



TERMS OF REFERENCE

FOR INTERNET SERVICE PROVIDE WITH VPN BUSUANGA DOPPLER WEATHER RADAR STATION

1. BACKGROUND

Busuanga Radar Station was installed last January 2017, serving Doppler Weather Radar Observation to the locality of Occidental Mindoro, Calamian Group of Islands (Busuanga, Coron, Culion, Linapacan), Cuyo Group of Islands (Cuyo, Magsaysay, Agutaya), Northern Palawan (El Nido, Taytay, San Vicente, Dumarang, Araceli, Roxas). The Doppler Weather Radar Observation in Busuanga started serving those areas since 2019. They have started providing weather advisories and warnings however, communication network remains their concern.

There is no leased line available in the area, and the wireless network shows poor connectivity for 5G and LTE communications. Also, no available provision for a wireless communication since the proposal from PLDT was declined due to their request of installing a tower higher than the radar building.

In the absence of the primary and secondary communications system available in the area of Busuanga Doppler Weather Radar Station. The proposal addresses the need to establish Radar Communication for Busuanga Doppler Weather Radar Station, through the use of Satellite communication system as a tertiary communication.

2. APPROVED BUDGET FOR THE CONTRACT (ABC)

The Approved Budget for the Contract is Six Hundred Thousand Pesos (600,000.00) inclusive of VAT and all applicable government taxes.

3. QUALIFICATIONS OF THE BIDDER

(Please refer to Section II. Instructions to Bidders, the Bid Data Sheet and Checklist of Eligibility and Technical Requirements of the Bidding Documents)

4. DELIVERY PERIOD AND PLACE OF DELIVERY

The winning bidder shall provide SATELLITE communication system with VPN at Busuanga Doppler Weather Radar Station at Busuanga, Palawan within 30 c.d. from receipt of the Purchase Order (PO) at the PAGASA Central Office located at PAGASA Science Garden Complex, BIR Road, Diliman Quezon City.

5. BID PROPOSAL CONTENTS

The prospective bidder is expected to comply and respond in accordance with the specific instructions to bidders and submit all the documentary requirements under the Checklist of Eligibility, Technical and Financial Requirements. The submission of documentary requirements must be properly arranged in order and with label.



The prospective bidder shall respond paragraph by paragraph and shall clearly indicate compliance to all the required specifications and shall specify the number of days or schedules within which to complete the delivery of all the goods required.

The prospective bidder shall be required also to include in this proposal, original descriptive literatures and unamended brochures of all equipment/materials to be supplied. Plans, drawings and diagrams/configurations must likewise be provided.

These details will allow the PAGASA-Bids and Awards Committee to fully evaluate and determine compliance from the prospective bidders.

The following are additional bidder qualifications which will be part of the technical bid documents that will be submitted by interested bidders:

For Satellite Communication Service Providers:

- The Service Provider must have a track record of existing subscriptions of the similar offered services in the Philippines.
- The Internet Service Provider must be registered to the National Telecommunications Commission as Value Added Service Provider as defined by NTC Memorandum Circular 02-05-2008.
- The Internet Service Provider must be able to provide a document that would present a valid engagement with an existing Satellite Service Provider or Operator (SSPO).
- The Internet Service Provider must show proof of SSPO Accreditation certificate from DICT
- The Service Provider should have undergone similar projects of similar nature. Similar Nature shall be contracts pertaining to the **“Supply, Installation, Commissioning and management of ICT Satellite Communication System and Information Internet Protocol Based Interconnectivity, data audio or video.”**

6. TECHNICAL SPECIFICATIONS

The winning bidder shall provide Internet Service to Busuanga Doppler Weather Radar Station at Busuanga. The leased service to be provided should have the following minimum specifications.

6.1 Managed Internet Service - this service shall provide managed internet connectivity using one (1) SATELLITE equipment per site location that must conform to the following minimum Required Technical and Functional Specifications:

- 6.1.1** The provision shall be dedicated to each identified location;
- 6.1.2** Download Data Rate of 5 Mbps (Forward Link) throughput with a Committed Information Rate (CIR) of at least 5 Mbps.
- 6.1.3** Upload Data Rate of 15 Mbps (Return Link) throughput with a Committed Information Rate (CIR) of at least 15 Mbps Roundtrip Latency – Shall have at most 550 to 600 milliseconds roundtrip latency on **unloaded** circuits;



