have to be done by the firm.

9. CPCB Deliverables

a. Working space to the Programmer.

b. Access to IT Division during working hours.

c. Procurement of NIC domain for hosting application

d. Remote access of database/application.

e. Hardware for installation as suggested by the firm and connectivity

f. VM at NIC

10. Penalties

a. Timeline for Delivery and Penalty for Delay

Sl. No.	Milestones	Time for Completion (T1* Final work award letter issue date)	Penalty for Delay
1	Signing of agreement with the successful bidder	Within 1 Week from the date of issue of letter of intent	-
2.	Inception report to be submitted	Within 1 week from the day T1*	Rs. 500/- per week of delay
3.	SRS Development	T1* + 4Weeks	Rs. 2000/- per week of delay
4.	Development of Basic Central software	T1* +12 Weeks	Rs. 2000/- per week of delay
	Integration with weather Data from IMD +	T1* +16 Weeks	Rs. 2000/- per week of delay per module

	Connectivity with SODAR Data + Integration of Forecasting Data + Integration of Graded Response mechanism + Integration of Action Taken as per Graded Response mechanism		
5.	**Development of Mobile APPs (Three IoS + Android+Windows)**	**T1* +20 Weeks**	**Rs. 2000/- per week of delay per APP**
6.	**Establishment of Central Server including networking with VM other than NIC with DDS & Dashboards**	**T1* + 20 Weeks**	**Rs. 2000/- per week of delay**
7.	**Testing and Certification of software solution**	**T1* + 24 Weeks**	**Rs. 2000/- per week of delay**
8.	**System Ready for launch**	**T1* + 20Weeks**	**Rs. 2000/- per week of delay**
9.	**Training**	**T1* + 24 Weeks**	**Rs. 2000/- per week of delay**
10	**Connecting all 58 CAAQMS Plus other stations available**	**T1* + 24 weeks**	**Rs. 1000/- per Station per month**

b. Breakdown of system

i) In case the system breaks down and software has stopped functioning (i.e. no output available on web site marked for the system) the same should be made functional within **maximum 8 (eight) hours of time** (for which no separate communication will be made from CPCB side) else penalty of Rs. 500/- every day (number of working days) will be levied on the firm and the Board shall have the right to deduct the same from the running bills of the firm.

ii) In case the system throws error messages on website and data is not displayed or wrong data are displayed on web site marked for the system, the same should be corrected within **eight hours time (08 hrs.)** (for which separate communication shall be made by CPCB with error message's snapshots) else penalty of Rs. 100/- (One hundred rupees only) per error message shall be imposed on per day basis.

d. Development of New pages and inclusion of new stations

i) Work assigned for new pages development or inclusion of new stations into the software will also attract penalty of Rs. 50/- per day separately, if not completed in time frame mutually agreed in writing in between CPCB and the firm.

e. Maximum Penalty applicable:

The total penalties amount inclusive of all penalties shall not be more than 25% of the yearly contract value. If penalties amount happens to be more than 25% of yearly contract value, then CPCB shall have the right to terminate the contract and shall deduct the maximum of 25% amount of yearly contract value and release the balance payment to the firm. During AMC period, the calculation will remain same and the amount shall be deducted from the PBG submitted to CPCB if penalty amount is higher than AMC amount.

11. Mode of Payments

a. Milestone 1: 10% of Total project cost shall be released after SRS Development (End of 4weeks)

b. **Milestone 2:** 25% of total project cost shall be released after 16 weeks i.e. at the time of compleion of Development of Central Software with all its utilities as mentioned at sr. no5. of the point 16 i.e. Schedule of "Development of Software for CCR" -2017-18.
c. **Milestone 3:** Balance 65% Payment after GO LIVE! i.e. after 06 months from the date of work award after penalty deduction if any.
d. **Milestone 4:** AMC of the software on successful operation of the software on six monthly basis after its one year warranty period.

Any payment to be released under the project will be subject to following conditions:

(i) Submission of final bill in triplicate,
(ii) Submission of source code in soft copies
(iii) Submission of two hard copies of software manual
(iv) Functionalities of software operational such as installation of new server, installation of new agency, display at web page, connecting database with air quality stations etc.
(v) Certification from IT Division verifying that system is functional.
(vi) Penalty if any shall be deducted from the payments without notice.

Cost of the project work should be clearly mentioned by the firm. The Cost should be excluding all taxes etc. However, taxes should be clearly mentioned in the financial proposal submitted by the firm to CPCB. Taxes would be payable as per Government of India rules applicable from time to time.

12. Exclusions

a. Up-gradation of the infrastructure like hardware required for the operation of software, for which firm will provide proper justification with logical support.
b. Failures and consequent data loss arise due to external factors.

13. Communication Methodology

Communication / Escalation Matrix for firm's Support Team: Level	Designation	Name	Email id	Contact no.
Complaint Registration	Support Desk	Firm's Desk		
New web pages development / New Stations inclusion work	*CPCB will organise meeting at CPCB to be attended by firms*			

	senior members and decisions are abiding to the firm in writing			
Level 1	Team Lead			
Level 2	Project Manager			
Level 3	Sr. Manager if any			

The CPCB shall communicate issues over email and the firm is responsible to respond within three hours on any working day.

14 Eligibility Criteria and Selection Criteria

A. Eligibility Criteria

Already published for EoI Eligibility and documents already submitted by EoI Eligible firms.

B. Selection Criteria Stage-II

The software consultants/firms selection criteria is as follows:

a. The firm has to qualify in below mentioned eligibility criteria for Stage-II

1. Specific Work Experience

1.	**Identified Fields**	Number of project dealt in the specific area in last three years till date
	a. **Software development Protocol based** /	
	b. web development with statistical tools/	
	c. ERP based development/	
	d. GPRS/GSM based /	
	e. SCADA based	

Document No 1 & 2: to be submitted for each project done

a) Copy of Work award letters
b) Copy of Work Completion Letters

2. Proposed Team

1.	**Proposed Team Composition**	Details of Team Members proposed to be deployed for the project work.
Team leader	Designation	
	Qualification	
	Experience	
	Skill	
	Responsibilities	
Member1	Designation	
	Qualification	
	Experience	
	Skill	
	Responsibilities	
Member2	Designation	

	Qualification	
	Experience	
	Skill	
	Responsibilities	
Member3 Permanent residence engineer for next four years during AMC	Designation	
	Qualification	
	Experience	
	Skill	
	Responsibilities	

Please expand the table as per actual deployment planned. Submit the details as Document No 3.

3. Details of Technologies Used for software solutions

1.	Type of Project	Technology Used Details

Submit the details as Document No 4.

4. Time Management of the Project Proposed

Please provide PERT Chart with activity details and timelines and submit the document. Submit the details as Document No 5.

5. Details of systems operated by the firm similar to real time data management systems

Sr. No.	Details of project operational Live	Web Location of Projects

Submit the details as Document No 6.

b. On qualifying Eligibility Criteria, firm has to demonstrate the technical skills through presentation at CPCB. This presentation would require expertise on data connectivity from any live device/devices /analysers.

c. All firms meeting eligibility criteria will be called for technical presentations. Based on technical evaluation criteria, firms meeting the Benchmarks will be listed. The technical evaluation committee will decide the benchmark, the minimum qualifying marks. The financial bids of the technically qualified firms will be opened to determine the lowest bidder for awarding the work.

d. If lowest bidder fails to submit the BG within stipulated time, the bid of the lowest bidder will be considered as non responsive.

