Government of India

Ministry of Agriculture & Farmers Welfare

Department of Agriculture & Farmers Welfare

Mahalanobis National Crop Forecast Centre

Near Krishi Vistar Sadan Pusa Campus, New Delhi-110012

Invitation for

Expression of Interest (EoI)

for

"Empanelment of Companies/Agencies for setting-up of AWS/ARGs and providing weather datasets under Weather Information Network Data System (WINDS)"

File No. E1259026/7(2)/PMFBY-WINDS/2023-MNCFC (125903)

(Visit us at https://www.ncfc.gov.in; http://agricoop.nic.in)

(October 2023)

Note: In case any difference is found in interpretation or reference of terms & conditions and various provisions as mentioned in the EoI document, the terms & conditions and provisions of the WINDS Manual 2023, as amended from time to time, shall be final and binding in all situations to all stakeholders.

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NOTICE INVITING EOI

Government of India **Ministry of Agriculture & Farmers' Welfare** **Department of Agriculture & Farmers' Welfare** **MAHALANOBIS NATIONAL CROP FORECAST CENTRE** **Near Krishi Vistar Sadan, Pusa Campus, New Delhi-110012** **NOTICE INVITING EOI** **(For publishing in the Website)** **File No. E1259026/7(2)/PMFBY-WINDS/2023-MNCFC (125903)**	
Office of issue	**Mahalanobis National Crop Forecast Centre (MNCFC), DAC&FW, Nr Krishi Vistar Sadan, Pusa Campus, NewDelhi-110012**
EOI Notice Available at Website	**http://www.ncfc.gov.in http://agricoop.nic.in**
Date of Issue/Publishing	**Friday 13 October, 2023**
Pre-bid meeting	**Friday 20th October, 2023 at 2:00 PM** **Virtual meeting link- https://meet.google.com/yvs-qvgw-bcc**
EOI submission last date and time	**Friday 27 October, 2023, 18:00 Hrs**
Date of Presentation of EOI	**Monday 30th October 2023**
Place of Presentation of EOI	**Committee Room, MNCFC, Nr. Krishi Vistar Sadan, PusaCampus, New Delhi-110012.**

On behalf of President of India, Expression of Interest is invited from experienced agencies for Empanelment of Companies/Agencies for setting-up of AWS/ARGs and providing weather datasets as per the guidelines of Weather Information Network Data System (WINDS).

EOI Invitation document can be downloaded from MNCFC website https://ncfc.gov.in/ and DA&FW website https://agricoop.gov.in/

Sd/-

Director, MNCFC
011-25843224

SECTION-I: GENERAL ASPECTS OF EOI INVITATION

1. NATURE OF EOI

This EOI is for obtaining services of established reputed agencies for "Empanelment of Companies/Agencies for providing weather data services by creating Weather Information Network Data System (WINDS) across the country" and to empanel them as WINDS Implementation Partners (WIPs). Presently, services are required for setting up a robust National level network of Automatic Weather Stations (AWS) and Automatic Rain Gauges (ARG) under WINDS initiative as per the protocols and guidelines defined in the WINDS Manual 2023, as amended from time to time, with the aim of generating long-term hyperlocal weather data, for disaster risk resilience needs of agriculture and different sectors and shall benefit the Central/State/UT Governments in taking real-time strategic interventions in the best interest of the stakeholders.

2. BACKGROUND

On the backdrop of climate change and its direct and indirect impact on the agriculture sector resulting in increased risk of losses due to extreme weather events like droughts and floods, unseasonal rainfall and high temperatures. In this scenario of climate change, importance of crop insurance for managing the agricultural risks can't be overemphasized. For the purpose of ensuring that flagship agriculture insurance schemes of Government of India (PMFBY/RWBCIS) provide the high quality coverage, there is an urgent need to generate weather data at more granular level by increasing the density of the AWS/ARG network.

Department of Agriculture & Farmer Welfare (DA&FW) is in process of nationwide rollout of Crop Yield Estimation system based on the Technology under PMFBY. Availability of weather data at Insurance Unit (IU) level is very important for preparation of term sheet in RWBCIS and also an important input in yield estimation using technology. Accordingly, DA&FW, GoI is considering to create a national level Weather Information Network Data System (WINDS).

WINDS would integrate weather data, pooled from different weather observation systems in the country, into a single national level Data Hosting Platform (DHP). This digitally integrated platform for hosting long-term, hyperlocal, quality checked and reliable weather data will synergise the efforts and the data collected by different stakeholders for larger usage in risk mitigation strategies of the Governments and ensure seamless and near real time dissemination of services.

WINDS will be a national level initiative which will integrate the existing infrastructure and expertise available with IMD, various State Governments and

public/private technical organizations. New stations would also have required to be installed under the WINDS to ensure there is granular and hyperlocal weather data network across the country. This EOI has been brought in order to empanel eligible agencies for setting up of Automatic Rain Gauge and Automatic Weather Station network on a rental model in the country.

The selected agency will be responsible for the supply of weather data from the network of AWS/ARG as per the requirement of RFP document. The selected agency will also be responsible for maintaining the network for a period of 5 (Five) years. Summary of crop risks and related weather datasets are as follows:

Table 1: Summary of crop risks and related weather datasets

Sr. No	Risks	Weather variables
1.	Drought/Prolonged dry spell	Rainfall, Rainy days, Dry days
2.	Flood	Cumulative rainfall, rainfall intensity
3.	Cyclone	Cumulative rainfall, rainfall intensity, Wind speed
4.	Hailstorm	Rainfall
5.	Unseasonal rain	Rainfall amount, rainfall intensity & duration
6.	Frost	Minimum temperature, sunshine hours, wind speed
7.	Heat waves	Maximum temperature
8.	Cold waves	Minimum temperature
9.	Pest/disease	Humidity, temperature

AWS/ARG datasets are of immense use for improving crop loss estimation procedures under PMFBY and RWBCIS for the risks listed below:

a) Prevented / failed sowing / planting

b) On-Account payment of claims due to mid-season adversity

c) Localized Calamity

d) Post-Harvest Losses

e) Dispute resolution regarding Yield Data/Crop loss

f) Designing of Triggers and Term-Sheets

g) Technology based direct yield estimation

With this background, Mahalanobis National Crop Forecast Centre (MNCFC), Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India invites Expression of Interest **(EOI)** from

companies/firms/agencies or any other juristic entity **(Applicants)** wishing to be considered for short listing for participating in bidding process for **Empanelment of Companies/Agencies for setting-up of AWS/ARGs and providing weather datasets as per the guidelines of Weather Information Network Data System (WINDS)** across the country, hereinafter referred to as the "**Solution"**. MNCFC is planning to implement the proposed solution in all the states & UTs of India.

Please note, this is the first stage of a multi-stage procurement process. The objective of this Request for EOI is to identify and pre-register eligible applicants who are interested in providing the proposed solution and have suitable capacity, capability and experience.

Expression of Interest (EOI) are invited in sealed envelope superscripted as **Expression of Interest - Empanelment of companies/agencies for providing weather data by creating Weather Information Network Data System (WINDS) across all the States/UTs of India.**

a) From the applicants who meet the eligibility criteria as set out in **Section I (4)** of this document

b) Who can offer a solution strictly in line with the technical parameters as set out in **section II of this document**

c) Agree to abide by the terms and conditions contained in this EOI document and WINDS manual.

Sealed envelope containing complete set of hard copy of EOI should be submitted by Post or to be delivered in person at the below address. Softcopy will be asked during the scrutiny process of the proposal.

Director MNCFC and Chairman of the WINDS committee
MAHALANOBIS NATIONAL CROP FORECAST CENTRE (MNCFC)
Ministry of Agriculture & Farmers' Welfare
Department of Agriculture & Farmers' Welfare
Near Krishi Vistar Sadan, Pusa Campus,
New Delhi-110012

3. Scope of work

- Supply of quality weather data by installing a network of Automatic Weather Stations / Automatic Rain Guage Stations, as per the guidelines and protocols defined in WINDS Manual 2023, as amended from time to time, with the following major components:

Weather Sensors

- Air Temperature
- Relative Humidity
- Rain Gauge (Precipitation)
- Wind Direction & Speed
- Pressure sensor (shall be added in one of the AWS of each districts, as per recommendation of WINDS committee).
- Data Logger & Power Unit

- Establishment of AWS & ARG network across the State/UTs.
- An AWS shall be installed at every Block/Tehsil/Taluk level and ARG at every Gram Panchayat (GP)/Insurance Unit level. The technical specifications and details are given in **Section-II**.
- Preventive & breakdown maintenance of AWS/ARGs and Supply of weather data for 5 (Five) years.
- Periodic calibration and maintenance of AWS/ARG sensors and equipment, either in-situ or in laboratory conditions, with primary & traveling standards.

4. ELIGIBLE AGENCIES

This process is open to all applicants who fulfil the eligibility criteria as set out in **Section-I (4.1)**. The applicant should furnish information required in this section**,** in their EOI proposal**.**

For determining the eligibility of Agencies for their pre-qualification hereunder, the following shall apply:

- **The applicant for pre-qualification shall be the Sole Bidder.**
- **To be eligible for pre-qualification and short-listing, an applicant shall fulfil the following conditions of eligibility.**

4.1. Eligibility Criteria (Pre-qualification)

i. This work is open to all technical agencies, which include government, private, international, and autonomous organizations. However, International Agencies should have legal presence and registered entity in India with adequate capacity to work at field level.

ii. The agencies who have already implemented weather data related services, installation and maintenance of AWS/ARGs for at least 3 Years in different states, and have a proven experience of installation and operations of more than 1000 AWS and/or ARGs cumulatively, in the last three out of five years, will be considered for empanelment by the WINDS Committee as WIP.

iii. The Agencies must be registered with relevant Govt. /Statutory Authorities/tax authorities for not less than three years such as Income tax Department etc. as required in the normal course of business to render similar services.

iv. The Applicant should not have been blacklisted by any Statutory Body /Government Ministry/ Government Department/ Central or State PSU.

