

**TERMS OF REFERENCE
(TOR)**

**SUPPLY, DELIVERY, INSTALLATION, TESTING, AND COMMISSIONING
OF SMART AUTOMATED WEATHER STATION**

1. RATIONALE AND BRIEF BACKGROUND

The Republic Act No. 10121 known as the Philippine Disaster Risk Reduction and Management Act of 2010 defines Early Warning System as the set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.

Quezon City, among any other location in the Philippines, is exposed to the ever-evolving disasters which is exacerbated by climate change. In order to ensure the safety of its citizens, it needs to utilize both existing and new technologies in monitoring and forecasting the weather.

QCRRMO aims to install smart automated weather stations to further improve its capabilities in monitoring and forecasting the weather, especially for extreme heat. The aforementioned sensors will be seamlessly integrated to the existing sensor network and create a localized risk analysis system focused on extreme heat to provide a better understanding on what actions are needed to be done to further improve the current programs and systems to mitigate the impact of the hazard.

2. PROJECT DESCRIPTION

The concept of the project is to enhance the capabilities of QCRRMO by installation of smart automated weather stations. The additional sensors and system will provide a more in-depth understanding on heat index patterns within the city as it is vital information on the cancellation of classes and work throughout the year.

Since these are critical systems for disaster preparedness, The system shall be based on a proven solution already deployed by other Local Government Units within Metro Manila to ensure reliability and interoperability. The QCRRMO is aiming to have a system aligned with SMART CITY models or solutions that are automated, faster to implement, easy to manage, and more cost effective. In addition, the datasets of the sensors should be seamlessly integrated to the existing IRISE UP data display and data management system (cloud-based and QCITDD).

3. PROJECT SCOPE OF WORK

The QCRRMO plans to install fifty-one (51) smart automated weather stations within the City identified by QCRRMO. The datasets will then be integrated into the existing data display and data management system (cloud-based and QCITDD) of QCRRMO along with the previously procured sensors. National and local protocols should be followed in the analysis of the sensors' datasets.

System Output

- Fifty-One (51) Operational Smart Automated Weather Stations
- Sensor Data Processing, Storage Integration, And Display System
 - Data Storage and Processing
 - Data Display
 - Data Backup/Redundancy
 - Historical data
 - Integration to existing data display

Technical Specifications

Lot	Description	Delivery Time
1 Lot	FIFTY-ONE (51) SMART AUTOMATED WEATHER STATIONS Sensor Parameters <ul style="list-style-type: none">• Temperature: -20 °C to 55 °C• Humidity: 0% to 100%• Pressure: 300 hpa to 1100 hpa Other Sensor Parameters <ul style="list-style-type: none">• Dewpoint Temperature• Heat Index Temporal Resolution	Sixty (60) Calendar Days

	<ul style="list-style-type: none"> • 15 minutes, 1 hour, 6 hours, and 24 hours <p>Sensor Peripherals</p> <ul style="list-style-type: none"> • Solar Panel • Internal Antenna • Connection Wires • Global SIM Card <p>Features</p> <ul style="list-style-type: none"> • No programming and complex wiring • Real-time access to data from any web browser • Cloud-based data access <p>Delivery and Installation</p> <ul style="list-style-type: none"> • Site Survey • One time 	
	<p>DATA CONNECTIVITY, REPLACEMENT, MAINTENANCE, CALIBRATION, WARRANTY, AND TECHNICAL SUPPORT</p> <ul style="list-style-type: none"> • Quarterly checking of station every January, April, July and October • Three (3) years coverage <p>Replacement of devices and accessories such as:</p> <ul style="list-style-type: none"> • Solar Panel • Internal Antenna • Connection Wires • Global SIM Card • Three (3) years coverage <p>Emergency Repair and Maintenance</p> <ul style="list-style-type: none"> • 24/7 Availability of Personnel • Three (3) years <p>Data Connectivity Subscription</p> <ul style="list-style-type: none"> • Three (3) years coverage <p>SENSOR DATA PROCESSING, STORAGE INTEGRATION, AND DISPLAY SYSTEM</p> <p>Data</p> <ul style="list-style-type: none"> • Seamless integration of weather data to existing IRISEUP system. • Provision of new API endpoint containing all collected and modeled (observed and forecast weather) data at https://api.iriseup.ph/endpoint API endpoint system <p>Data Display</p> <ul style="list-style-type: none"> • GIS, Table, Graph and Threat Matrix display of real-time and historical of sensor data • GIS analysis overlaying data of sensor • Consolidation of existing and new sensors into one seamless and unified risk analysis system • System provision for spatial risk analysis system <p>Data Backup/Redundancy</p> <ul style="list-style-type: none"> • Data dumps are to be performed every 15 minutes or shorter (all details pertaining to access to the QCRRMO database such as address or URL to a management console, USERID and Password are to be given to QCRRMO). <p>Software License</p> <ul style="list-style-type: none"> • Perpetual license with three (3) years warranty and technical support • One (1) Meteorologist, Two (2) Data Scientists, and Two (2) field staffs for technical support and training <p>Training</p> <ul style="list-style-type: none"> • One (1) day end-user training • All training will have eight (8) hours per day with five (5) attendees 	