15. Terms and Conditions

A. Technical Terms and Conditions

a. First Prototype should be submitted as per schedule and thereafter final software should be submitted with ***three iterations***.

b. The server of system has to be placed at location like Software Technology Parks of India, NICSI Shastri Park Data Centre, firm shall be responsible to provide software support on remote.

c. Efforts have to be made by the firm to get the continuous data in the system.

d. Responsibility lies with the firm for data availability from air quality monitoring stations to VM and necessary co-ordination has to be made by the firm.

e. The firm will diagnose the problem with reference to the incident registered through email except the data availability where software should have auto mechanism of calculation.

f. In case of any bug / error in the existing functionalities the firm will provide resolution.

g. The support Team should define the time required to resolve the incident & communicate the same to the contact person of **CPCB** through email.

h. Once the incident is resolved an email statement for the same would be initiated by the firm & the incident be considered closed after acknowledged by **CPCB.**

i. In case of new functionality requirement, it should be communicated in writing through mail and the firm shall respond within two working days along with the roadmap of time estimate.

j. The contract may be terminated any time, if CPCB desires to do so without assigning any reason with 15 days' notice to the firm in writing.

k. The contract can be renewed only upon written request by the firm to continue the contract on mutually agreed terms and conditions in future.

l. The software system / code developed shall become the property of CPCB and CPCB is free to replicate, reproduce, multiply or distribute and deploy the software at any other location. The CPCB will hold all the copyrights and IPR of the written code.

m. It is expected that at least three members team will work on the project. The educational qualification and work experience of team members should essentially be:

Team Member 1: B. Tech., IT with at least two years of experience in the software development.

Team Member 2: B. Tech., IT with at least two years experience in software development.

Team Member 3: B. Tech., Computer/ IT with at least two years experience in networking.

The firm may propose bigger team with higher qualification mentioned above, as per their work requirement understanding till the project delivery. Once it starts rolling after GO Live! Only one engineer will be required for the routein works. If any more assistance is required, the firm will provide support from its office.

n. First time auditing till GO LIVE! is the responsibility of the firm/vendor and there after if required auditing will be borne by CPCB and the responsibilities of closing NCs is of the firm.

o. The contract period will be for five years starting from the date of GO Live!.

p. The quoted rates should be applicable during project duration and quoted rates shall not change for the project duration.

q. CPCB shall award the complete work to the lowest quotee on total value basis.

r. The firm should quote in all works listed in the commercial document, otherwise bid will be disqualified / rejected.

s. There will be a team formed at CPCB IT Division to crosscheck the data availability, assessing the performance of the firm. This team will cross verify the data availability, new work assignment progress and any other related issue and shall communicate to the firm in writing. This team will also calculate the penalty as per mentioned clauses and recommend the amount of penalties considering all related issues of the software and other station related issues. The firm shall communicate with the team and should clarify each issue time to time.

t. If there is no running bill is pending the firm is liable to pay the penalty amount levied by CPCB on the firm as per penalty clauses of this document within 15 days time after the issue of the letter by CPCB to the firm, else the CPCB shall have the right to take legal action against the firm.

B. General Terms and conditions

To ensure that CPCB is provided with complete and accurate information in response to the attached RFP, it is requested that each software consultant responding to the RFP agrees to read the software specifications in detail, quote the time required, and adhere to the following terms and conditions.

i. Firm has to suggest

a) RDBMS and licensing requirements (if any) on which the software is proposed to be developed, so that CPCB can make necessary arrangements for its procurement if required and the cost component will be considered additionally. However, open source based technology is preferred.

b) from time to time the up-gradation requirements of technology.

ii. Performance Security :

i. Performance Security is to be provided by the successful bidder awarded the contract. Performance Security should be for an amount of **10% of Project total cost except taxes**. Performance Security may be furnished in the form of an Account payee Demand Draft, Fixed Deposit Receipt from a Commercial bank, Bank Guarantee from a Commercial bank. The Performance Security should remain valid for a period of **Sixty two** months from the date of letter of intent issued by the Board and should be submitted within 15 days of issue of letter of intent. If Performance security is not submitted within 15days of issue of letter of intent, bid will be considered as non responsive and EMD shall be forefietted.

ii. Bid security (EMD) will be refunded to the successful bidder on receipt of Performance Security while EMD of unsuccessful bidders will be returned without interest on the finalization of work award.

iii. The bidder is expected to examine all instructions, forms, terms and conditions and specifications mentioned in the bidding document. Failure to furnish all information required by the bidding documents or submission of a bid not substantially irresponsive to the bidding document in every respect will be at the bidder's risk and may result in the rejection of it's bid.

iv. This call of tenders does not bind the Central Board to place order. The Tenders submitted in response to this invitation can be rejected without assigning any reason.

v. The final authority for acceptance of a bid will rest with the Chairman, Central Pollution Control Board who does not bind himself to accept the lowest bid and is vested with the authority to reject any or all of the bids received without assigning any reason.

vi. The bid shall contain no interlineations, erasures or overwriting words except as necessary to correct errors made by the bidder, in that case such correction shall be initialed by the person or persons signing the bid.

vii. Canvassing in any form will disqualify the Bid

viii. **Adherence to timeline** – The vendor agrees to adhere to the timeline for the software development and delivery within stipulated time lines.

ix. Subletting of the work is not allowed without prior written permission from CPCB.

x. **Costs and Expenses** – Any and all costs (and expenses) incurred by the vendor in responding to the EOI, RFP, Pre Bid engaging in any other activity required in connection to this bid are to be solely borne by the bidder; these will not be reimbursed by CPCB.

xi. **Right to modify the list of functionalities and scenarios** – The list of scenarios / functionalities / requirements detailed in SRS document is not exhaustive. CPCB, at its sole discretion, may modify or delete any of the existing scenarios, or provide additional scenarios. Any such modification / addition shall be duly communicated to the bidders.

xii. **Right to interview** – As a part of the evaluation process, CPCB may interview the vendors who participated in the Bid. The interviews may be conducted over telephone, video conference, or face to face. CPCB reserves the right to reject any vendor.

xiii. **Right to Share Proposal with designated personnel** – The response to the RFP submitted by the authorised representative of the vendor, along with all the supporting documents / materials shall become the property of CPCB and shall not be returned to the Bidder. CPCB does not undertake to hold the content of the responses to this RFP and any subsequent information or contractual documents related thereto ("Bidder Information") in confidence. Further, CPCB reserves the right to disclose any and all Bidder Information on a need to know basis to its employees, agents and subcontractors.

xiv. **Right of Refusal -** The vendor understands and agrees that CPCB reserves in its absolute discretion the right to select or reject any bidder any time during or after the RFP process or any subsequent evaluation or contractual process. The vendor further understands and agrees that any such selection or rejection may be based on the vendor's responses to this Bid, on any subsequent information or contractual documents related thereto, or for any other reason whatsoever.

xv. **Ownership of documents and copy rights** - Complete Software developed under this project, documentation and other work products will be fully owned by CPCB. CPCB will get unlimited rights to modify, enhance, install and otherwise use the software as it deems fit.