4.2. Technical Capacity

For demonstrating technical capacity and experience (the "Technical Capacity"), the applicant shall have:

I. The service providers must have the capabilities to maintain the stations properly and ensure seamless quality data to the central server specified by WINDS. The Agency must be having proper Manpower Resources i.e., Project Leads, Service Engineers, Data Science experts, Software Developer, GIS expert, Agro-Meteorological Experts, on their pay rolls, minimum of 10 experts (at least one in each discipline), for which documentary proof needs to be submitted.

II. Agency must have in-house capacity/resources/manpower (service engineer) for maintenance, calibration and troubleshooting of AWS/ARGs including the sensors and other equipment as per the specification defined in this manual, for which documentary proof/self-declaration needs to be submitted.

III. The agency must have well equipped data centre and lab for monitoring and analysis/quality checking of weather data.

IV. Preference shall be given to agencies who have demonstrated experience in implementing innovative weather-based solutions in agricultural applications, i.e., integrating weather data and derived products with remote sensing, AI/ML, IoT, Climate risk management and crop simulation tools etc and their approaches have been tested/used by the State/insurance companies/central government agencies/PSUs etc.

4.3. **Financial Capacity:**

I. The agency should have a minimum annual turnover of 10 Crores in three out of last five years, specifically related to similar activities.

II. The Applicant should be profitable in - previous 3 financial years (FY 20-21, 21-22, 22-23).

III. The Applicant should be having positive net worth.

5. Technical criteria for Empanelment of WIPs

The agencies fulfilling the eligibility criteria shall only be considered for technical evaluation. The minimum qualifying mark will be 70 out of a maximum of 100 (hundred marks) as a benchmark for the quality of the technical proposal. The agencies qualifying the technical criteria shall be empanelled as WIP by the WINDS Committee. The various criteria based on which the technical proposal will be evaluated are given in Table 2 below.

Table 2: Marking Criteria for Technical Evaluation

Sr. No.	Parameter	SupportingDocument	Maximum Marks	Marking Criteria
1.	**Weather Data as a Service, installation and maintenance of AWS/ARGs:** Experience in Crop Insurance Sector or any other Central/State/UT Government scheme **(Minimum 3 Years)**	Details of Contracts relating to supplying of data to reputed Central/ State Govt./Public sectors, attested copies of the work orders.	25 Marks	a) >= 3 Years & < 5 years: **12 Marks;** b) >= 5 Years & < 8 years: **18 Marks;** **c)** >= 8 years: **25 Marks**
2.	The Bidder must have executed at least one similar project involving installation of 1000 AWS/ARGs cumulatively in the past 3 Years. **Substantially completed ongoing projects will also be considered.** Documentary Proofs such as contract order, client references & contact details (email/ landline/ mobile) of such client(s) for whom similar projects were executed (Start & End Date of the Project to be mentioned) shall be provided.	Client References: - 1. 2.. 3.	20 Marks	a) Similar projects (=1): **10 Marks**; b) Similar projects (= 2): **15 Marks**; c) Similar projects (3 or more): **20 Marks**;

Sr. No.	Parameter	SupportingDocument	Maximum Marks	Marking Criteria
3.	**No. of Subject matter Specialists/Technical Manpower** The agency should have in-house meteorologists, service engineers, data science experts, software developers on their payroll	Documentary proof of qualification/employment to be attached. (**Service Engineers** – Diploma /B.Tech/ in Electronic or Electrical Engineering **Data Science experts, and Software Developer, GIS expert** – MCA/BTech/MTech in CS/IT/Geoinformatics/ Data Sciences with minimum 3 year of experience. **BSc/MSC Agrometoerlogy / Meteorology**	15 Marks	**a)** 10 Experts **– 10 Marks** **1 Mark** for each additional resource
4.	**Business Turnover:** Minimum annual turnover of 10 Crores in three out of last five years, specifically related to similar activities.	Copy of the audited Balance Sheet and/ or Certificate of the Chartered Accountant for preceding three years.	15 Marks	Average of Annual turnover for considered three years will be considered and marks will be given as follows: a) >=10 Crores & < 12.5 Crores: **10 Marks**; **Additional 1 Mark** for each 50 Lacs increase in Average Turnover
5.	**Technical capability** The agency should have proven track record of analyzing, visualizing and modeling of weather data/products through Portals/App/ Dashboard	Documentary proof to be attached	5 Marks	a) Dashboard/ visualization platform - **Max 2 marks** **b)** Mobile App for monitoring/quality control - **Max 2 marks** c) Weather based use cases - **1 mark.**

Sr. No.	Parameter	SupportingDocument	Maximum Marks	Marking Criteria
6	The Applicant should have experience of working in (AWS/ARG and data related activities) at least in two States/UTs of India with Government/ PSU/Insurance	Written, Certified documentation of all the QA procedures	10 Marks	2 States: **5 Marks**, **1 Mark** for each additional State/UT
7.	Technical presentation		10 Marks	Interaction with agencies

5.1. Additional Information/Document to be Provided:

The agencies shall submit the following documents along with their proposal for empanelment as WIP:

a) A brief profile of agency mentioning address of its registered head office, address of local offices, Contact no. (Mobile, landline, fax and email id), names of important persons who may be contacted etc.

b) Certificate of Incorporation/ Registration of Agency/ Memorandum and Articles of Association/ Partnership Deed/ Proprietorship Deed/ Declaration of Proprietorship etc. as the case may be.

c) Copy of PAN/TAN numbers.

d) Copy of Income Tax Return for last three Financial Years.

e) Audited accounts (Balance Sheet and Profit and Loss Account etc.) for the last three years FY 20-21 & 21-22 & 22-23.

f) Copy of GST/VAT Registration Certificate.

g) Certificate by the agency to the effect that the agency is not blacklisted by any Govt. Organization/ DGS&D/ NCCF / PSU.

h) Certification. The Agency should provide certificates of the past experience of similar activities. Copies of experience certificates/order for award of contract for related services with other Ministries/Departments/PSUs.

i) EoI Acceptance Letter on agency's letter head which should be filled, signed and stamped/certified properly.

j) Earnest Money Deposit of Rs.1,00,000/- -

k) An Undertaking on the agency's letterhead along with requisite documentary proofs. The format of the undertaking is provided in Annexure A.

l) Any other document required as per the EOI document.

Documents listed above must be properly scanned such that they are clearly readable/ legible as the poorly scanned documents may render the EoI unresponsive at technical stage. The documents should be arranged, exactly, in the above order and page numbered, with an index, in the beginning, providing the page number of each document.

6. FORMAT OF EOI TO BE SUBMITTED BY THE AGENCY

i. The applicant should prepare EOI strictly as desired in this Request for EOI document.

   a. EOI should be typed and submitted on A4 size paper, securely bound and with all pages therein in serial order.

   b. All pages of the EOI should be signed by only the authorized person(s) of the company/firm. Any interlineations erases or overwriting shall be valid only if the person(s) signing the EOI authenticates them. The EOI should bear the rubber stamp of the applicant on each page except for the un-amendable printed literature.

   c. Contact detail of the authorized signatory and an authorized contact person on behalf of the applicant is to be provided as under: -

Particulars	**Authorized Signatory for Signing the EOI**	**Authorized Contact Person**
Name		
Designation		
Email ID		
Landline No		
Mobile No		
FAX No		
Address		

ii. The applicants should demonstrate in EOIs that they meet all parameters given in **Section 3** of WINDS document.

iii. In case any discrepancy is observed between hard and soft copy, the hard copy will be considered as the base document.

The last date for submission of EOI is DDMMYY up to 0:00 pm. In case the designated day happens to be a holiday; the next working day will be deemed as the last date for submission of EOI.

7. EMD/Bid Security

a. An Agency is required to deposit, along with its Bid, a Bid Security / EMD of Rs. 100000, refundable not later than 180 (One Hundred Eighty) days from the Bid Due Date.

b. The Agency who are registered on Tender submission date with National Small Industries Corporation, New Delhi, shall be eligible for exemption from EMD. Micro and small Enterprises specified by Ministry of Micro, Small & Medium Enterprises (MSME) are exempted from Earnest Money Deposit (EMD), who produce goods or provide their own services.

c. The Agency will have an option to provide Bid Security / EMD in the form of a demand draft or bank guarantee from any Nationalized Bank / Any Schedule commercial Bank in India drawn in favor of the "Pay & Accounts Officer (Extension), Shastri Bhawan, New Delhi", and in such event, the validity period of the demand draft or bank guarantee, as the case may be, shall not be less than 180 (one hundred and eighty) days from the Bid Due Date, inclusive of a claim period of 60 (sixty) days, and may be extended as may be mutually agreed between the Authority and the Bidder from time to time. The Bid shall be summarily rejected if it is not accompanied by the Bid Security / EMD.