- 6.1.4 The network must be able to support the following data applications, using the same Baseband equipment: data transactions and file transfer, Broadband IP supporting IP multicast and unicast, data broadcast;
- 6.1.5 The network shall support IP networked applications;
- 6.1.6 The system should have an embedded TCP acceleration; it is preferred that the offer will include an embedded solution at the SATELLITE;
- 6.1.7 Shall provide proof of satellite footprint covering sites under this tender with the following parameters:
 - 6.1.7.1 Effective Isotropic Radiated Power (EIRP) minimum of 50 dBW;
 - 6.1.7.2 Antenna gain-to-noise temperature (G/T) minimum of 5 dB/K;
 - 6.1.7.3 Satellite elevation look angle should be 130 to 150 degrees.
- 6.1.8 Remote SATELLITE Specifications
 - 6.1.8.1 Offered Remote SATELLITE must support Ku or K or Ka Band;
 - 6.1.8.2 Offered remote SATELLITE must support various BUCs and LNB for Ku or K or KA;
 - 6.1.8.3 Offered remote SATELLITE shall support minimum DVB-S or DVB-S2 or DVB-S2X with Automatic Code Modulation;
 - 6.1.8.4 Access Scheme - MF-TDMA or SCPC or Hybrid Terrestrial and Satellite access;
 - 6.1.8.5 The inbound must support the following 5-dimensional inbound adaptive schemes: power, modulation, FEC, Symbol Rate, spread spectrum;
 - 6.1.8.6 The inbound must support the following 5-dimensional inbound adaptive schemes: power, modulation, FEC, Symbol Rate, center frequency;
 - 6.1.8.7 Satellite orbital location must be within 130 degrees up to 160 degrees east orbital slot;
 - 6.1.8.8 Satellite's geographical coverage (footprint) is 100% of the Philippines (nationwide) for relocation purposes;
- 6.1.9 Teleport Hub Station must be in the Philippines. It must have a primary and secondary teleport with an uninterruptible power supply supporting the entire hub and RF system, redundant power generator systems, and the capability to operate for seven days without commercial power. The Internet backbone must be connected via redundant fiber optic cable directly connected to Tier 1 Philippine Internet Exchanges or Tier 1 International Internet Exchanges and, upon notice of its availability by DICT, to the DICT Pacific Light Cable Network submarine cable system. The service provider must show proof that its current SLA at the HUB station is equal to or greater than the guaranteed level of 95%.
- 6.1.10 The Service Provider must secure a Certification from its Satellite Provider certifying that it has acquired enough total bandwidth capacity to provide the project.
 - 6.1.10.1 The total bandwidth capacity must be more than or equal to the accumulated bandwidth requirement of the project.
- 6.1.11 Proper engineering practice, including proper and secure mounting of Antennas, for the installation of the site shall also be observed.

6.2 Satellite Modem — this service shall provide customer premise equipment with the following minimum specifications:

- 6.2.1 RF Input / Output Dual L band, F Connectors or single L band Connector for Input RF.
- 6.2.2 Data Interfaces:
 - 6.2.2.1 One 10/100/1000 Mbps Ethernet port, auto MDI/MDIX
 - 6.2.2.2 Operating Temperature 0° to +40°C (32° to +104°F)
 - 6.2.2.3 All Ports should support 802.1q VLAN tagging



6.2.3 Remote terminal ODU BUC power shall be at least 2W.

6.2.4 Remote terminal power shall be AC (110/220V).

6.2.4.1 Management Web based local management.

6.2.4.2 Remote Software Upgrades over the air.

6.2.4.3 SNMP v1, v2 Support.

6.2.4.4 Carrier rate - Offered modem must support 100 Ksps to 480 Msps

6.2.4.5 Any Supported Modulation BPSK, QPSK, 8PSK/8QAM, 6APSK/16 QAM, 32 APSK, 64APSK;

6.2.4.6 Coding must support LDPC, BCH;

6.2.4.7 For IP based applications, the network shall provide Quality of Service (QoS) based on the DiffServ standard or other similar standards;

6.2.4.8 DVB-S2X FEC shall be supported;

6.2.4.9 FEC Rate 1/4, 1/3, 2/5, 1/2, 2/3, 3/4, 5/6, 8/9;

6.2.4.10 Inbound Rates Symbol Rate must be minimum 100 Ksps Supported IPv4 & IPv6;

6.3 Equipment Maintenance

6.3.1 Ownership, maintenance and upkeep of the equipment are the Service Provider's responsibility and PAGASA shall not be responsible for any damage to Service Provider's equipment such as but not limited to voltage fluctuation, UPS burnt short circuit, any earthing issue, theft, and natural calamities, or other similar or analogous circumstances. Service Provider has to make necessary arrangements for insurance and other ancillary services;

6.3.2 Fault Management shall be proactively initiated by the Service Provider;

6.4 Electrical Power System

6.4.1 The provision of sufficient electrical power supply which will be used to support the Customer-Premise equipment (CPE) including but not limited to the Modem / Router, SATELLITE Terminal, Switch, Access Point present in the provision of this Project and shall be provided by the hosting facility.