xvi. **Transfer of ownership -** The bidder shall grant the purchaser a perpetual license to use the software without any additional payment or obligations to enter into a contact for maintenance or support. There is no limit on the number of users for Software and for the Central Server Software. Concurrent number of servers may be used if required. All study documents, data and specification prepared by the Bidder shall be the property of CPCB.

xvii. **Compatible with NIC and NICSI –** Vendor should not be using any 3rd party tool which is not allowed by NIC or NICSI while hosting in their domain. It's the responsibility of the Bidder to

provide documentation and engage in the coordination activities for setting a part of the software or full at the NIC server.

xviii. In case of disintegration or dissolution of Bidder due to any reason what so ever it is, the individual members will be accountable for deliverable to CPCB. If Bidder' firm is purchased by another firm or agency, that new owner or agency shall be responsible for deliverables to CPCB.

xix. **FORCE MAJEURE**

Firm shall not be considered in default if delay in delivery occurs due to causes beyond his control such as acts of God, natural calamities, civil, wars, strikes, fire frost, floods, riots and acts of unsurped power. Only those causes which have a duration of more than 7 calendar days shall be considered cause of force majeure. A notification to this effect duly certified by the Local Chamber of Commerce/Statutory Authorities shall be given by the Vendor to the owner by registered letter. In the event of delay due to such cases a length of time equal to the period of force majeure or at the option of the owner the order may be cancelled. Such cancellation would be without any liability whatsoever on the part of owner. In the event of such cancellation the vendor shall refund any amount advanced to the vendor by the Board and delivery back any material issued to him by the Board and release facilities, if any, provided by the Board.

xx. If there are any queries, clarifications required on above document may please be forwarded to Sh. A. Sudhakar, Additional Director and Incharge IT Division asudhakar.cpcb@nic.in and Sh. Aditya Sharma, Scientist 'D' aditya.cpcb@nic.in .

16. Submission of Proposals

Through e-Tendering process only.

No Physical documents have to be submitted. Scanned Copy of EMD and Tender fee is to be submitted through e-Tender portal and original DD/Fee instrument is to be submitted to CPCB IT Division on or before closing date and time.

Documents relating to selection criteria (technical eligibility) have to be submitted online Document no 1 to 6.

17. Check list for the Bidder

1. Bid on original format of the tender only
2. Submit all documents as prescribed in Selection Criteria Stage-II from Documents 1 to 6 duly signed by the authorized representative.
3. EMD (Document-7) & Tender Fee (Document-8) for software development or documentary evidence for exemption of EMD & Tender Fee.
4. Price bid must be Part-II of the bid in the form provided at Annexure II of the Bid document
5. The Taxes, etc. must be quoted clearly separately in the price bid only.
6. Price bid form should not be with any condition.
7. CVs of team members likely to be deployed for the project should be attached with technical bid. (Document-9)
8. Annexures I, III, IV, V signed, filled & submitted with technical bid (Document-10-13).

18. SCHEDULE OF 'DEVELOPMENT OF SOFTWARE FOR CCR" - 2017-18

Starting from Zero Date (Date of final work award)

No.	Activities to be carried out	M1	M2	M3	M4	M5	M6
1.	Final Work Award						
2.	SRS Development						
3.	Development & Upgradation of Basic Software						
4.	Development of IMD Module + SODAR Module+ GR + Action Taken Points Software + Payment (1st Prototype)						
5.	Development of Manual Data Management Module and Mobile APPs in three platforms						
6.	CERT in Certification - Obtaining VM-NIC – Hosting						
7.	Development of system of connectivity with existing Public Complaint systems of different agencies						
8.	Connectivity with Mobile APP of CSE						
9.	Procurement of Servers, software & Other peripheral Items						
10	Development of IVR System						
11.	Depiction of data over Maps & Trainings						
12	Development of Dashboards & Data Display systems for different agencies						
12.	Fully functional and connected system with CCR & Other State Control Rooms after Three iterations of feedbacks						