7.1. Process before submission of EOIs: -

I. **Raising of queries/clarifications on Request for EOI document:** The applicants requiring any clarification on this document should submit their written queries on or before 20/10/2023 at ncfc@gov.in, sunil.dubey86@gov.in, ashutosh.gavli@nic.in.

II. **Modification in Request for EOI document:** At any time prior to the deadline for submission of EOIs, MNCFC may modify any part of this document. Such change(s) if any may be in the form of an addendum/corrigendum and will be uploaded in MNCFC's website- https://www.ncfc.gov.in . All such change(s) will automatically become part of this Request for EOI and binding on all applicants. Interested applicants are advised to regularly refer the URLs provided above.

III. **Extension of date of submission of EOIs:** Request for extension of date for submission of EOIs will not be entertained. However, the MNCFC at its discretion may extend the deadline in order to allow prospective applicants a

reasonable time to take the amendment/changes, if any into account or for any other reason whatsoever.

7.2. Process after submission of EOIs:

a. All EOIs received by the designated date and time will be examined by MNCFC, to determine if they meet criteria/terms and conditions mentioned in this document including its subsequent amendment(s), if any and whether EOIs are complete in all respects.

b. On scrutiny, the EOIs NOT found in desired format /illegible/ incomplete/not containing clear information, in view of MNCFC, to permit thorough analysis or failing to fulfil the relevant requirement will be rejected for further evaluation process.

c. MNCFC reserves the right, at any time, to waive any of the requirements of this Request for EOI document if it is deemed in the interest of MNCFC.

d. If deemed necessary, MNCFC may seek clarifications on any aspect of EOI from the applicant. If a written response is requested, it must be provided within 03 days beyond the response received, if any will not be considered. However, that would not entitle the applicant to change or cause any change in the substances of their EOI document already submitted. MNCFC may also make enquiries to establish the past performance of the applicants in respect of similar work. All information submitted in the application or obtained subsequently will be treated as confidential.

e. After examining the EOI, some or all of the applicants may be asked to make presentation of the solution and demonstrate the capability to undertake the assignment.

f. MNCFC may shortlist the applicants who fulfil the eligibility criteria, have solution as per the requirement of the MNCFC and are agreeing to abide by the terms and conditions of the MNCFC. MNCFC's judgment in this regard will be final.

g. Respective implementing States/UTs be states will issue a Request for Proposal (RFP) from the qualified empanelled WIPs for inviting technical and indicative commercial bids for next process of procurement. However, please note that short listing of applicants should not be treated as a contract for the proposed work.

h. Applicants will be advised about short-listing of their EOIs or otherwise. However, applicants will not be provided with information about comparative position of their EOIs with that of others.

8. Terms & Conditions

i. Lodgement of an EOI is evidence of an applicant's consent to comply with the terms and condition of Request for EOI process and subsequent bidding process. If an applicant fails to comply with any of the terms, its EOI may be summarily rejected.

ii. Wilful misrepresentation of any fact in the EOI will lead to the disqualification of the applicant without prejudice to other actions that the MNCFC may take. The EOI and the accompanying documents will become property of MNCFC. The applicants shall be deemed to license, and grant all rights to MNCFC, to reproduce the whole or any portion of their product/solution for the purpose of evaluation, to disclose the contents of submission to other applicants and to disclose and/ or use the contents of submission as the basis for EOI process.

iii. MNCFC reserves the right to accept or reject any or all EOIs received without assigning any reason thereof whatsoever and the MNCFC's decision in this regard will be final. No contractual obligation whatsoever shall arise from the EOI process.

iv. Any effort on the part of applicant to influence evaluation process may result in rejection of the EOI.

v. MNCFC is not responsible for non-receipt of EOIs within the specified date and time due to any reason including postal delays or holidays in between.

vi. MNCFC reserves the right to verify the validity of information provided in the EOIs and to reject any bid where the contents appear to be incorrect, inaccurate or inappropriate at any time during the process of EOI or even after award of contract.

vii. Applicants shall be deemed to have:

   a. examined the Request for EOI document and its subsequent changes, if any for the purpose of responding to it.

   b. examined all circumstances and contingencies, having an effect on their EOI application and which is obtainable by the making of reasonable enquiries.

   c. satisfied themselves as to the correctness and sufficiency of their EOI applications and if any discrepancy, error or omission is noticed in the EOI, the applicant shall notify the MNCFC in writing on or before the end date/time.

viii. The Applicants shall bear all costs associated with submission of EOI, presentation/POC etc., as desired by the MNCFC. MNCFC will not be

responsible or liable for any cost thereof, regardless of the conduct or outcome of the process.

ix. Applicants must advise the MNCFC immediately in writing of any material change to the information contained in the EOI application, including any substantial change in their ownership or their financial or technical capacity. Copies of relevant documents must be submitted with their advices. For successful applicants, this requirement applies until a contract is awarded as a result of subsequent bidding process.

x. Shortlisted applicants must not advertise or publish the same in any form without the prior written consent of MNCFC.

xi. Brief overview of the proposed procurement/scope of work given in this document may be further elaborated, viz., more details may be included in the Request for Proposal (RFP) document to be issued as a result of evaluation process of EOIs.

xii. MNCFC shall have the right to cancel the EOI process itself at any time, without thereby incurring any liabilities to the affected Applicants. Reasons for cancellation, as determined by MNCFC in its sole discretion include but are not limited to, the following:

a. Services contemplated are no longer required.

b. Scope of work not adequately or clearly defined due to unforeseen circumstance and/or factors and/or new developments.

c. The project is not in the best interest of MNCFC.

d. Any other reason.

xiii. In the event of failure of the Service Provider to render the Services or in the event of termination of agreement or expiry of term or otherwise, without prejudice to any other right, the MNCFC at its sole discretion may make alternate arrangement for getting the Services contracted with another vendor. In such case, the MNCFC shall give prior notice to the existing Service Provider. The existing Service Provider shall continue to provide services as per the terms of contract until a 'New Service Provider' completely takes over the work. During the transition phase, the existing Service Provider shall render all reasonable assistance to the new Service Provider within such period prescribed by the MNCFC, at no extra cost to the MNCFC, for ensuring smooth switch over and continuity of services. If existing vendor is breach of this obligation, they shall be liable for paying a penalty, which shall be decided after

completion of bidding process, on demand to the MNCFC, which may be settled from the payment of invoices for the contracted period.

9. Data Sharing/Ownership (as per WINDS Manual 2023, as amended from time to time)

Data Sharing and ownership shall be as per the protocols and guidelines defined in the WINDS Manual 2023, as amended from time to time.

10. Disclaimer:

MNCFC is not committed either contractually or in any other way to the applicants whose applications are accepted. The issue of this Request for EOI does not commit or otherwise oblige the MNCFC to proceed with any part or steps of the process.

Subject to any law to the contrary, and to the maximum extent permitted by law, MNCFC and its directors/officers/employees/contractors/agents and advisors disclaim all liabilities (including liability by reason of negligence) from any loss or damage, cost or expense incurred or arising by reasons of any person using the information and whether caused by reasons of any error, omission or misrepresentation in the information contained in this document or suffered by any person acting or refraining from acting because of any information contained in this Request for EOI document or conduct ancillary to it whether or not the loss or damage arises in connection with any omission, default, lack of care or misrepresentation on the part of MNCFC or any of its officers, employees, contractors, agents or advisors.

Please Note: Since this is not a Request for Proposal (RFP), commercials are not required to be submitted at this stage.

SECTION-II: TECHNICAL SPECIFICATIONS

1. Establishment of National Level ARG Network at Gram Panchayat level and AWS at block level

1.1. AWS and ARG Sensor specifications

The Sensors shall be certified/calibrated by IMD or NABL accredited laboratories or equivalent.

All the sensors and equipment installed as part of AWS/ARG network under WINDS should be of reputed brand/OEM shall conform with the minimum specifications as described below.

A. Automatic Rain Gauge

Table 3: Automatic Rain Gauge Sensor specifications

S No	Description	Required Specification
a	Instrument	Tipping Bucket Rain Gauge (TBRG)
b	Orifice Size/ collector diameter	Specified diameter of the collector rim shall be at least 159.5 mm
c	Collector Area	Specified collector area shall be at least 200 cm^2
d	Reed Switch	Magnetic switch
e	Operating range	Unlimited; electrical impulse output
f	Response time	Capable of operating at rates up to 1 pulse per second.
g	Resolution	0.25 mm or 0.5 mm per tip
h	Output	Reed switch count
i	Sustainability	Up to 300 mm/hour
j	Accuracy: Maximum permissible % error in the measurement of rainfall	±2% or better, for rain rate up to 25 mm/hour
		±3% or better, for rain rate between 25mm/ hour to 50 mm/ hour
		±4% or better, for rain rate between 50mm/ hour to 100 mm/ hour
k	Range	Unlimited

S No	Description	Required Specification
l	Material of outer body / Housing (Base & collector)	Non-Corrosive material
m	Bucket Material	Injection molded non-hydroscopic ABS (Acrylonitrile Butadiene Styrene), UV-stabilized or brass with chrome plated or stainless steel
n	Levelling	Suitable levelling adjustment screws and circular spirit level must be provided at the base of TBRG for levelling the Tipping Bucket Mechanism.
o	Debris protection filter	Suitable (Wire mesh) debris protection filter should be provided inside the collector.