6.4.1.1 The Service Provider shall provide the electrical connection from the CPE to the tapping point of the hosting facility.

6.4.1.2 The Service Provider shall provide UPS for emergency power system for proper shutdown and avoidance of failure due to sudden power loss and to serve as voltage regulator.

6.4.2 The provision of grounding system shall be provided by the Service Provider to prevent unwanted surge voltage or lightning occurrence in the Communication system.

6.4.2.1 The Service Provider shall provide proper grounding system and shall be properly bonded with the existing grounding system of the Radar station.

6.4.2.2 The Service Provider shall also include LAN surge protection device to prevent unwanted surge voltage entering the system.

6.4.2.3 The Service Provider shall guarantee grounding resistance relatively close to the ideal resistance of ZERO Ohms.

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6.5 Security

6.5.1 The Service Provider shall include VPN router to both end-to-end connections from PAGASA Central Office to PAGASA Busuanga Radar Station or vice-versa.

6.6 Antenna

6.6.1 The Service Provider shall include Parabolic Dish Antenna with a size of 1.2 m or larger.

"tracking the sky...improving the security"



- 6.6.2** The SATELLITE Antenna Gain should be 10 dB or better.
- 6.6.3** The Service provider should include LNB and BUC compatible with Ku or K or Ka Bands
- 6.6.4** The SATELLITE Antenna shall have a wind resistance of at least 60 m/s or better.
- 6.6.5** The SATELLITE Antenna should have a durable outdoor BNC cable.

7. INSTALLATION OF SATELLITE

7.1 The supply, installation, integration, commissioning, and maintenance of data links and Wi-Fi hotspots through SATELLITE Technology shall be implemented at Busuanga Doppler Weather Radar Station.

7.2 SATELLITE Equipment

7.2.1 The provider shall deliver and install the following equipment:

7.2.1.1 SATELLITE Antenna 1.2 m or larger.

7.2.1.2 Outdoor Equipment, BUC, LNB and pedestal assembly

7.2.1.3 Indoor Equipment, Modem, VPN routers for Site and another VPN router for receiving facility.

7.2.1.4 UPS of at least 1kVA for surge protection and voltage regulation purposes.

7.2.1.5 Operational Manual and guides for installation and orientation of the Antenna.

8. TRAININGS

The project shall support the capacity building for top-level managers, trainers, network administrators, and other technical personnel for maintenance and basic troubleshooting, as follows:

- 8.1.** Top-Level Management – training designed for the involvement of Top-level management for SATELLITE maintenance
- 8.2.** Network Administrators - training designed for administrators of the NMS to ensure acceptable availability of the services as well as prompt response as needed.
- 8.3.** End-users - training designed for the users of the system.
- 8.4. Maintenance and Support**

The Service Provider shall provide Maintenance and Support Services covering all defects for the services delivered (e.g., system bugs and data conversion/migration errors). These shall be acted upon, resolved, and/or replaced accordingly at no additional cost to PAGASA. The Warranty and Support services shall have the following components:

- i. Support and Problem Escalation Plan
- ii. Assignment of Focal Person and Contact Information
- iii. The Service Provider will provide resolution time based on the severity level of the reported support request (see matrix below):



Severity Level	Maximum Response Time (From the time problem is determined to the time of resolution)
High/Critical/Down	Four (4) Hours
Medium/Normal	Next Business Day
Low/General	Two (2) Business Days

- iv. In any case that the problem is not resolved for the highest severity, an escalation shall be made within 24 hours after the initial resolution has been made.
- v. For any replacement of parts kindly refer to the Service level of Agreement and penalties.

9. REQUIREMENTS AND QUALIFICATIONS OF THE SERVICE PROVIDER

9.1 Similar Projects - The Service Provider should have undergone similar projects of a similar nature for satellite-based broadband delivery methods for GIDA sites because of the terrain and remoteness of these locations.

9.1.1. "Similar nature" shall include installation of ICT equipment and/or satellite- based broadband equipment, and contracts pertaining to the supply or management of systems providing connectivity solutions such as internet service or broadcast of data, audio, and/or video over/via satellite.

9.2. Franchise Requirements - Non-franchise holders may participate in this tender, subject to compliance with relevant rules and regulations under the Implementing Rules and Regulations (IRR) of Republic Act (RA) Number 10929 or an Act Establishing the Free Internet Access Program in Public Places in the Country and Appropriating Funds Therefore, particularly with respect to the provisioning of commercial services outside the Project. As such, the Service Provider/s must be a registered value-added services (VAS) provider with the National Telecommunications Commission (NTC).