19. The expected output is shown in figures below:

Important Functions of the systems

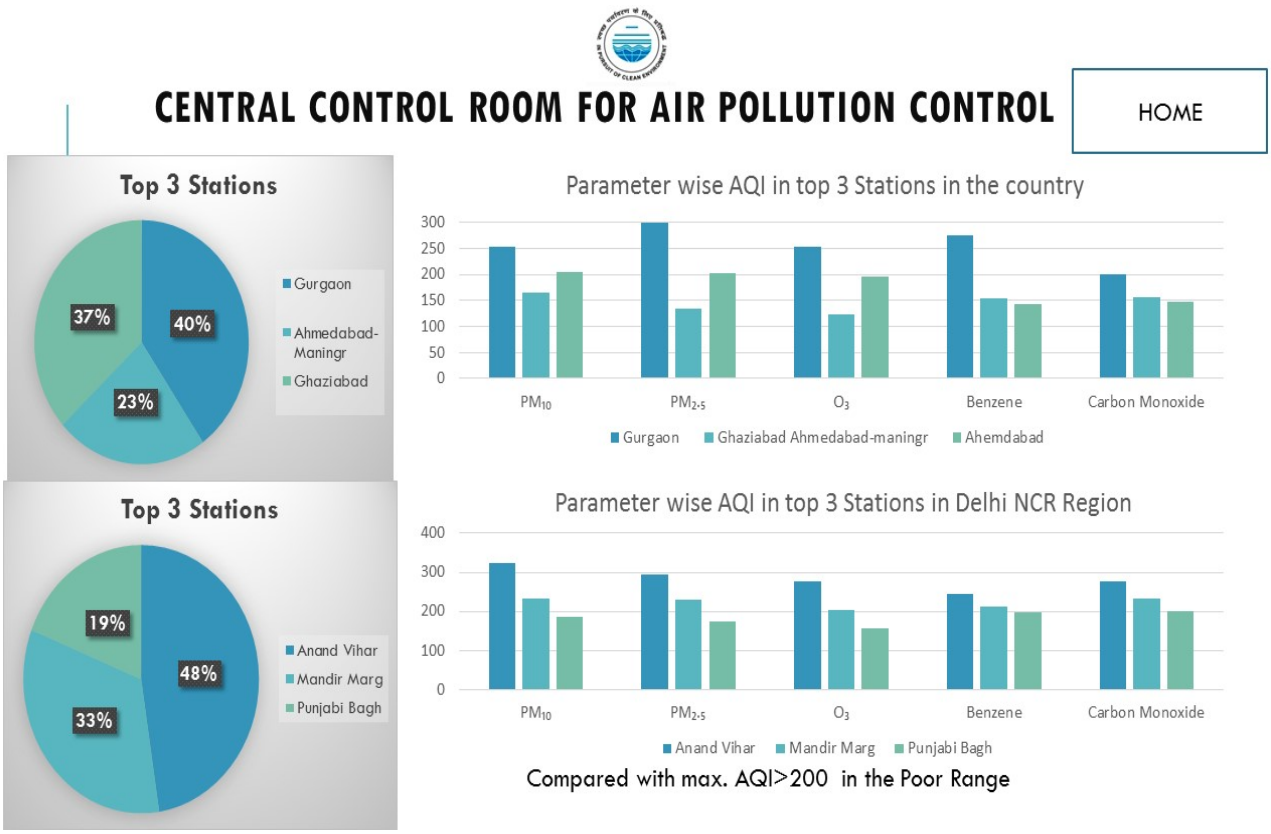
Collect Data

Display AQI & Data

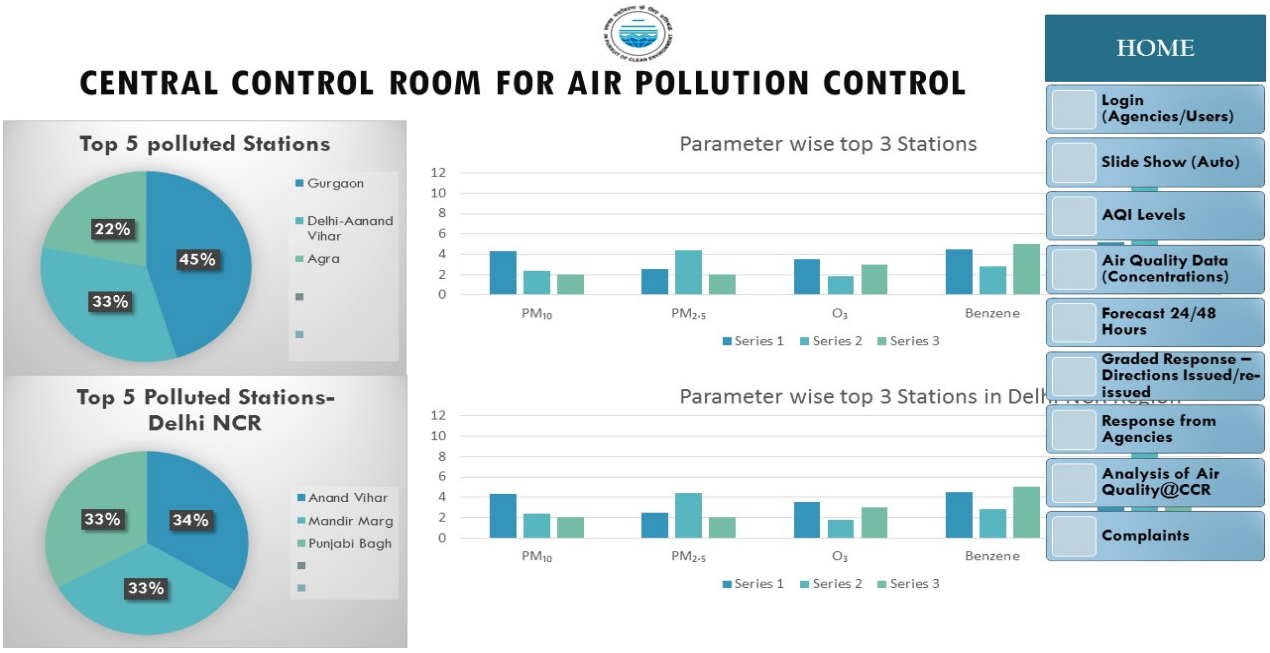
Complaint Redressal Data

Graded Response Data

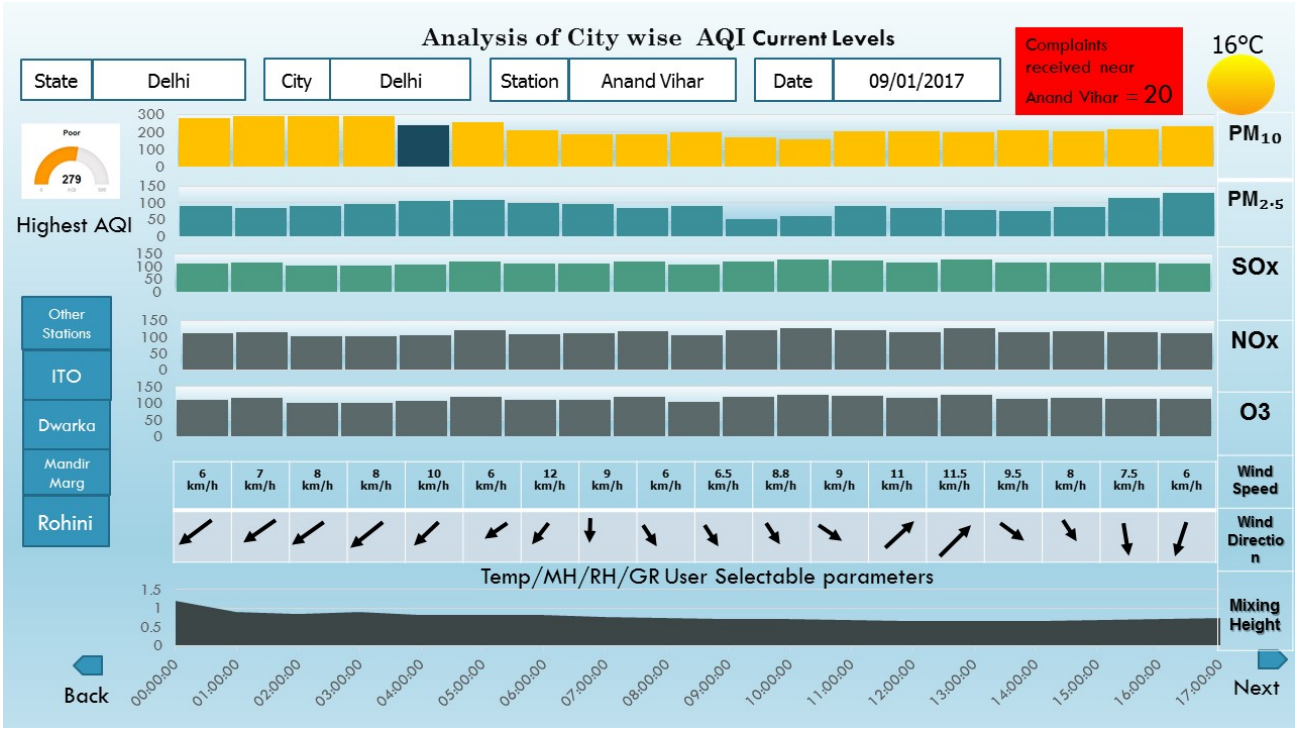
Top Three Stations data requiring attention for the air pollution control measures.