B. Air Temperature Sensor

Table 4: Air Temperature Sensor specification

S No	Description	Required Specification
a	Type	PT100 1/3 class B or solid state or equivalent
b	Range	-20°C to 60°C
c	Resolution	0.1 °C
d	Accuracy (With Radiation shield)	±0.2 °C or better
e	Response time	< = 10 seconds
f	Out put	Digital
g	Louvered Radiation shield	UV Resistant (Minimum 6 Louvers)

C. Relative Humidity (RH) Sensor

Table 5: Relative Humidity (RH) Sensor specifications

S No	Description	Required Specification
a	Type	Capacitive/Solid state sensor with protective coating
b	Range	0 to 100 % RH
c	Resolution	1 % RH
d	Accuracy (With Radiation shield)	±5% or better for RH 0 to 50%, ±3% or better for RH >50%
e	Response time	<=10 sec

f	Out put	Digital OR Analog
g	Louvered Radiation shield	UV Resistant (Minimum 6 Louvers)

D. Wind Speed and Wind Direction

Table 6: Wind Speed and Direction Sensor specification

S No	Description	Required Specification
a	Type	Ultrasonic
b	Measurement Range (Wind Speed)	0-75 m/s
c	Measurement Range (Wind Direction)	$0\text{-}359^0$
d	Resolution (Wind Speed)	0.1 m/s
e	Resolution (Wind Direction)	1^0
f	Accuracy (Wind Speed)	±2% or better up to 50 m/s ±3% or better above 50 m/s
g	Accuracy (Wind Direction)	$\pm\ 3^0$
h	Response Time	Instantaneous
i	Output	Digital

1.2. Siting and Exposure - Conditions and Requirements

1.2.1. General Siting and Exposure conditions for AWS/ARG station

Standard Operating Procedure for AWS Installation/Deployment and guidelines for site preparation are described in Annexure VIII and Annexure IX shall be followed strictly, as siting and exposure have an important influence on the performance of the AWS/ARGs and the quality of the data generated.

Site for installation of the AWS/ARGs is to be provided by respective state governments, preferably government owned land/space, or if private land on rental basis, the rent for the same shall be borne by the state government. The site should be free from any encumbrance. It would be the responsibility of the State/UT Government to provide safe and secure sites for the installation.

The AWS is to be located on a level piece of ground, covered with short grass or natural earth ideally 5 m x 7 m in dimension. In cases of non-availability of space, 5 m x 5 m would be sufficient, especially in hilly areas.

Foundation should be laid for civil work at the site with RCC, for the mast, fencing and the equipment to be installed as part of the station.

The AWS/ARG site must be free from obstructions like tall buildings, trees, etc. The site shall be assessed for potential obstructions and potential sensor contaminants (e.g., water and dust sources) should be identified.

The site must be selected in a way that the distance between the fencing and the AWS/ARG mast should be at least 2 m. This distance is recommended to minimize the effect of the fence on the sensor's readings especially when weeds and/or debris on the fence act as horizontal obstruction.

Conditions to be avoided:

a. Sheltered hollows, high vegetation, shaded areas, swamps, steep slope
b. Obstructions like tall buildings, trees etc.
c. Location of site on the edge of a slope, hillocks, cliff or inside a valley
d. Large industrial heat sources
e. Locations near high-tension power lines
f. Low places holding standing water after rains
g. Underground obstructions like buried cables or conduits
h. Pollution influence from surrounding farms and towns

1.2.2. Automatic Rain Gauge (ARG) – Tipping Bucket Rain Gauge (TBRG)

The ARGs shall be located on a level piece of ground, covered with short grass or natural earth ideally 4 m x 3 m in dimension.

The ARGs shall be installed at minimum height of 30 cm from ground. However, in case suitable siting requirements are not met or in case of flood prone areas, the maximum height of such ARGs can be the rooftop of the one-story building. This must be done with concurrence from the local Authority i.e. District Magistrate/ Collector or officer nominated by District Magistrate/ Collector.

In the event the ARGs are installed at rooftops, stable and proper foundation along with secure and tamper proof environment, shall be ensured.

The area surrounding the ARGs, at least up to 5 meters, should generally be flat and open, with slope of less than 30°.

Possible obstacles must be situated at a distance greater than the height of the obstacle.

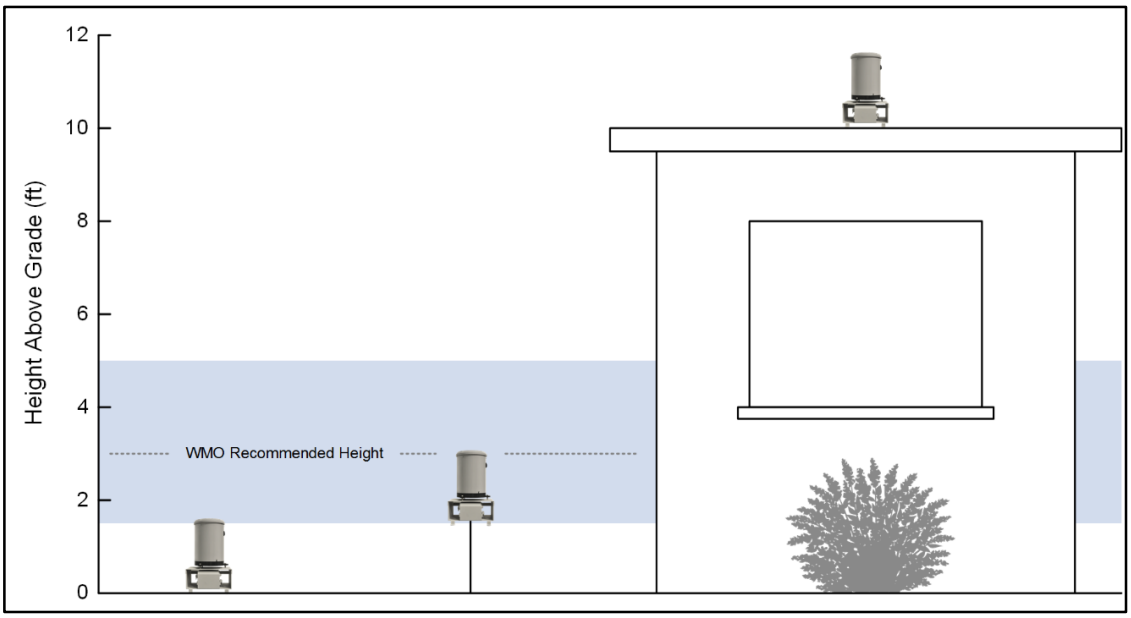

Figure 1: Most Common Rain Gauge Siting Criteria for height Above Grade *(Source: Kevin L. Enfinger et al., ADS Environmental Services)

1.3. Air Temperature and Relative Humidity (RH)

The standard measurement height of temperature and relative humidity sensors is 1.25 meter to 2 meters from the surface. The sensor must be enclosed in a radiation shield.

Ground covered with natural and low vegetation (<25 cm) representative of the region.

No irrigation or routine lawn watering system within 5m radius.

No significant heat source or reflective surface (buildings, roads, concrete surface) within 10m radius.

In case where 60 % of the RUA is covered by the water source or large-scale inland water, such locations shall be excluded from installation of AWS/ARGs.

Minimum distance from sensor to nearby other objects at least 2x the height of the object away.

1.3.1. Wind Speed and Wind Direction

The sensors shall be mounted on a mast at a height of 3 meters above the ground.

Surrounding obstacles must be at least 1.5 times their height away from wind mast.

Individual obstacles (i.e., shade, fence, short trees etc.), lower than 1.5 meters above ground can be ignored.

1.4. Data Acquisition and Transmission

1.4.1. Data Acquisition System (DAS) or Data Logger

A data acquisition system (DAS) or Data Logger is the heart & brain of the AWS station and shall provide a means to for collecting, logging and transmitting the weather data in a secure, reliable and efficient manner, while maintaining the availability, confidentiality and integrity of the data.

The data logger shall read data from a sensor, and store in an encrypted format, as per the Advanced Encryption Standard (AES) specification for the encryption of electronic data, for data security and to prevent unauthorized access to the data. The protocols for encryption & decryption of data are provided in Annexure XV.

It should have adequate number of analogue & digital channels and sufficient number of communication ports and shall be configurable and programmable remotely from the user end.

It must have open architecture to connect any commercially available sensor.

The software of the data logger shall be able to implement error handling mechanisms and remote updating to ensure the integrity of the data during collection, logging and transmission, and shall log any errors or exceptions.

Microcontroller/microprocessor-based technology shall be used for data acquisition or measurement.

Recording Timing: 08:30:01 am to 8:30:00 am (Todays data = starting from 08:30:01 am of previous day to 08:30:00 of measurement day).