Automated Monitoring and Notification System

The Service Provider shall implement an automated monitoring and notification mechanism to ensure proactive detection and reporting of any sensor-related incidents.

The system shall be capable of:

- **Real-Time Monitoring:** Automatically track the operational status, power levels, data transmission, and connectivity of each weather station.
- **Automated Alerts:** Generate and transmit automated notifications to the designated QCRRMO contact persons (via SMS, email, or secured messaging platform) in the event of:
 - Communication loss or downtime exceeding 15 minutes;
 - Abnormal or missing data readings;
 - Low power or connectivity failure;
 - Hardware malfunction or calibration errors.
- **Incident Log and Summary Reports:** Maintain an auditable log of all automated alerts, response actions, and system recovery records, which shall be accessible to QCRRMO and ITDD.
- **Monthly Automated Status Reports:** The system shall automatically generate and transmit summary performance and uptime reports to QCRRMO and ITDD-designated email addresses for monitoring and validation purposes.
- The automated notification system shall be active 24/7, integrated with the Service Provider's monitoring dashboard, and aligned with the Service Level Agreement (SLA) response and resolution timeframes.

Service Level Agreement (SLA)

Severity Level	Description/Impact	Required Timeframe
Critical	Complete system outage or total data communication failure affecting all sensors.	Response: Within 2 hours Resolution: Within 4 hours
Severe	Major degradation affecting multiple sensors or data reporting from several locations.	Response: Within 4 hours Resolution: Within 8 hours
Major	Partial disruption affecting a limited number of sensors; workarounds available.	Response: Within 8 hours Resolution: Within 16 hours
Minor	Minor issue affecting a single unit or non-critical function.	Response: Within 16 hours Resolution: Within 32 hours

4. AREA OF COVERAGE

The sensor installation will cover fifty-one (51) locations within Quezon City and will be identified by the Emergency Operations Center (EOC) during the start of implementation.

5. PROJECT STANDARDS AND REQUIREMENTS

- All datasets generated, collected, or processed by the installed sensors—including meteorological, environmental, analytical, and operational data—shall remain the sole and exclusive property of the Quezon City Government. The service provider shall act solely as custodian of such data for the duration of the contract and shall ensure full compliance with Republic Act No. 10173, otherwise known as the Data Privacy Act of 2012, and its implementing rules and regulations.
- The system shall include standardized data export functionality to enable seamless transmission and ingestion of sensor data into the Quezon City Government's Central Data Warehouse and Unified Analytics Platform, as managed by the Information Technology Development Department (ITDD).[2]
- The entire system—including the sensor data processing, storage integration, and display components—shall undergo Vulnerability Assessment and Penetration Testing (VAPT) to be conducted by the Information Technology Development Department (ITDD) and/or the Department of Information and Communications Technology (DICT).
- All identified vulnerabilities shall be addressed and remediated by the service provider in accordance with the corrective timelines and resolution standards defined under the Service

Level Agreement (SLA). Validation and clearance from ITDD shall be mandatory prior to system acceptance and final turnover.[3]