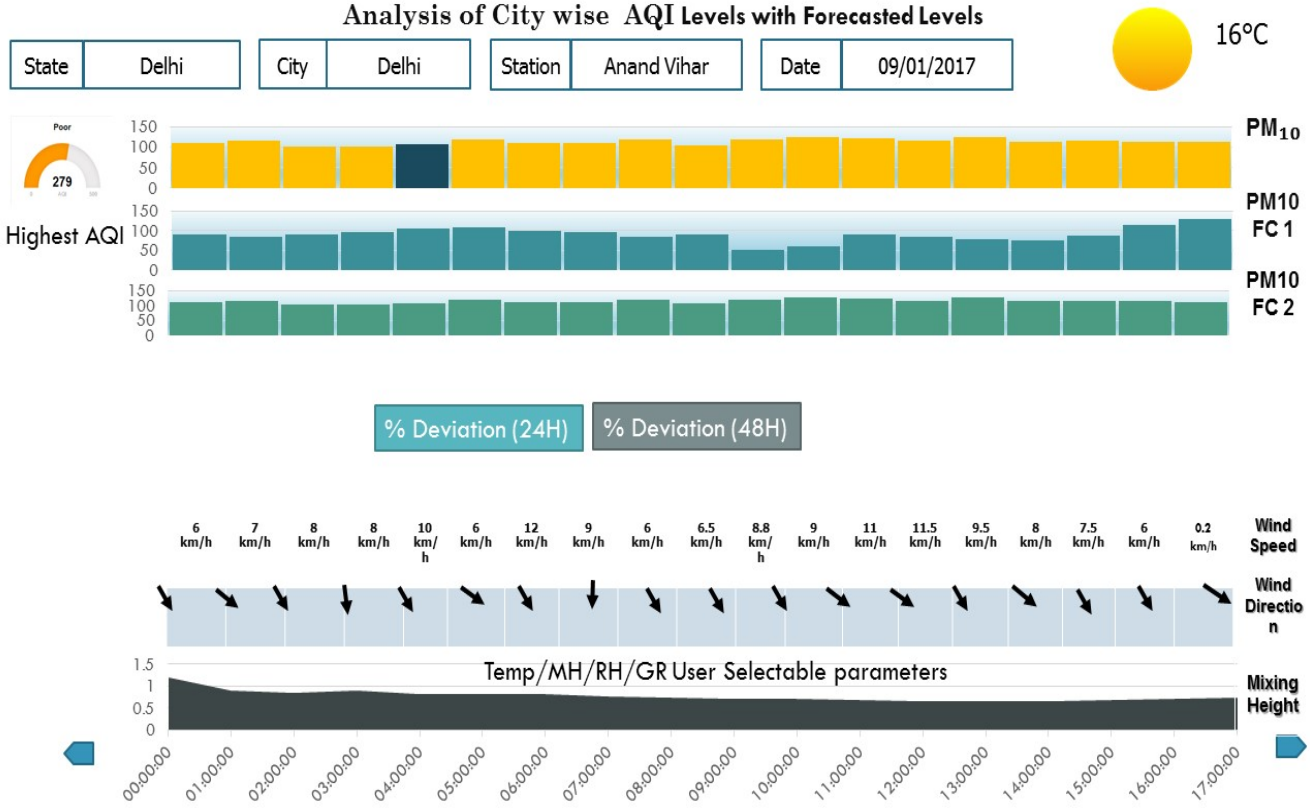
Various features of the project which are required to be developed.



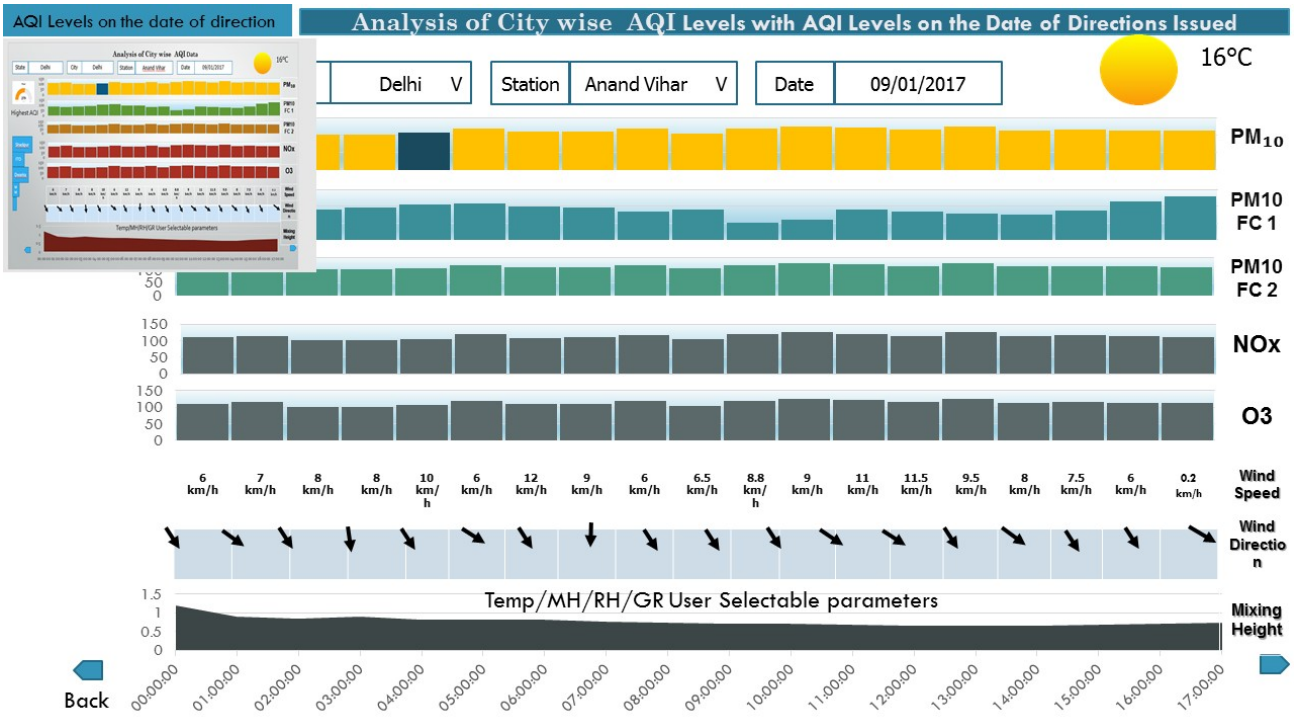
Scientific Display of all the data collected by the system to decide on actions by the Air Pollution Control Task Force analyzing data for generating Graded Response and Action Points to be Intitiated by Various agencies in Central Control Room of IT Division.



Forecast Data depiction in parallel to ascertain the actual variation and shortcomings in the accuracy of prediction



Actual Comparative levels of air quality parameters at the time of issuing Graded Response directions and the current state of air pollution levels with respect to various control measures applied and their results.



Templates ato be finalized for the collection of information from stake holders responsible for the action points based on Graded Responses provided by CPCB.

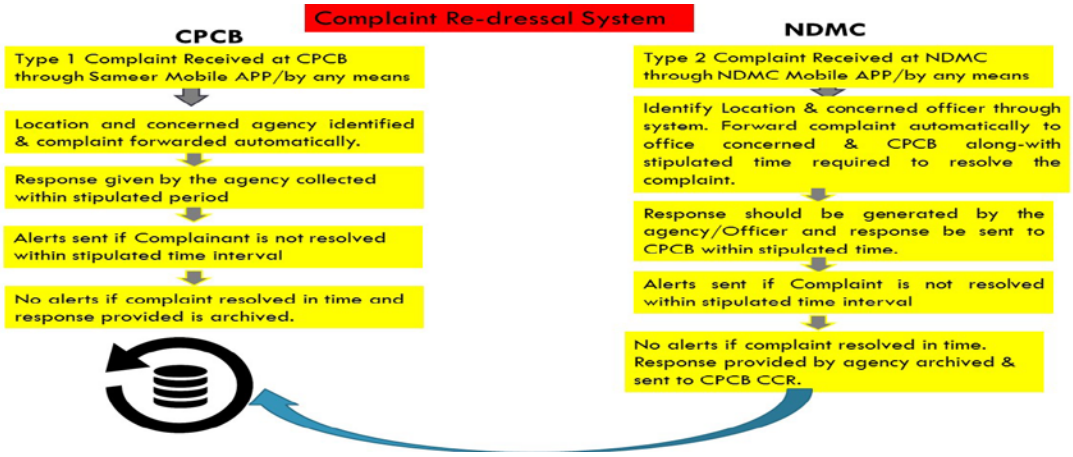
TEMPLATE for SUBMISSION OF COMPLAINT FROM CONTRIBUTORS