Measurement of the weather parameters shall be conducted in the following manner:

Temperature	: Continuous (one minute)
Humidity	: Continuous (one minute)
Wind speed	: Continuous (one minute)
Rainfall	: Continuous

Data averaging period of the measurement shall be One Hour and the following parameters **(Table 7)** shall be recorded in the hourly summary:

Table 7: Parameters to be recorded in hourly summary

Parameter	Description
Tavg	Average value of the temperature measured in one hour (average of 60 records)
Tmax	Maximum value of the temperature recorded in one hour (out of 60 records). It will be reported as per IMD Norms
Tmin	Minimum value of the temperature recorded in one hour (out of 60 records). It will be reported as per IMD Norms
RH	Average value of the relative humidity recorded in one hour (Average of 60 records)
Wind Speed	Average value of the wind speed recorded in one hour
Max W Speed	Maximum value of wind speed recorded in one hour
Min W Speed	Minimum value of wind speed recorded in one hour
Avg W Dir	Average value of the wind direction in one hour
Rainfall	Cumulative (Total) rainfall recorded in one hour (sum of all the records in one hour)

The following parameters shall be recorded in the daily summary:

Table 8: Parameters to be recorded in Daily Summary

Parameter	Description
Tmax	Maximum of maximum temperature recorded in one day (out of 24 records)
Tmin	Minimum of minimum temperature recorded in one day (out of 24 records)
RH at 08:30 am	Relative Humidity of 08:30 am/Relative Humidity (Morning)/RH-I
RH at 05:30 pm	Relative Humidity of 05:30 pm/Relative Humidity (Evening)/RH-II
Wind Speed	Average value of the wind speed recorded in one day (average of 24 records)
Max W Speed	Maximum value of wind speed recorded in one day (out of 24 records)
Min W Speed	Minimum value of wind speed recorded in one day (out of 24 records)
Avg W Dir	Average value of the wind direction recorded in one day (average of 24 records)

Rainfall	Cumulative (Total) rainfall recorded in one day (sum of 24 records).

The data logger software shall be able to provide status values indicating information about the state of the connected sensors. This indication shall include both analog sensors as well as sensor with digital serial interface. For each sensor, there shall be a value in the variable status, which can be included in the report(s) and or monitored in order to produce an alarm, e.g., for monitoring purposes. The manner how the status information will be presented shall be freely user definable in the setup software (e.g., good, suspicious, bad).

1.4.2. Data Transmission or Reporting

Mobile telemetry shall be used for the data transmission. Data logger should be compatible with 4G and above networks. It shall contain active sim card for handling data communication redundancy.

The Data logger shall transmit the data directly to the WINDS portal which is owned and operated by DA&FW, GoI. Simultaneously, as a fallback, the same data as on WINDS portal shall be transmitted to other server maintained by the Government of India.

Data shall be transmitted on hourly basis i.e.; hourly summary of the data shall be transmitted to the WINDS portal.

Every AWS / ARG should transmit at least 90% of scheduled hourly data packets to WINDS Portal ensure data completeness. In case, data packets received at the WINDS Portal from an AWS / ARG is less than 90% of the scheduled data packets to be received for reasons other than Mobile Network Failure or similar reasons, it shall be deemed that the ARG / AWS is inactive for that particular day and no data charges will be given.

In addition to the parameters mentioned in **Tables 6 & 7**, the parameters viz, battery voltage, panel voltage, signal strength, IMEI number, time stamp, firmware version, device_id, latitude, longitude, shall be transmitted by the data logger to the server, in the form of a 'json' response.

JSON template for transmission of weather data from data logger to WINDS portal is as given below:


```
{
  "Maximum_Temperature": 30.5,
  "Minimum_Temperature": 15.2,
  "Average_Temperature": 22.8,
```

```
"Maximum_Relative_Humidity": 90.1,
"Minimum_Relative_Humidity": 45.8,
"Average_Relative_Humidity": 68.2,
"Average_Wind_Direction": "N",
"Maximum_Wind_Speed": 25.3,
"Average_Wind_Speed": 12.7,
"Rainfall_Hourly_Cumulative": 5.8,
"Rainfall_Cumulative": 20.3,
"Rainfall_Weekly_Cumulative": 35.1,
"Maximum_Solar_Radiation": 1200.6,
"Minimum_Solar_Radiation": 300.2,
"Average_Solar_Radiation": 800.4,
"Atmospheric_Pressure": 1013.2,
"Average_Soil_Moisture": 45.6,
"Average_Soil_Temperature": 18.7,
"Sunshine_Duration": 6.2,
"Dew_Point_Temperature": 12.3,
"Battery_Voltage": 3.7,
"Panel_Voltage": 12.1,
"Signal_Strength": 80,
"IMEI_Number": "123456789012345",
“Device_id": “123456“,
“Latitude": “22.771234“,
“Longitude": “77.281234“,
"Time_Stamp": "2023-04-18T15:30:00Z“
}
```


1.4.3. Power Requirements

The WIPs shall run the entire AWS/ARG network on solar and battery power. The system should be self-sustained, with fully solar power operated system with solar panels, battery bank and solar charge controller.

The battery must be maintenance free & it must be of such a capacity that the AWS/ARG shall run uninterrupted even in completely cloudy weather for at least 30 days.

The solar panel should be of adequate ratings to charge the battery during sun.

The Supplier must attach a detailed Power Budget Calculation taking care of solar panel and battery efficiency and sufficient safety factor of the system supported

with documentary proof during technical empanelment for power consumption of the station for minimum 30 days on batteries without any charging.

The detailed power consumption of each component of the AWS/ARG system must be clearly mentioned in the technical brochures to support empanelment.

2. Data hosting platform

2.1. WINDS portal

For better synergies in the processes of data collection, reception, monitoring, storage, processing, quality control and dissemination, a National level WINDS portal shall be established at DA&FW, GoI. All the data generated through WINDS shall be hosted on this platform which will include the existing as well as all future networks of IMD, State/UT Governments and other agencies, and will be shared among the stakeholders freely as per the data and information sharing policy of WINDS.

A digital platform/app for uploading the details of maintenance, verification visits at the AWS/ARGs locations by QAPs, WIPs and other stakeholders is being developed by DA&FW, GoI and the same shall be integrated and made available on real-time basis on the WINDS portal. It will be mandatory for all stakeholders to use the digital platform/app without exception.

Specific hardware and software shall be added to the WINDS portal as required.

Specifications and architecture of WINDS portal along with corresponding user manual will be shared separately by the DA&FW, GoI.

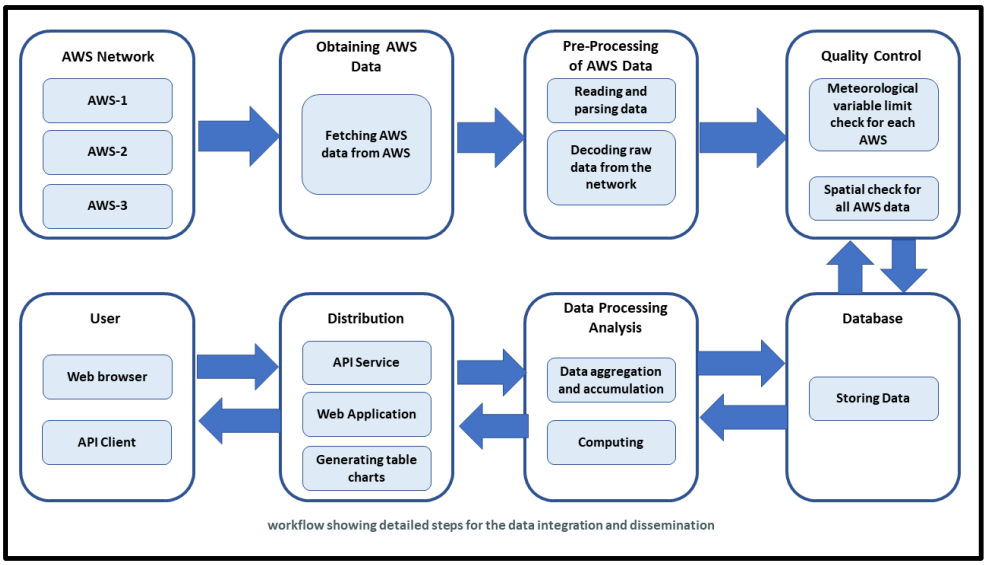

Figure 2: Data Flow through WINDS portal

A metadata database, which shall provide detailed information necessary for users to gain adequate background knowledge about the AWS/ARG stations and observational data, together with updates due to changes that occur, shall be a part of the WINDS database. The major metadata elements include the following:

a) Station information,

b) Individual instrument information,

c) Data processing information,

d) Data handling information,

e) Data transmission information,

f) Quality check information

A general flowchart of the WINDS data flow through the WINDS portal is depicted in **Figure 2**.

2.1.1. Reports/Tools/Dashboard

Status Reports: There should be an automatic report generation tool to monitor on status of the AWS/ARGs installed under WINDS. The Report Tool should be embedded with WINDS portal, shall allow users to create Report summaries. The Reports can be generated in formats such as a delimited text file, Microsoft Word, Microsoft excel, PDF, etc.

Visualization Tools/Dashboard: The WINDS portal shall be supported with advanced visualization and data analysis tools to monitor and review the real-time and historical data on multiple levels and shall provide at-a-glance view of key weather indicators.

3. Accreditation, Calibration and Maintenance of AWS/ARG network

3.1. Accreditation

WIP shall be responsible for the accreditation of the Instruments and sensors of AWS/ARGs, through accredited labs of IMD or NABL accredited laboratories in the country, as per the sensor and instrument specifications defined in this document, before commissioning of the AWS/ARGs under WINDS.

3.2. Calibration

AWS/ARG sensors with electrical components, along with signal conditioning modules and data-acquisition and transmission equipment, show accuracy drifts in time and, consequently, need regular inspection and calibration.

The calibration of the equipment may be done in-situ i.e., Field Inspection and/or under Laboratory conditions, by the WIPs at regular intervals and compulsorily be logged into the WINDS Portal.

The calibration interval is determined by the drift specifications given by the manufacturer and the required accuracy.

To maintain data quality, sensor calibration shall be performed by the WIPs as and when required and at least before every season both Kharif and Rabi with travelling standards.