9.3. Licenses - Service Provider/s shall be registered with the National Telecommunications Commission (NTC) as value-added Service Provider. The Service provider shall also secure a permit to operate to NTC for the permit to operate satellite communication service for Busuanga Radar Station if necessary.

9.4. The Service Provider must submit a Certification from a Satellite Provider or duly accredited distributor in the Philippines that it has the available bandwidth to service the project

9.5. The Service Provider/Satellite Operator must have SSPO.

9.6. The Service Provider must have ISO 9001



- 9.7. The Service Provider must have an experienced deploying more than 200 Satellite in Geographically-Isolated and Disadvantaged Areas (GIDA).
- 9.8. It is a requirement for the contractor to completely respond to all the specified items in the compliance matrix provided in this document. This shall help evaluate the compliance of the contractor to the requirements.
- 9.9. Part of the eligibility documents is a certification that the contractor has presented their proof of concept of the project and has met the criterion set by the technical specifications.

10. PAYMENT TERMS AND SUBSCRIPTION DURATION.

- 10.1. The payment for the CONTRACTOR shall be given in this following scheme, monthly billing, upon the completion and submission of the required deliverables, subject to the provisions of the section 62 of the 2016 Revised IRR of RA 9184.
 - 10.1.1. Revision of payment scheme can be changed upon the agreement of both parties Contractor and End User.
- 10.2. The contract duration shall be six (6) months starting from the start date of regular data sending of radar data. Renewal of contract shall be conducted one (1) month before the end of the contract.
 - 10.2.1. The End User shall provide recommendation for the renewal of the contract.
 - 10.2.2. The CONTRACTOR shall provide the monthly connectivity summary as part of the attachment for renewing the contract.
 - 10.2.3. The start date will be 1 day after a complete day of testing radar data transmission and shall be properly documented.

11. SERVICE LEVEL AGREEMENT AND PENALTIES

- 11.1 In case uptime falls below the guaranteed level during deployment, PAGASA shall impose a penalty on the payment for each percent below the guaranteed level of 10%.
 - 11.1.1 A service availability / uptime average of less than 20% shall entitle the PAGASA with 100% service rebates computation for that certain period / month.
- 11.2 The Service Provider shall ensure 90% uptime for all services.
 - 11.2.1 Penalty/rebates on payment will be levied on the term where downtime/outage occurred;
 - 11.2.2 Computation of allowable downtime shall be based on a 24-hour, 7 days a week (24X7) delivery of service;
 - 11.2.3 In the event of downtime, providers will be penalized depending on the duration of downtime in minutes. *(Refer to Annex: Sample Computation of Rebates and Service Credit Equivalence)*
 - 11.2.4 Downtimes/outages cause by fortuitous events such as those of force majeure and/or armed conflict shall be excluded from the SLA calculation. Restoration of services shall be done in no more than seven (7) days after access to the site/area is possible or allowed. Certification from the concerned agency shall be necessary to exclude the said downtimes/outages by reason of force majeure and/or armed conflict.
 - 11.2.5 For the testing of the delivered bandwidth, a Speed test or iPerf result of no less than the required CIR throughput per hotspot shall suffice. Other bandwidth testing sites in



lieu of speed test can be accommodated as well, so long as approved by PAGASA prior to actual testing.

- 11.2.6 The Service Provider shall provide a cloud-based, subscription-based security which blocks proliferation of security threats including malware, phishing, crypto mining and Botnet command and control attacks/callbacks, as part of compliance to Republic Act 10175 or the “Cybercrime Prevention Act of 2012”;
- 11.2.7 In case of downtime due to mechanical or equipment failure, the service provider shall act according to the level of severity and provide acknowledgement report made by the client either via text, phone call or email, and shall be addressed within 24 hours for the resolution or action towards the maintenance.
- 11.2.8 For corrective maintenance, when there is a necessity of replacing parts, the replacement shall be borne by the service provider, provided that the contract of subscription remains active.

12. WARRANTIES

- 12.1 The bidder warrants that it shall strictly conform to all the Terms and Conditions of this Terms of Reference.
- 12.2 Service must be available 24 x 7 days continuously.
- 12.3 All services shall be an ongoing perpetual service at the fixed monthly rate, until such time as PAGASA decides to terminate the service. Termination of the service shall require PAGASA to give a minimum of 30 days advance notice. The minimum period for the service/contract shall be 6 months for the initial subscription.
- 12.4 The warranty of satellite communication equipment shall be valid based on the duration of the contract.
- 12.5 The winning bidder shall neither assign, transfer, pledge nor subcontract any part or interest therein.