1	Complaints	Category 1. Leaf Burning 2. Garbage non-lifting 3. Garbage Spill on road 4. Vehicular management 5. Road Cleaning 6. Road Diversion/repair 7.	280 alphanumeric character
2	Select Photo	1 photo 2 Photo Can be multiple Photo	Jpeg or pdf format in multiple
3	Location Lati +Longitude	Auto	41.40338, 2.17403
3	Land Mark	Near Railway Bridge	100 char
4	Location	Chander Nagar Ghaziabad	100 char
5	City	Ghaziabad	50 char
6	State	UP	20 char
7	Pincode	201011	6 numbers
8	Mobile No (Register)(Office No)	9911328120	10 numbers
9	Emai Id (Register)	Xyz.cpcb@nic.in	Mandatory @ in mail
	(Finally Submit Record) All field are mandatory		
	Appendable fields		Selection notepad file keeping with record of numbers for referncing
	Submit New Status	Selection notepad file keep with record numbers	

TEMPLATE for SUBMISSION OF RESPONSE TO THE DIRECION ISSUED FROM CONTRIBUTORS

1	Complaints	Category 1. SPRINKLING OF WATER IN 5 LANES FOR 5 DAYS 2. STRICT VIGIL ON PICK UP OF GARBAGE BEFORE 9AM 3. Vehicle movement banned fron 8-10 at road number 71 & 72 4. Road Cleaning through vacuum in between 9 to 11 pm on working days 5. Road Diversion/repair in the night 6. Traffic lights off during peak hours	280 alphanumeric character
2	Select Photo	1 photo of current activity done 2 Photo Can be multiple Photo	Jpeg or pdf format in multiple
3	Location Lati +Longitude	Auto (of the action taken points)	41.40338, 2.17403
3	Land Mark	Near Railway Bridge	100 char
4	Location	Chander Nagar Ghaziabad	100 char
5	City	Ghaziabad	50 char
6	State	UP	20 char
7	Pincode	201011	6 numbers
8	Mobile No of the action taken official & reporting officer	9911328120, 9911328122	10 numbers
9	Emai Id of official & superior officer	Xyz.cpcb@nic.in, xyt@gmail.com	Mandatory @ in mail
	(Finally Submit Record) All field are mandatory		
	Appendable fields		Selection notepad file keeping with record of numbers for referncing
	Submit New Status	Selection notepad file keep with record numbers	

Flow of information for complaint lodging and complaint redressal mechanism and its information flow to CPCB.



Targets of the Projects

MCD/SPCB/Delhi Police/CPWD/EDMC/SDMC..

- ❑ CREATE A CONTROL ROOM
  - ❑ INSTALL THREE- FOUR DESKTOPS TO VISUALISE THE AQI LEVELS IN YOUR AREA
    - ❑ ENSURE AVAILABILITY OF SMART PHONES & DOWNLOAD CPCB APP (TO BE DEVELOPED)
    - ❑ ENSURE LCDS, 2Mbps LEASED LINE FOR INTERNET CONNECTIVITY WITH REAL IP(5) REQUIRED FOR SECURE NETWC
    - ❑ DISPLAY AQI INFORMATION THROUGH SLIDE SHOW IN CONTROL ROOMS
  - ❑ ENSURE TECHNICAL MANPOWER TWO TO THREE OFFICIALS HAVING IT & ENVIRONMENT SKILLS
  - ❑ TRAINING BE PROVIDED TO MANPOER TO SENSITISE WITH THE AIR QUALITY, AQI, WEATHER AND FORECAST DATA
    - ❑ OPERATE CONTROL ROOM & ANALYSE THE INFORMATION PROVIDED THROUGH SLIDE SHOW BY CPCB
    - ❑ UPDATE STATUS ON ACTION TAKEN ON DAILY BASIS (THROUGH APP OR WEB PORTAL)
    - ❑ ANALYSE THE RESULTS ON THE BASIS OF CURRENT AQI LEVELS. DAILY ANALYSIS AT ANY STATION CAN BE DONE CONTRIBUTORS AND ROUTEIN ACTIONS BE FOLLOWED
  - ❑ SYSTEM TO COLLECT COMPLAINTS AND THEIR REDRESSAL IN TIME BOUND MANNER
  - ❑ FORWARD COMPLAINTS AND RESPONSES TO CENTRAL CONTROL ROOM CPCB IN SYNCHRONSATION ON REAL TIME
  - ❑ USE SERVICES OF GEOSPATIAL DELHI LIMITED FOR CAPTURING COMPLAINTS AND FORWARDING PROPERLY
  - ❑ SUBMIT THE ACTION TAKEN THROUGH MOBILE APP/WEB PORTAL TO CENTRAL PORTAL OF CPCB TIMELY including images and videos.
  - ❑ INTERFACE TO BE DEVELOPED BY DEVELOPER WORKING AT CONTRIBUTORS END TO TRANSMIT DATA THROUGH INTERFACE AS REQUIRED (DETAILS WILL BE PUBLISHED BY CPCB)

CPCB

- ❑ DEVELOP A MOBILE APP WORKING IN ANROID, IOS, WINDOWS AVAILABLE AT APP STORE/ GOOGLE STORE
- ❑ SOFTWARE APPLICATION AT WEBPORTAL IN SYCHRONISATION WITH MOBILE APPS ACTIVE ON 24X7 BASIS
- ❑ SMS GATEWAY FOR SENDING SMS AND SENDING EMAILS ON THE BASIS OF GRADED RESPONSE TO CONTRIBUTORS
- ❑ FOLLOW UP THROUGH AUTOMATED SYSTEM ON THE BASIS OF ALARMS AND ALERTS
- ❑ DISPLAY OF COMPARATIVE AQI LEVELS AFTER & BEFORE ACTION TAKEN ON THE BASIS OF GRADED RESPONSE

- DEVELOP AN APPLICATION SOFTWARE WHICH CAN
  - COLLECT AQI FROM EXISTING SERVERS OF CPCB
  - MANAGE AIR QUALITY DATA RETRIEVAL FROM EXISTING CPCB SERVERS AT A SINGLE LOCATION
  - COLLECT & DISPLAY WEATHER DATA FROM AIR QUALITY MONITORING STATIONS
  - COLLECT WEATHER DATA FROM IMD
  - COLLECT IMAGES FROM DEPT OF SPACE AND SUPER IMPOSE AQI LEVELS
  - FORWARD AIR QUALITY DATA TO IMD FOR PREPAREING FORECAST
  - COLLECT MIXING HEIGHT DATA FROM SODAR OF CPCB & NPL & ANY OTHER INSTITUTION
  - COLLECT COMPLAINTS RECEIVED ON REAL TIME BASIS FROM DIFFERENT CONTRIBUTORS LIKE NDMC, EDMC, SDMC, EPCA,PWD, SAMEER AND ARCHIVE
  - COLLECTS RESPONSES THROUGH WEBPORTAL & MOBILE APP OF CONTRIBUTORS AND ARRANGE THESE IN REPOSITOR
  - DISPLAY AQI INFORMATION THROUGH SLIDE SHOW TO ALL STAKE HOLDERS/CONTRIBUTORS
  - DISPLAY RAW AMBIENT AIR QUALITY DATA AS PER SELECTION
  - MULTICAST INFORMATION IF IT IS COMMON TO ALL LIKE STANDARD SEASONAL GRADED RESPONSE
  - COLLECT FORECAST DATA FOR 24/48 HOURS
  - COMPARE FORECASE DATA WITH ACTUAL DATA MEASURED