The periodic comparison of AWS/ARG sensors with travelling standards at the AWS/ARG location is an absolute requirement to monitor the performance of the sensors. Before and after field inspections, the travelling standards and reference sources must be compared with the working standards which has traceability to SI units through calibration from NABL/equivalent laboratory. The maintenance service must be informed as soon as possible when accuracy deviations are detected.

Instruments at the end of their calibration interval, instruments showing an accuracy deviation beyond allowed limits during a field inspection and instruments repaired by the maintenance service, should be returned to a calibration laboratory prior to re-use.

3.3. Maintenance

Periodic maintenance of the AWS/ARGs, under the WINDS network shall be the responsibility of the WIP.

The WIPs shall depute a service engineer and adequate service staff at the district level, for quick response and turnaround time.

Response time, for emergency maintenance shouldn't be more than 3 days, in any case. SLA shall be followed.

The WIPs shall follow the following maintenance checks:

3.3.1. Preventive Maintenance

Preventive maintenance shall be done once in a quarter. However, during the four monsoon months (June-September), preventive maintenance shall be done every month. To minimize corrective maintenance and to increase the performance of an AWS/ARG, well-organized preventive maintenance shall always be practiced.

Onsite calibration shall be done each time the engineer visit the station for preventive maintenance

3.3.2. Emergency/Corrective/Breakdown Maintenance/ Trouble Shooting

WIPs shall monitor the AWS/ARGs installed under WINDS and attend to any kind of breakdown or emergency, proactively or on intimation of the concerned stakeholders. Emergency/corrective/breakdown maintenance must be attended within 2 days from the day of fault/breakdown reported.

3.3.3. Adaptive Maintenance

Adaptive maintenance of AWS/ARGs by WIPs is required to take into account the rapid changes in technology and the availability of spare parts after a few years.

The WINDS portal should be capable of providing access to online maintenance logs on a web portal for the maintenance of AWS/ARG.

The Standard Operating Procedures (SOPs) for Maintenance of the AWS/ARGs under WINDS are provided in Annexure C.

4. Calibration Processes and Methods for AWS/ARG Stations by the WIPs

Timely and frequent calibration of the sensor provides reliability, accuracy quality to the sensors as well as to the data. It can be done in the laboratory as well as on the field. In laboratory the sensors are calibrated under controlled environment. Whereas the field calibration has been done on the field in dynamic and uncontrolled environment. Equipment used at site shall be calibrated by NABL accredited laboratories. Reference standards used for verification also to be calibrated through NABL accredited laboratory. Field calibration can be done by two methods i) at actual field with travelling standards traceable to international standards through calibration from NABL Accredited laboratory and ii) By comparing with reference grade AWS station which has traceability to international standards through calibration from NABL Accredited laboratory. The sensors having tested, compared and calibrated by this method will be having traceability with reference standard AWS and Travelling standards used in this process.

4.1. Calibration Equipment

Figure 7: Reference standard AWS

Figure 8: Sensors collocated with Reference Grade AWS for field calibration and comparison on field

Figure 9: Reference Travelling Standard Kit for actual site calibration:

Figure 10: Reference Travelling Standard Whirling Psychrometer.

4.2. Calibration procedure

4.2.1. Standardized Procedure for Tipping Bucket Rain Gauge (TBRG)

Constant water flow generator of various intensities or rain gauge calibrator is used to calibrate the TBRG. These TBRGs ideally should have ability to generate constant water flow of 50 mm/hr, 100 mm/hr, 200 mm/hr and 500 mm/hr. Pulse counter is used to count the pulses generated by TBRG sensor for the various intensity flow of known volume.

i. Following environmental condition has been noted and reported during each calibration

   a) Date and Hour (start/End)

   b) Air temperature (°C)

   c) Water Temperature (°C)

   d) Atmospheric Pressure (hPa)

   e) Ambient Relative Humidity (%)

ii. The number of tests performed for each instrument, their description in terms of time units and/or number of tips has been documented.

iii. Relative error of TBRG"

The relative error is evaluated for each reference flow rate as:

$$e = \frac{I_{m-} I_r}{I_r} \times 100$$

where I_m is the intensity measured by the instrument and I_r the actual reference intensity provided to the instrument.

iv. Five tests or a minimum of three tests has been performed for each set of reference intensities, so that five error figures are associated with each instrument. The average error and the average values of Ir and Im are obtained by discarding the minimum and the maximum value of e obtained for each reference flow rate, then evaluating the arithmetic mean of the three remaining errors and reference intensity values.

4.2.2. Standardized Procedure for Air Temperature, Relative Humidity, Wind Speed and Direction

1. Simultaneous continuous collocated measurements with reference grade AWS sensors have been conducted for the calibration. The sensors calibrated by this method has been used to replace with the field sensor which has been detected drift or bias in on field calibration/testing with reference travelling standards.

2. Simultaneous long term (24 hrs) collocated measurements with reference grade AWS sensors has been conducted for the confirmation of the observed drift or bias in the field sensor during field calibration. Based on the result obtained from this testing the sensor has been handed over to the R & D embedded system unit for further decision i.e repair or discard the sensor.

3. Bias and precision were calculated using the equation below:

$$Bias = \frac{1}{n}\sum_{1}^{n}(S - R)$$

$$Relative\ mean\ bias = \frac{\sum_1^n (S - R)}{\sum_1^n R}$$

$$Precision = \sqrt{\frac{\sum_1^n (S - R)^2}{n}}$$

$$Relative\ precision = \frac{\sum_1^n |S - R|}{\sum_1^n (R)}$$

Where,

S = Sensor Value

R = Reference Sensor Value

n = number of samples.

5. Dispute resolution in WINDS – Timelines and Mechanisms

Since WINDS is being rolled out for the first time, it is not possible to visualise all disputes/issues at the time of framing of this document. Accordingly, provision is being made to handle disputes of both types, viz. those which are anticipated and otherwise.

As WINDS is a national initiative with a broad range of applications, different stakeholders who may raise disputes under the WINDS are:

a) Any stakeholder using WINDS data for implementing Government sponsored programme/study or research in the State/UT, which may include:
    i. State/UT Administration
    ii. Insurance companies implementing PMFBY & RWBCIS,
    iii. MITRs, TIPs and WIPs,

b) Any citizen of India, by intimation through Local Government Officer and/or the WLG.

A dispute may be raised by any of the above-mentioned stakeholders on the WINDS Portal or WINDS App, in case the protocols related to siting conditions of AWS/ARG, data recording and data transmission, maintenance etc., are not being adhered to.

Disputes, if any, related to WINDS implementation framework shall be handled by the concerned Nodal Department of the State/UT Government responsible for implementation of WINDS in the State/UT.

5.1. Siting Disputes

The State/UT shall notify and publish proposed AWS/ARG locations and name of concerned WINDS Local Guardian (WLG) and a copy of the same shall necessarily be uploaded on the WINDS portal and also displayed in the concerned gram panchayat office for public information.

Any dispute related to location of the AWS/ARG shall be raised within 7 working days of notification of the AWS/ARG location by the State/UTs through the WINDS app/portal.

The siting location of AWS/ARG shall be deemed to be accepted by all the stakeholders if no objection is raised within 7 working days of such notification of AWS/ARG locations by State/UT.

relevant

5.2. Data Quality Disputes

The data quality related disputes shall be resolved by adopting the standard quality control and quality assessment procedures as defined in WINDS manual.

Any dispute related to data, shall be raised within 7 days of receipt of data on the WINDS portal, through the WINDS app/portal.

The AWS/ARG data on the WINDS portal shall be deemed to be accepted by all the stakeholders if no objection is raised on data within 7 working days of receipt of data on the WINDS portal.

5.3. Escalation Mechanism

The escalation mechanism for dispute resolution shall be built into the WIND Portal/App and shall follow the following structure:

Level 1: The WIP's representative and the concerned Block level officer of the Nodal Department of the State/UT Government responsible for implementation of WINDS, shall review the complaint/objection and resolve the same within 3 days.

Level 2: If any of the stakeholders are not satisfied with the Level 1 resolution, the matter shall be escalated to a District level committee comprising of the concerned District Level Officer of the Nodal Department of the State/UT Government responsible for implementation of WINDS and an agro meteorologist from any government institution (IMD, ICAR, SAUs, KVKs, etc.), who shall review the objection raised and resolve the matter within 7 days of escalation, after verifying the AWS/ARG siting and/or data quality norms and shall notify the WIPs for taking corrective action with defined timelines not more than 7 days.

Level 3: Any issue which remains unresolved at level 2 of the escalation mechanism, shall be escalated to a State/UT level committee comprising of the authorized senior officer of the concerned nodal department of the State/UT, officer from IMD's Meteorological Centre's head office in the State/UT or Regional Meteorological Centres (RMCs), who shall review the escalation and pass a speaking order on the matter within 7 days of the escalation.

Level 4: The WINDS Committee shall act as appellate authority in case any dispute between the stakeholders is not resolved at level 3 of the escalation mechanism. Its decisions shall be final and binding on all concerned. For this, the WINDS committee shall call for a meeting of all the concerned stakeholders and external

experts, if necessary, within 7 working days of the date of receipt of appeal in which views of all the stakeholders shall be recorded. The WINDS Committee will hear the appeal and pass a speaking order within 15 days of the date of receipt of appeal, after hearing all the stakeholders' implementing WINDS.

In case, more than 10% of the total AWS/ARG locations in a district are affected due to siting or data quality issues, the WINDS committee can suo moto or on the recommendation of the State/UT or other stakeholders, can take cognizance of the matter and issue directions for resolution or serve a show cause notice or warning to the WIP.