- Equipment replacement shall be permitted solely under the following verified circumstances: (i) theft of the equipment, provided a police report or equivalent official documentation confirming the incident is submitted within 24 hours of discovery; (ii) damage to the equipment resulting directly from impacts of natural hazards (such as floods, earthquakes, storms, or other force majeure events beyond the Contractor's reasonable control), substantiated by photographic evidence, meteorological reports, or expert assessments; or (iii) destruction of the equipment occurring within the designated project area due to unforeseen events, accompanied by an incident report detailing the location, time, and cause. All replacement requests must be submitted in writing to the Project Coordinator within 48 hours of the incident, including comprehensive supporting documentation (e.g., photographs, witness statements, insurance claims if applicable, and any relevant site logs), and shall be subject to review, verification, and prior written approval by the Project Coordinator or designated authority. The Contractor remains responsible for implementing all reasonable preventive measures to safeguard the equipment, and any replacement shall be limited to equivalent specifications and quantities, contingent upon availability of project funds and adherence to procurement guidelines outlined elsewhere in this Terms of Reference. Unauthorized or unsubstantiated requests may result in denial of replacement and potential liability for the Contractor.
- Bidders should have completed, a single contract that is similar to this Project or related to Supply, Installation and Maintenance of meteorological devices and data processing systems, equivalent to at least fifty percent (50%) of the ABC three (3) years from the date of submission and receipt of bids, a contract similar to the project.
- Bidders should have at least two (2) field staff for the installation and three (3) years on-going support and maintenance of fifty-one (51) sensors. Bidders should have demonstrated experience and capacity to manage community based early warning systems in a highly urbanized city (HUC) in Metro Manila.
- Bidders should have at least one (1) Meteorologist and two (2) IT-Data Science resources for Training and continuous consultation within the project as this is a science-based data driven project.

6. PROJECT DURATION

The delivery period of the Project shall be within sixty (60) calendar days after the issuance of the Notice to Proceed.

7. APPROVED BUDGET FOR THE CONTRACT

The approved budget for the contract amounts to nineteen million eight hundred fifty thousand pesos (P19,850,000.00).

ITEM	BUDGET (PHP)
1. FIFTY-ONE (51) SMART AUTOMATED WEATHER STATIONS	
2. SENSOR DATA PROCESSING, STORAGE INTEGRATION, AND DISPLAY SYSTEM	
TOTAL	

8. BASIS OF PAYMENT

Below are the deliverables that will be used as the basis for full payment.

Item	Deliverables	Payment Percentage
Delivery & Installation of Fifty-One (51) Automated Weather Station Set Solar Panel and Data Connectivity	Project Acceptance Document: Receipt, Inventory, Installation Completion and Maintenance & Warranty Certificate	15%

Delivery of Data Display System	Project Acceptance Document: Fully delivered system and documentation	75%
Training	Training Certificate	10%

9. PENALTIES FOR BREACH OF CONTRACT


Incomplete and delayed delivery will result in penalties based on standard Government implementing rules and regulations.

Due to the nature of the system, technical support on the cloud-based application must be readily available for emergency repair and maintenance works.


10. CANCELLATION FOR OR TERMINATION OF CONTRACT

Incomplete and delayed delivery and non-performance of services will result in penalties and termination of contract based on standard Government implementing rules and regulations.

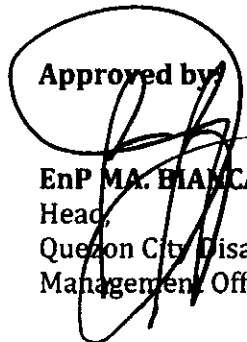
Prepared by:


CARL OLIVER M. LUCAS
 EOC Manager
 Quezon City Disaster Risk Reduction
 Management Office (QCDRRMO)

Noted by:


ERWIN CARLOS N. VALDEZ
 Deputy for Operations
 Quezon City Disaster Risk Reduction
 Management Office (QCDRRMO)

Approved by:


EnP MA. BIANCA D. PEREZ
 Head
 Quezon City Disaster Risk Reduction
 Management Office (QCDRRMO)