Annexures

Annexure-I

Bid for – Upgradation of "CCR (Central Control Room) Software" for providing Quick Graded Response to control Air Pollution, Tender Notice No. : C-12013/24/2017-18/Tech/Sr. No.1

APPLICATION FORM

(To be filled by the bidder)

1.	Name and full address of the Bidder including Telegraphic Address/Telex No. and Fax No.	:	
2.	Name and Designation of the Head of the Firm/supplier and his Telephone No	:	
3.	i) In case the supplier is located out of Delhi; Name of the official responsible in in Delhi, if any. ii) Name, Designation, Address Telephone & Fax Numbers of the Authorized Person who may be contacted during the process of the software development concerned under this document (Applicable for all the Bidders)	: :	
4.	Whether Earnest Money Deposited (Amount: Rs.)	:	
5.	If yes, Demand Draft No, Date and Name of issuing Bank.	:	
6.	Validity of Proposal	:	120 days
7.	Income Tax Clearance Certificate attached (Latest) (Yes or No) with PAN Number.	:	
Place Legally Binding Signature with stamp			

Annexure -II

PRICE BID FORM

Upgradation of "CCR (Central Control Room) Software" for providing Quick Graded Response to control Air Pollution,

Tender Notice No. : C-12013/24/2017-18/Tech/Sr. No.1

Details showing quantity, specification and other details of the system offered. (to be filled by the bidder and must be kept in "Price Bid" part of the Tender)

Name of items	Quantity	Unit Price (in Rupees excluding taxes at col. no. 4)	Taxes etc. (Sales Tax, C.S.T, etc.	Total Amount in Rupees for CPCB.(PricexQty+Taxes)
1	**2**	**3**	**4**	**5**
i) Upgradation/Development of basic software for Central Control Room and its continuous upgradation as per requirement during project duration. Various modules to be developed are: a) Data Acquisition module (DAM) b) Data Verfication module (DVM) c) DAM with IMD for weather data d) DAM with SODAR CPCB & NPL e) DAM with IMD for Forecast Data f) New Agency integration module g) Report Module h) User Management Module i) Graded Response Module k) Action Point submission & Response collection Module. l) Data Display with location specific Information Module & Agency Specific Module J) Payment Module	01(set)			Pricex01=
ii) Development of Mobile APPs on different platforms	03			Price x 3=

iii) Testing and Certifications of modules and testing through CERT In Empanelled vendors for software. Software audit before deployment.	01 audit During initial deployment			
iv) Basic report generation mechanism with at least 25 types of reports. (Formats of reports will be discussed	01			Price x 1=
v) Development of web pages / dynamic pages over maps at leat 25 such web pages (5 pages/yr)	01			Price x01=
vi) Training (One Day training program on 10 different days at CPCB by firm's representatives on different dates) No. of days will vary.	01			Price x10=
vii) Module wise systematically written user manuals and training material of the software.	04 sets (Hard & Soft copies)			Price x 01=
viii) Development of IVR System expandable to 10 lines. (Phone lines or Short code lines will have to be provided by the firm)	01 (One Line)			Price x 01=
ix) Integration of different Public Complaint Apps or Web based systems, operated by stake holders (no. will vary)	01 No			Price x 10=
x) AMC for four years after warranty period of 01 year with stipulated manpower support.	AMC for four years	Rate of AMC		Price x 04=

NOTE:- Sheet must be signed by the Bidder along with the seal.

Lowest bidder will be caluculated on the basis of total sum of column 5.

Signature with date & stamp of the bidder

Annexure – III

UNDERTAKING

DATE_____

Upgradation of "CCR (Central Control Room) Software" for providing Quick Graded Response to control Air Pollution,

Tender Notice No. : C-12013/24/2017-18/Tech/Sr. No.1

THE CHAIRMAN

Central Pollution Control Board

(Ministry Of Environment & Forests, Government Of India)

C.B.D. Cum Office Complex

East Arjun Nagar, Delhi - 110 032.

Sir,

Having examined the conditions of Bid Document and requirement of the system, the receipt of which is hereby acknowledged. We, the undersigned, offer to upgrade, deliver and install the following:

1. Software for the project

2. Maintain the software for the project duration

The above software, installation shall be in conformity with the specifications and conditions of software development.

We undertake, if our bid is accepted to deliver the systems quoted by us, we shall deliver and install within the period indicated by CPCB in the tender document.

We agree to abide by this bid for a period of 120 days from the date fixed for Bid opening and it shall remain binding upon us and may be accepted at any time before expiry of that period.

We are submitting a Demand Draft/Pay order no……..dated …….issued by …….. for Rs.....in favour of "Central Pollution Control Board", Delhi towards the Earnest Money Deposit.

This Bid, together with written acceptance (by the representative of the firm) thereof in notification of award shall constitute a bidding contract between us.

We understood that CPCB is not bound to accept the lowest or any bid may be received by CPCB.

Dated this.....day of.....2017

Signature of authorized Person, Name with Stamp & full Address.

Annexure - IV

LOCATION OF DELIVERY AND INSTALLATION

Upgradation of "CCR (Central Control Room) Software" for providing Quick Graded Response to control Air Pollution,

Tender Notice No. : C-12013/24/2017-18/Tech/Sr. No.1

Location:

1. Central Pollution Control Board	Parivesh Bhawan, East Arjun Nagar, Shahadra, Delhi 110032

Annexure- V

Agreement

Agreement below is to be submitted by the Consultant after issue of letter of Intent by CPCB within 7(seven) day's time.

AGREEMENT

An agreement is made on the _____day of _____2017 between Central Pollution Control Board, 'Parivesh Bhawan', East Arjun Nagar, CBD-cum-Office Complex, Delhi-32 (herein referred to as the 'Board' which expression shall unless repugnant to the context or meaning thereof be deemed to include their successor and /or assignee) of the other part.

WHEREAS the party of the first part is a statutory body, created and established under an act of the parliament known as Water (Prevention & control of pollution) Act, 1974 and the rule framed thereunder. Member Secretary of the Board is authorized person to sign the agreement on behalf of the Board.

AND WHEREAS the main objective of the board is to control the pollution of water and air at the same time take such measures as may be necessary to prevent pollution of water and air. One of the functions of the Board is to Plan and execute a nation-wide program for the prevention, control or abatement of water and air pollution.

AND WHEREAS the Board, in pursuance of its objective and to carry out the functions, with regard to prevention, control or abatement of water and air pollution, it is essential that all the relevant data are collected, collated and compiled in such way that these could be retrieved quickly and easily. In order to have effective implementation, Board has decided the **Upgradation of "CCR (Central Control Room) Software" for providing Quick Graded Response to control Air Pollution, Tender Notice No. : C-12013/24/2017-18/Tech/Sr. No.1** to be carried out by the firm amounting to Rs. _____ ____(……Rupees only).