5.4. RWBCIS/PMFBY Related Disputes

Any dispute pertaining to claim related or other issues under RWBCIS/PMFBY or other crop insurance schemes shall be referred to the appellate authorities mentioned under the corresponding scheme guidelines notified by the State/UTs and shall be resolved as per the dispute resolution mechanisms as per the relevant provisions of the operational guidelines of those schemes.

5.5. General Provisions related to other disputes

Data generated under WINDS shall not be compared with any other sources not notified by the WINDS committee.

Any dispute by the State/UT, WIP, insurer, or other stakeholders raised under the Dispute resolution mechanism of WINDS must be related to the technical aspects of WINDS implementation.

Disputes, if any, related to WINDS implementation framework shall be handled by the Nodal Department of the State/UT Government responsible for implementation of WINDS.

6. Penalty Provisions

Selected WIPs shall comply with the guidelines in WINDS manual and the instructions issued by the Government from time to time. Non-compliance to guidelines shall attract penalty.

Penalty will be imposed on the WIPs based upon the Service Level Agreement (SLA) indicators of compliance to specifications, timelines and data quality.

6.1. Service Level Agreements (SLA)

6.1.1. Delay in commissioning of AWS/ARG from stipulated timelines

The liquidated damage shall be 0.5% of procurement cost of weather data for the agreement period for delayed commissioning of AWS/ARG per week or part thereof, on pro-rata basis. The maximum amount of liquidated damages shall be 10% of the procurement cost of weather data for the agreement period.

6.1.2. Missing/Erroneous Weather Data

Missing of any of the weather parameters in a given day for a given AWS/ARG station shall be considered as erroneous data and no rental cost for such AWS/ARGs for the day shall be payable.

A penalty upon per day data rental cost of AWS and ARG respectively shall be levied for each day of erroneous/missing data irrespective of number of weather parameters. Thereafter, the penalty shall increase gradually with each day of continuous erroneous/missing data.

However mobile data network failure due to unforeseen circumstances, such as natural calamities, vandalization, etc., will be excluded, case wise on merits of situation while calculating the period of failure.

The penalty shall be calculated on the basis of the yearly rental cost of the AWS and ARG station data as per the table 9.

Table 9: Penalty Calculation

S No	No. of Days or part thereof beyond Timeline	Penalty (Percentage of Yearly rental cost of the AWS and ARG station data
1	Up to 3 Days	0.00%
2	4	0.50%
3	5	0.50%
4	6	0.50%
5	7	1.00%
6	8	1.50%
7	9 and more	2.00%

Maximum penalty per station shall be up to 10% of the annual charges. This calculation will be done on monthly basis.

Penalty amount shall be adjusted against the invoice submitted at quarterly intervals by the WIP.

6.2. Damages

Notwithstanding anything contained in WINDS manual, the WINDS Committee and/or the State/UT reserves the right to recover damages, without prejudice and in addition to the right mentioned under WINDS Manual or remedies available under law, incurred as a result of claims arising due to misuse of any information or data acquired during implementation of WINDS and/or the Agreement or inaccurate or incorrect data provided by WIP or breach of any confidential information, wilful gross negligence, breach of indemnity clause, wilful misconduct etc. Such right to recover damages shall be without limitation of any liability.

ANNEXURE A: Undertaking Letter for empanelment of an agency as WINDS Implementation partner (WIP)

[On the letter head of the Agency]

UNDERTAKING LETTER

Date: <DD/MM/YYYY>

To,
The Director,
Mahalanobis National Crop Forecast Centre,
Sahyadri Ave, Near Krishi Vistar Sadan,
Pusa, Pusa, New Delhi - 110012
Dear Sir,

Sub: Undertaking for Empanelment as WINDS Implementation Partner (WIP)

Having examined the Expression of Interest (EOI) documents including all annexure the receipt of which is hereby duly acknowledged, we, the undersigned, offer to provide the services as mentioned in EOI document in conformity with the said EOI document and the WINDS Manual 2023, as amended from time to time.

A. We understand that the EOI document provides generic specifications about all the items, and it has not been prepared by keeping in view any specific agency. We have verified and duly accept the eligibility criteria for this EOI.

B. We have read, understood and accepted the terms/ conditions/ rules mentioned in the EOI document and the WINDS Manual 2023, as amended from time to time.

C. We undertake that in competing for and if the award is made to us, in executing the subject EOI, we will strictly observe the laws against fraud and corruption in force in India namely “Prevention of Corruption Act 1988”.

D. We are not blacklisted currently by any Government or its bodies, nor debarred currently from dealing with any company or public entity.

E. We undertake to carry out the work, if selected, as per WINDS Manual 2023, as amended from time to time.

F. We hereby certify that we have submitted the following documents in the requested format along with this undertaking:

    1. Annexure A: Certificates of past experience in similar work.
    2. Annexure B: Proof of technical capacity and experience: The applicant must have installed, calibrated, maintained more than 1000 AWS/ARG sites, including siting, sensors and other equipment, in the last 3 years.

3. Annexure C: The calibration certificate of the sensors, electronics and other equipment provided by manufacturer.
4. Annexure D: Detailed power consumption of the sensors and power budget taking care of solar panel and battery efficiency and sufficient safety factor of the system for power consumption of the station for minimum 30 days on batteries without any charging.
5. Annexure E: Details of qualifications of technical personnel available.
6. Annexure F: Certificate of Incorporation/ Registration of Agency/ Memorandum and Articles of Association/Partnership Deed/ Proprietorship Deed/ Declaration of Proprietorship etc. as the case may be.
7. Annexure G: Copy of Income Tax Return for the last three Financial Years.
8. Annexure H: Solvency Certificate
9. Annexure I: Audited accounts (Balance Sheet and Profit and Loss Account etc.) for the last three years.
10. Annexure J: Copies of work contracts (of similar services) of minimum 10 Crores per annum, from Government/Autonomous bodies/PSU, private entities for the last three out of five years, including satisfactory performance certificate, if any.
11. Annexure K: Acceptance Letter on Company's letterhead which should be filled, signed, and stamped/certified properly.
12. Annexure L: Copy of PAN/TAN card and CIN.
13. Annexure M: Letter of Authority/Power of Attorney/Board Resolution/any other document indicating unequivocable authority to sign and submit the EOI.
14. Annexure N: Declaration regarding compliance with the standards and technical specifications as mentioned in the WINDS Manual 2023.

G. We certify that we have provided all the information requested by the WINDS Committee in the format requested for. We also understand that the WINDS Committee has the exclusive right to reject this proposal in case the WINDS Committee is of the opinion that the required information is not provided or is provided in a different format. It is also confirmed that the information submitted is true to our knowledge and the WINDS Committee reserves the right to reject the offer if anything is found incorrect.

Place:

Date: <DD/MM/YYYY> **Seal and signature of the Agency**

Annexure B: General Guidelines for AWS/ARG site preparation and installation

The quality of the AWS/ARG data & the life span of the AWS/ARG station is totally dependent upon quality of the installation. The following minimum norms should be followed for the installation of AWS/ARG.

I. Site Selection

1. The AWS is to be located on a level piece of ground, covered with short grass or natural earth ideally 5 m x 7 m in dimension. In cases of non-availability of space and in tough terrains, 5 m x 5 m would be sufficient with prior approval from State/UT Government.
2. The ARG is to be located on a level piece of ground, covered with short grass or natural earth ideally 4 m x 3 m in dimension. In cases of non-availability of space, of in case of flood prone areas the maximum height of such ARGs can be the rooftop of the one-story building.
3. The site shall be levelled, cleared of bushes, unplanned growth of trees, high-tension wires and other obstructions which may hamper the working of the AWS/ARG.

II. AWS/ARG Civil Work

1. Proper foundation should be laid for civil work at the site with RCC of 1:2:4, 2 feet below ground level to 0.5 feet above ground level for the Mast for installing AWS/ARG sensors and electronics, fencing and other equipment to be installed.
2. Mast for mounting the sensors should be made up of Aluminium or GI material of 1.5-inch diameter and gauge 2 or better.
3. The fencing of the AWS/ARG site should be done in such a manner that it ensures the safety of the instruments in the remote locations.
4. A suitable chain-link or barbed wire fence with a gate and Signboard at each AWS/ARG site shall be preferable.
5. All metallic components should be painted with standard quality-approved anti rust coating paints. Painting of fencing, chain-link and gate to be done properly at least once a year.
6. The approach to the site should be made free of obstacles like bushes, trees etc., should be beyond the reach of pets & the other animals and should be easily accessible by the installation and maintenance team.

III. Enclosure/Fencing/Chain-link

1. The height of the fencing for the AWS/ARG site enclosure must be at least 1.5 meters above ground level.

2. The fencing must be made over a cement foundation which is nine inches above ground level.
3. Fencing angle should be of size 50mm x 50mm x 6mm and pre coated with red-oxide. The total height of the fencing angle should be 2.3 meters i.e. (1.5m above ground level + 0.8 m below ground level).
4. Two MS angles must be used diagonally at each of the four corner angles of the site. The angles can be attached (with welding or the other appropriate means) from the middle of the existing corner angle to the ground. The depth of the support will remain the same as of main angle.
5. The dimensions of the fencing angle foundation should be 1.0 ft x 1.0 ft (length x width) and at a depth of 3 feet. The foundation should be square shaped.
6. Distance between each fencing angle should be 1 meter.
7. Chain-link mesh must be stretched and welded/fixed properly on the fencing angles.
8. A pipe or angle must be fixed on the upper part of the fencing to have a neat finishing and at the same time to avoid loosening of the fencing over a period of time.
9. The Chain-link fencing should be fastened with the help of screws fitted on the fencing angles. Alternately it may be welded neatly at four equidistant positions of 0.5 meter each.
10. Gate should have proper support of MS angles with additional support of crossed MS angles. Alternately gate should be fixed with the support of RCC pillars.
11. Suitable locking facility with 3 keys for safety purposes is mandatory. One set is to be handed over to the department.

IV. Tower/Mast Foundation

1. This is the platform on which the life of the AWS/ARG system is dependent. It should be strong enough to sustain the weight of the mast of the AWS/ARG instrument in adverse weather.
2. The mounting pole of TBRG shall be upright and making 90° angle to the ground and its height is 30 cm above from the ground.

V. Automatic Rain Gauge foundation

The foundation of the rain-gauge should be such that it can sustain the sensor even in the case of very heavy rain. The orientation of the sensor should not be perturbed in case of heavy rain.

VI. Anchor Rod and Guy rope

In case of AWS system, the anchor rod supports the AWS mast. It should be rugged & strong.

VII. Local Earthing

It is a common perception that most of the outdoor instruments, start malfunctioning because of the improper earthing. It should be done in such a manner that it protects the AWS from any earthing/static discharges issues.

VIII. Painting

To protect the AWS from environmental hazards & avoid the rusting, the AWS & its various components should be painted accordingly.

The fencing angles, chain-link/barbed wire fencing, gate and the sign board shall be suitably painted to avoid rusting and to withstand the vagaries of the weather.

Annexure C: Standard Operating Procedure for AWS/ARG Maintenance

AWS/ARG maintenance shall cover on-site maintenance of the hardware, software, sensors, electronics and all civil work. The following maintenance mechanism is proposed under WINDS

a) **Preventive Maintenance:** Preventive maintenance should be done quarterly and once every month for the four monsoon months (June to September).

b) **Corrective Maintenance:** Corrective maintenance should be on call there is no constraints. Corrective maintenance must be attended within 3 working days from the day of fault/breakdown reported

c) **Adaptive Maintenance:** Adaptive maintenance is required to consider the rapid changes in technology and the availability of spare parts after a few years.

d) **Calibration-** Both field inspection with traveling standards and laboratory inspection will be conducted at regular interval. For faster and quicker movement and response, spare parts sub-inventory needs to maintain at cluster level. Ensure that, you are always maintaining 10 % of the spare parts of total cluster in your inventory.

For both, Preventive and Corrective maintenance following guidelines / checklist should be followed.

1. Pre-Maintenance Check List:

The representatives of the WIPs shall ensure the that:

a) their mobile battery is fully charged.

b) they are carrying a toolbox containing all required of maintenance tools.

c) they have understood the breakdown issue and associated activities.

d) they are carrying required spare parts and accessories as per the breakdown call.

e) they have looked upon and are familiar with the operational history of the station to be visited.

2. Maintenance Check List:

Note down and report the overview of physical inspection of the site on hanging of wires, theft/damage of equipment, grass, civil and fencing status, new obstacle raised if any)

2.1 Sensors:

a) Ensure that north marking/arrow is aligned to the North direction of the station.

b) Check wear and tear of the anemometer.

c) Check anemometer connection and ensure its functionality.

d) Check the anemometer cable, if required change the cable.

e) Clean the anemometer connectors, connect to the DL and ensure its functionality again.

f) Ensure that the ATRH (Atmospheric Temperature & Relative Humidity Sensor) sensor is mounted at the height of 1.25 to 2 meter from ground

g) Check the connection of the ATRH sensor and ensure its functionality.

h) Check the ATRH cable. If required change the cable.

i) Remove ATRH sensor and clean the radiation shield.

j) Check filter cap of ATRH sensor. if dust accumulated on it change the filter cap. (Filter cap should be replaced after every three months.)

k) Clean the sensor gently and remove the dust and dirt accumulated on it.

l) Clean the ATRH connectors.

m) Ensure that you are installing ATRH sensor at the height of 1.25 to 2 meter from ground.

n) Check the functionality of ATRH sensor.

o) Check and compare ATRH sensor's instantaneous measurement with the Whirling Psychrometer's measurements. Take 3 to 5 sets of observations for the comparison. Report all the measurements in Designated mobile application.

2.2 Inspect the TBRG (Tipping Bucket Rain Gauge) and comment on:

a) Position of the TBRG: Whether it is upright or tilted/leaned

b) Whether any debris accumulated in the funnel of the TBRG.

c) Whether the bubble of the level meter is at the centre.

d) Rusting observed on any part of the TBRG.

e) Remove the debris from the funnel (if observed any) and clean the funnel.

f) Remove the rust (if observed any) with the help of spray WD-40.

g) Apply anti rust spray/oil/grease on the rusted part.

h) Ensure or adjust the level meter bubble at the centre.

i) Ensure that the buckets are moving freely

j) Calibrate the bucket with the help of syringe and ensure that both the buckets are tipped on 5 ml volume of water.

k) Ensure that the DL records and show 0.5 mm rainfall after every tip.

l) Check the TBRG cable if required change the cable.

m) Clean the TBRG connectors and ensure the functionality of the TBRG.

2.3 Power Unit:

a) Check solar panel connections.

b) Check and report solar panel voltage.

c) Check battery connection.

d) Check and report battery voltage.

e) Check and report battery output terminal voltage.

f) Clean and mount the solar panel.

g) Ensure that the solar panel is mounted on South direction and with proper angle.

2.4 Communication unit:

a) Check and report DL IMEI.

b) Check and report CCID of SIM.

c) Check antenna connection.

d) Remove SIM card and clean the slots softly.

3. Post-Maintenance Check List:

a) Ensure that all the screws are tightened properly.

b) Ensure that all the clamps are tightened properly.

c) Ensure that all the cables are neatly tied with cable tie or adhesive tape.

d) Ensure that you have selected correct location name from the drop-down list of the designated mobile application. Please reconfirm it.

e) Ensure that you have correctly reported material requirement.

f) Ensure that you have filled comment section of the application correctly and precisely.

g) Ensure that you have filled log card properly.

h) Check the stations communication with the server by reporting to your reporting manager.

3.1 Submission:

a) Ensure and confirm that all the fields in the maintenance report are filled completely.

b) Submit duly filled maintenance report to server. (Server will not accept partially filled report)

c) Site Leaving Permit (SLP) will be generated in the application after the successful submission of the maintenance report.

d) If it is not generated automatically, ask your reporting manager to generate the permit for leaving the site. Without this permit field engineers are not allowed to leave the site.

4. Important Aspects

a) For maintenance and supervision, a service engineer shall be deputed at District level.

b) Service provider will perform the preventive maintenance of AWS/ARGs, before, during and after the onset of Monsoons, this would be mandatory and, part of routine check.

c) Response time, for emergency maintenance shouldn’t be more than 3 days, in any case. SLA shall be followed.

d) Government of India or respective state government should be provided access to online maintenance logs on a web portal for the maintenance of AWS.

Annexure D: Quality Assurance in the activities of WIP

For the reliable and good quality outputs WIP should follow quality assurance system for continually improving the delivery and effectiveness of AWS/ARG installation, operations, verifications, data transmission and data integrity. This will be based on either the Quality Management System (QMS) outlined in the ISO 9001:2017 standards or the detailed description of the Quality Assurance System (QAS).

At the time of site selection and commissioning of the instrument WIP should do a self-assessment and commissioning report to be prepared. This report must be signed by the competent authority.

The QMS/QAS procedures of WIPs may have the following procedures:

- **Documentation Required: (indicative list)**
  a) Organisation Structure and Leadership
  b) Role and Responsibilities
  c) Standard Operating Procedures (SOP) of activities
  d) Human Resource Recruitment, training and periodical Evaluation
- **Infrastructure required to complete the work (indicative list)**
  a) Office, Store Facilities, Training Facilities
  b) Testing Facilities
  c) Calibrations Equipment
  d) Spare Parts
- **Logistics requirement**
  a) As per geo-locations specifications defined by respective agencies
- **AWS commissioning and Operational Team**
  a) As per geo-locations specifications defined by respective agencies
- **Procedures (indicative list) for internal QMS**
  a) Define Leadership & Team: District wise / Region / Head Office
  b) Define Role and Responsibilities.
  c) Internal Auditing procedures
  d) Risk identification & mitigation procedures.
  e) Complaints handling & root cause Analysis
  f) Corrective Action (CA) & Preventive Action (PA), Planned Do Act and Check (PDCA) cycle
  g) Self-assessment and review of all SOP & activities in a month/6 month
- **Indicative list of SOPs is mentioned below:**
  - Human resource recruitment / Tie ups, Training and evaluation.
  - Procurement of materials & Quality Check and Calibration. To cross check the all documents, standards, materials data sheets, installation /Chips/Sensors requirements.
  - Material transfer & storage requirements. (do's and don'ts)

- Site selection, documentation and drawings.
- Installation & verification of 1st 10 sets of data transmitted.
- Calibration of instruments. Defining the periodicity, cross checking records by handheld instruments to cross check the readings displayed at the AWS/ARG canters.
- Preventive maintenance and its log book
- Regular maintenance / replacement of chip/sensors recording each repair and replacement record and disposal SOP
- Obsolete sensors and discarded materials
- Data collection, Verification, QC check, Data transfer after due diligence & Authorised report to QC

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