AND WHEREAS the party of the second part is a firm M/s ____ _____.

AND WHEREAS the firm has approached the Board for the execution of the said work and have agreed to conduct and complete the work on the terms and conditions specified and agreed to between the parties hereto and as contained hereinafter.

AND NOW THEREFORE in consideration of the terms and mutual consent hereinafter mentioned, the parties hereby agree as follows:

1. DEFINITIONS

i. Agreement means this agreement and all appendices, annexure attached, work order, and subsequent amendment, modifications and additions directed by the Board to be carried out, provided that such directions are given by the Board.

ii. 'Work' means the total work to be conducted and completed by the firm as specified in details in the scope of work.

iii. The Board means the Central Pollution Control Board includes its Member Secretary and any other officials authorized to act and on behalf of the Board by the Member Secretary.

iv. The firm means M/s _____ _____ _____ _____.

2. OBLIGATIONS OF BOTH THE PARTIES

i. The firm should carry out the work from the date of issue of the final work order and submit inception report within 15 days time after receipt of final work award letter, as detailed in scope of work and as entrusted to them under the instructions of the Board and the firm further undertakes to give full co-operation to the Board in this regard.

ii. The Board shall have the right to depute its representative to work with the software developing firm and at all times such representative shall have access to the premises where and whenever the work is in progress. The software developing firm shall provide all facilities to the representative of the Board for inspection and/or assessment of work.

iii. The software developing firm shall receive fees in the manner prescribed in the payment conditions. Fees for any additional work, not included in the scope of work at the time of issuing the work order and which shall have to be carried out by firm under this agreement being due to amendments, modifications or additions as per clause 1(i) of this agreement, will be decided amicably and will be paid.

iv. This agreement comprises of detailed and definite enumeration of the rights and duties of the parties to the contract and covers all previous correspondence or negotiations etc., which may be contrary to this agreement in any way.

v. If one provision of this agreement should prove to be invalid or null, all remaining provisions shall remain effective without change. The contracting parties shall try to replace the invalid and null provisions by an admissible provision aiming of the same economic and legal rights.

vi. Dimensions/standards and units wherever referred shall conform to the Indian Regulations wherever obligatory and in all other cases the same will be as per prevailing practice. If however, the Board specifies the dimensions and units of the work then same shall be final and the firm undertakes to adopt the same and to carry out the work in accordance with the instructions issued by the Board.

vii. The software developing firm shall not engage or employ any sub-contractor for the execution of the work under this agreement without the prior consent in writing obtained from the Board. Any possible sub-contracts, which may concluded by the software developing firm in consent with the Board, shall be so concluded on the sole and full responsibility of the software developing firm. The fact of sub-contracting shall not absolve the software developing firm from his/her obligations and responsibilities under this agreement.

viii. Subject to the provisions of this agreement the software developing firm shall not transfer or assign this agreement without the Board's prior consent in writing. In any case transfer or assignment that may be affected by the software developing firm shall not modify his/her liabilities under this agreement. In the event of assignment for transfer the assignees or transferee shall be responsible for the fulfillment of the conditions of this agreement.

3. SECRECY AND COPYRIGHT

i. The software developing firm hereby undertakes to treat all the data, information, drawings and details etc., received by the consultants during the execution of the work, directly or indirectly, as exclusive property of the Board.

ii. No publication shall be effected or caused to be effected by the software developing firm without the consent of the Board in writing. All the information and data received or collected by the software developing firm during the execution of the work or at any other time in pursuance of this agreement shall be strictly treated as confidential and shall not be divulged to no other party, person or organization at any point of time.

4. EXTENSION AND TERMINATION

i. It is agreed between the parties that the Board may grant extension of time to the software developing firm for the completion of the work under this contract provided the Board is satisfied with the reasons for the extension stated by the consultant in his application in writing made to the Board, such extension stated would not entitle the consultant for any additional payment whatever under clause 2 of this agreement.

ii. It is agreed by and between the parties that the Board shall have the right to terminate this agreement without assigning any reason thereof subject, however to the condition that it shall give one month's notice of termination in writing to the software developing firm.

iii. In the event of termination of the agreement as provided herein, the software developing firm shall cease all further work and shall deliver to the Board all data, details, plans, specifications and other documents prepared or information collected upto the date of notice of treatment received thereof.

iv. In the event of termination of the agreement as provided herein, the Board shall reimburse to the software developing firm a part of fees proportionate to the work carried out pursuant to this agreement upto the date of notice of termination.

v. The software developing firm hereby undertakes and agrees to handover all the drawings, specifications, plans, sketches and other data and such other documents, alongwith complete information and report to the Board within 15 days of the completion of the work or the notice of termination of the contract as the case may be.

vi. The Board has the right to terminate the contract with or without assigning any reason at any stage besides reserve its right for the damage or any claim that the Board may have against the software developing firm.

vii. In case of such termination by the Board, if any payment in excess has been paid to the software developing firm, the software developing firm hereby undertakes and agrees to repay the excess payment within 15 days of the termination of the contract.

5. INDEMINITY

a. The software developing firm hereby undertakes to indemnify the Board against any claim made by any person/persons or by a third party for any reason whatsoever such a claim or damage may arise because of a mistake, negligence and/or any other reason or an act of the consultant during the course of the work being carried out or after the work the work carried out by the consultant under this contract.

b. The parties to this agreement specifically agree that the Board shall have the right to withhold the payment of fees that may be due and payable to the software developing firm in the event of any breach committed by the software developing firm under this agreement and the payment withheld be paid whenever such breach is rectified.

6. ARBITRATION CLAUSE

The parties to the agreement hereby agree and consent that all disputes, claims etc., arising out of and touching upon clause of the agreement and their interpretation shall be submitted to the sole arbitrator to be appointed in the following manner:

" The Chairman, Central Board shall appoint Director (CP Division), ministry of Environment & Forests, Government of India, New Delhi, or any other suitable person in the field of Computer Engineering as the sole arbitrator to adjudicate and decide upon the dispute referred to him ". The arbitrator shall state this decision in writing and if amount of claim in dispute is 50,000/- (fifty thousand rupees) and above, the arbitrator shall give reasons for award.

Subject as aforesaid, the provision of the arbitration & conciliation Act, 1996 or any other statutory modification or reenactment there of and the rules made there under and for the time being in force shall apply to the arbitration proceedings under the clause.

It is a term of contract that party invoking the arbitration shall specify the dispute or disputes to be referred to the arbitrator under this clause together with the amount or amounts claimed in respect of each dispute.

It is also a term of contract that if any of the party do not make any demand for arbitration in respect of any claim(s) in writing within 30 days of receiving the information from the Board that final bill is ready for the payment, the claim of the contracting party(s) will be deemed to have been waived and absolutely barred and the Central Pollution Control Board will be discharged of all liabilities under the contract in respect of these claims.

The decision of the arbitrator shall be final and binding upon the parties.

IN WITNESS WHEREOF THE parties of the first and second part of this agreement have subscribed their signatures on this agreement on the day and year herein above mentioned.

For M/s ._____ (**Dr. A. B. Akolkar**)

Member Secretary

For: Central Pollution Control Board

"Parivesh Bhawan", East Arjun Nagar, Delhi-110 032

SIGNED IN THE PRESENCE OF

1.Witness:

2. Witness: