Millennium Development Authority (MiDA)

RE: PROCUREMENT OF METER MANAGEMENT SYSTEM (MMS) FOR ELECTRICITY COMPANY OF GHANA LIMITED (ECG)

Bid Ref: 5130400/IFB/CB/04/18

Final Clarifications_MMS 280618 (002)1&3

1 About the Eligibility:

No.	Article	Page	Tender Requirement	Clarification Request	Answers
				Hexing is the a manufacturer of most of the	Yes. If only your product meets the specification as well as the requirements.
				system software and metering equipment and	Cooperation with local company is not a mandatory requirement.
				provider of service in China, if the origin of	
1	Eligible Goods	20	5.14 The origin of materials, equipment, and services is distinct	the equipment and service must distinct	
	and Services		from the nationality of the Bidder.	from the nationality of bidder, does it mean	
				that we can bid with our own equipment	
				and service? We must cooperate with a	
				local company to bid?	

2 About the systems:

			• Tariff		
	2.1.2.3.8		The following represent the features for Tariff configuration. It shall be	Does it mean that the token shall be send	Yes. The token shall be sent remotely to the meter.
1	Functional	372	possible to change all the tariff related parameters through a Recharge	to the meter by token remotely?	
	Specification		Code remotely using GSM / GPRS.		
			• Utility Standing Charges		
	2.1.2.3.8		The MMS shall be programmable to allow for collection of electricity sales	1. How do the utility collect the Utility standing	The MMS shall be configured to allow utility standing charges.
2	Functional	373	and the deduction of Utility standing charges and other levies per month as	charges?	
	Specification		per approved tariff by Government.		
3	2.3.4.1 Vending	406	• Replacement of existing on-line vending machine	1. Where is the existing vending machine?	The list is provided in the IFB on page 556; Site Tables under E. Implementation Schedule of Section VII.
	Station				
			Mobile Engineering Client		
			The systems shall support and interface for 3 online, GPRS-based mobile		
	2.3.4.2 Vending Software Specifications		meter engineering applications. The application will as a minimum be		
			used to perform key change tokens, clear tamper tokens, clear credit	1 Can you please explain "replacement	"Replacement credit" involves the transfer of credit from an old/faulty prepayment meter to a new prepayment meter.
4		411	tokens and replacement credit. Access to the mobile management client	credit" in detail?	
			application shall be user access controlled via the central management		
			server. All tokens shall be generated centrally on the server, only for		
			existing meters on the server.		
			Hardware		
			The Supplier shall familiarize himself with the existing Vending Systems		
	2.3.4.2 Vending		hardware utilized by ECG and take this infrastructure and systems into	1 Can the utility provide the existing	1. The existing hardware list is not needed as you will not quote for it.
	Software		account in the proposed vending solution offered.	hardware list?	
5	Specifications	414	The vending system shall operate on a standard, readily available, PC-based	2. Is the security module with USB port acceptable?	2. No.
			machine with no special modifications required to any parts.		
			The Supplier shall provide a standard STS security module solution		
			operating with a 64-bit PCI-based PC motherboard.		
			Transaction Switching		
			The system shall include as an additional option the capability to direct		
			transaction requests from vending clients to different services databases.		
			Bidder to indicate whether process is manually done or automatically.		
			The transaction switch shall include a billing system where different		
			commissions for different services as well as vendors could be calculated.		
			The transaction switch shall include vendor credit management tool		1. The transaction switching will be implemented as a module in the software suite.
	2.3.4.2 Vending		allowing upfront vendor to be managed.	1.Where shall the transaction Switching be implemented? How it works?	2. Various options have been given in the IFB page 464 for its operations under 2.3.4.2 of Section VII.
6	Software	416	The transactions switch shall either include, as an option, or be able to		
	Specifications		interface to an electronic fund transfer (EFT) switch to facilitate		
			credit/debit card payments.		
			The EFT option shall include a secure web site for selling services.		
			The transaction switch shall allow for various service providers of mobile		
			technology to interface seamlessly to the transaction switch.		
			The transaction switch shall allow a SMS (GSM) based message to transact		
			with the switch.		
			It shall have the functionality to print a message on the token of at least		
	2.3.4.2 Vending		400 characters, which can be customer specific, or a general message to all	Does it mean that the message shall be printed on the token receipt?	Yes. The message shall be printed on the token receipt.
7	Software	419	customers.		
	Specifications		It shall be possible to automatically print a message on the token advising		
			the customer of any problems, (e.g., an RD cheque, outstanding or		
			insufficient funds tendered).		
			• Vouchers generated by the system for issue to customers must contain		
	2.3.4.2 Vending		the information as per Annexure A and must at least be similar in terms of	1. What is the business process of Voucher-based vending?	The business process of Voucher-based vending is captured under the "Payment System" in IFB document page 468 under 2.3.4.2 of Section VII.
8	Software	421	the lay- out.		
	Specifications		The capturing of all transaction types shall form part of the testing and		
			commissioning process.		
				Does the CENTRAL MMS also need deploy the	Yes. The Central MMS deploy the vending System.
				Vending System ?	
	2.2 Network and		The diagram below illustrates the schematic drawing between the meter	Does the RVS provide the vending service	Yes. RVS provide the vending service through querying the vending system of RCC.
9	Communications	375	and the management at the primary and secondary data centers.	through querying the vending system of RCC?	
	Specifications			Does the vending system of RCC shall periodly	Yes. The vending system of RCC shall synchronize near real time the data of the central MMS. It is indicated in the IFB document under 2.3.2.2 of Section VII of the bidding document.
				synchronize the data to the Centre MMS?	
			a) A Centralized Meter Management System (AMI meters and STS		
	1.1 Business		Prepayment Meters conforming to IEC 61850, IEC 61970 and relevant	1. Please confirm that if the Centre MMS	The central MMS includes MDM system, the vending system and MDC system.
	Requirements to		standards) based on an open protocol system consisting of two servers,	include MDM system, MDC system and Vending system?	
10	Be Met by the	351	one for the Primary site located at ECG Project Office, Accra and the other		
	System		for the Recovery site located at ECG Legon District Office, Accra;		
			b) Two Regional Meter Control Centres (RCCs) at Accra West	1. What is the corresponding relationship between the 40 points of sales and the two RCCs?	1.There are two regions; Accra East and Accra West Regions. The two RCCs are located in the Accra East and Accra West Regions . The 40 points of sales shall be corresponding to the RCC of Accra West Region.
			Avenor office and Accra East Makola office all fully integrated		
11			with the central MMS	2. What is the relationship between	2. There shall not be separate vending system for the RCC as per this project. The RCCs are new system. The relationship between the vending system of central MMS is working on near real time data synchronization
				vending system of RCC and the vending system	
				of Centre MMS? Does they need data synchronization?	
				3. Does the vending system in this project shall	3. There is no existing vending system of the RCCs. The RCCs are new system to be introduced by this project.
				integrate with the existing vending system of the RCCs?	

			c) Forty (40) Vending Stations based on an open protocol		
			system and interfacing with the MMS; The RVS provides access		
12			for vending, management, administration, financial and		
			engineering control of Prepayment Meter systems. The RVS for		
			the purposes of vending can be located at different places as		
			per Consumer convenience.		
			4.4.1 The Technical Proposal shall be divided into the following chapters:		
			(a) MMS Solution Overview	1.Please explain in detail about item (d) System	
	4.4 Form TECH-4		(b) MMS Technical and Functional Features	Integration / Data Migration, the data	Integration of ECG's existing vending systems shall be treated as Support Services to ECG. See A5 Schedule 8 of the Price Schedules under Section IV of the bidding document. There shall be no data migration associated with this activity.
13	Preliminary	100	(c) Work Plan, Approach and Methodology	migration between which systems?	
	Project Plan		(d) System Integration / Data Migration		
			(e) Resource Planning		
14			4.Telecommunication Services	1.Please explain the Telecommunication	Telecommunication services includes terminating of the fibre optic links, the mounting of GPRS modems,etc. ECG has already laid fibre links to these centers. Bidders shall not be responsible for fibre links but shall be responsible for the GPRS modems.
				Service includes which services?	
15			For all the system hardware and software	As most of the IT hardwares and softwares specified in the tender document are with old version, if we want to update to the new versions, is it acceptable?	Yes. If only what is being provided meets the purchaser's minimum requirement. Updating to newer versions is acceptable.
3. About the meter:					
			Bidders shall offer internal power supply for modem, but bidders should	1.Our meter support internal modem without	Internal modems are not acceptable. Meter must have RS 485 communication ports for communication between meters and via GPRS to the MMS. The UART port is not acceptable.
			ensure that the modems have internal communication system through RJ	external power supply, the communication port	
			Port. Modems should be replaceable in case of any fault in the	between meter and modem is UART port, is it acceptable?	
1	Type of Meter	1	communication modem without disconnecting or powering off the meters		
			from circuit		
	Display (No. of		Bidders must confirm single or multiple displayed parameters through	1. We support displayed parameters through	No. The displayed parameter shall be at least 10-digit LCD.
	digit and characters		symbol/legends with minimum 10-digit display. Display should also have	symbol/legends with 8-digit display.	
	height)		features to show legends for different tampers.	In general,8-digit LCD can display every energy	
2		15	during the factory acceptance test of the meters.	This will be verified reading, and we support different	
				unit:kWh,mWh.is it acceptable?	
3	Carrying arrangement	21	Handle or suitable slot for carrying	1. Pls explain this in detail.	Depending on size, suitable handling facilities shall be provided.
4	Sealing arrangement	23	2 nos. on meter body, 2 nos. on terminal cover, 1 no. on optical port, 1 no. on MD reset button All seals on front side of the body.	1. Our meter is not with seal on optical port, but communication was encrypted, is it acceptable?	It is not envisaged that the optical port will be used frequently. Sealing is required and the Bidder must comply with requirements.
	Name plate			1. Name plate is printing on the meter cover, is	Bidders must comply with the specification.
5	fixing arrangement	24	Beneath the meter cover.	it acceptable?	
6	Display – Push Button display mode	32	LED/LCD segment check.	1. Does it mean the full display?	Yes. The full display requirement is described in bidding document in pages 216, 228, 518 &528.
7			Rising demand with elapsed time.	1.Can you please explain this in detail?	1. This is Apparent demand within a selected integration period. 2. The cycle should be programmable, default 15 minutes.
8			Meter Reading count	1. Can you please explain this in detail?	1." Meter Reading count" refers to the resolution.
9	Communication port	35	RS-232 with modem power supply with 2G/3G modem	Our modem do not need external power supply, is that ok?	That may be OK, but external Modem are required.
	Meter shall have provision to be				
	read in the absence of power		To be provided. It should require no opening of meter cover/terminal cover	Does it mean meter reading through LCD	No.
10		44	/ seals etc.	display?	
11	Tamper persistence time	51	5 min ±10 sec	1. what kind of tamper is it?	Please, refer to Answers to clarification request of 22 06 18 providing information on Missing Items References Sections IV&VII(PA220618) Annex E on TAMPER AND FRAUD PROTECTION FEATURES. The clarifications were issued to prospective Bidders on 22 June, 2018.
4 Others					
			SECTION IV: Network Security and Functional Requirements.		
12			The following is a Security Requirement under Section IV above. 3 System Requirements: Use of cryptographic module mechanisms for authentication consistent with FIPS 140-2 and NIST	Is it Ok to submit the Bid for the MMS System whilst we work on getting Compliant with the FIPS 140-2 Certification (AND ANY OTHER SECURITY CERTIFICATIONS)?	May not be ok.

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Bid Ref: 5130400/IFB/CB/04/18

Request For Clarification_MMS 280618 (002)2

Sl.	Previous Answer	Question	New Answer
3	The Supplier shall provide an SMS Server at ECG side as per the requirements in FORM MMS 11 (page 189); this shall interface with an SMS Server of the Telecom Service Provider(s) via SMPPv3 protocol.	a. What's the purpose of SMS server? b. Is there VPN connection between mobile network operator and MMS Primary/Recovery sites already? c. If not, is the establishment of the VPN connection included in the scope of the Bidder?	a) Page 445 of the bidding document defines the purpose. b) Yes. MMS (GPRS/ Fibre) – APN (Mobile phone network) – 6 x 5Mb/s c) Yes. The establishment of the VPN connection is shown in the scope in the bidding document in page 423.
14	The Integration of the ECG's existing vending systems to the MMS is indicated as options (integration to other systems) and the relevant price shall be provided as requested under Schedule 6 (see item 86)	If the integration is optional and the Bidder decides not to provide the integration, On-line payments by vendors should be possible for all prepayment meters (proprietary and STS) is not possible, especially for proprietary prepayment meters.	The 240 STS meters and AMI meters will be tested and integrated. The existing ECG STS meters will be tested for conformity but not integrated.
86	On-line payments by vendors should be possible for all prepayment meters (proprietary and STS).	In the case, will the meters be exempted from being integrated into MMS?	The proprietary meters shall not be tested and not integrated.
17	This has been included in the FORM MMS as Amendment 4 in an Addendum.	The GSM/GPRS modem for meter specified in Amd. 4 does not have Form MMS no. such as Form MMS 3 – Communications System – USB Modem. Please specify proper Form MMS no.	The Communications System (technical requirement 2.8.3 MMS Communication System-USB) has been modified to include GSM/GPRS requirements. Please refer to Amendment 4 for details of additions to requirements and additions to the corresponding Tech Form.
38	a) Yes, RCC shall support an initial 200,000 metering end points whilst centralized MMS shall support an initial 3,000,000 metering end points.	Do these answer mean license only? Or do all the hardware and software in RCC and MMS also have to have the processing capacity for handling the mentioned metering points?	All hardware and software including licenses shall be provided.
100	200,000 metering points for each RCC and 3,000,000 metering points for the central MMS scalable to 6,500,000.		
103	3,000,000 metering end points initially but with scalability to 10 years projection of 6,500,000 metering end points.		

40	c.) The following links are to be provided (cost to be included in bid) by the Bidder through the Telecom Service Providers - New Leased Fibre Links: 1. Primary Site to RCC (Avenor) 2. Recovery Site to RCC (Avenor) 3. Primary site to RCC (Makola) 4. Recovery Site to RCC (Makola)	a. Is there VPN connection between mobile network operator and RCC sites already? b. If not, is the establishment of the VPN connection included in the scope of the Bidder?	a) No. VPN connection between mobile network operator and RCC sites does not exist. b) Yes. The scope does cover the VPN connection to the mobile network operator. The VPN requirement is clarified and modified as follows: There shall be establishment of the VPN connection/capacity to the RCC from the mobile network operators and reads: • MMS (GPRS/ Fiber) – APN (Mobile phone network) – 12 x 5Mb/s instead of • MMS (GPRS/ Fiber) – APN (Mobile phone network) – 6 x 5Mb/s

55	1) Yes. The quantities are zero so it will not add to the total price.	The quantity is zero, so that the price shall not be added to the total price. Do we still need to provide response to the corresponding Form MMS nn?	Yes. Provide response to the correspondence Form MMS nn and provide price quote but price quote shall not be added to the total price.
94	4. The twenty (20) prepayment meters to be supplied from each manufacturer shall consist of: a. Ten (10) Single phase prepaid meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively. b. Eight (8) Three phase prepaid meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively. c. Two (2) Three phase CT-connected meters for large commercial applications, with a rated current and maximum continuous current rating of 5 and 10A/phase respectively. 5. Prepayment and AMI meters.	a. and b. explicitly specifies prepaid meter, but c. does not explicitly specifies prepaid meter. So that 20 prepayment and AMI meters each should be specified as: The twenty (20) prepayment meters to be supplied from each manufacturer shall consist of: a. Ten (10) Single phase prepaid meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively. b. Ten (10) Three phase prepaid meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively. The twenty (20) AMI meters to be supplied from each manufacturer shall consist of: a. Ten (10) Single phase AMI meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively. b. Eight (8) Three phase AMI meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively. c. Two (2) Three phase CT-connected AMI meters for large commercial applications, with a rated current and maximum continuous current rating of 5 and 10A/phase respectively.	The 20 prepayment and AMI meters will be supplied from each manufacturer according to the specification below: a. Ten (10) Single phase prepaid meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively. b. Eight (8) Three phase prepaid meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively. c. Two (2) Three phase CT-connected meters for large commercial applications, with a rated current and maximum continuous current rating of 5 and 10A/phase respectively.

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ANNEX 2

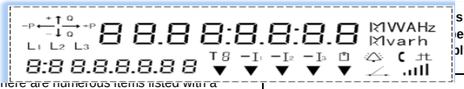
There are many repeat queries, out of which we have tried to present only the important ones

Sl	Reference			Question	Answer	Interpretation 1	Interpretation 2	Interpretation 3	Interpretation 4	Answers to Query on Clarification (Answer 2)	Queries on the clarifications	Answers to Query on Clarification (Answer 3)
	Page (Bidding doc)	Section	Item									
7	428	Section VII. 2.3.1.2.4	GIS coordinates acquisition for the meter	Allow for GIS coordinates acquisition for the meter (Section 2.3.1.2.4) Question How to implement the GIS function? Does the GIS function needed to be added in the meter? Please explain how to achieve this function. Please clarify.	**Yes. The GIS acquisition function should be resident in the meter.**	Meter should have GPS Receiver to be able to Identify its GIS Location	The installer enters the GIS information on the meter at the time of meter installation			**It is *mandatory* that GPS Receiver be included.**	**NOTED**	
8	440	Section VII. 2.3.2.1	2.3.2.1 Meter Management	The databases shall NOT be encrypted as the design of customized reports is essential. The system shall allow for the generation of engineering tokens for the following application: New meter installation: tokens for a limited number of units in the meter for activation and validation of the installation. Repair/checking of meters where customers indicate that the meter has failed - provision of small quantify energy units.	**The Engineering tokens shall be specific to the meter and shall comply with *IEC 62055- 41 - Electricity metering – Payment systems – Part 41: Standard transfer specification (STS) – Application layer protocol for one-way token carrier systems,* as in section VII page 406.**	The IEC 62055-41 is an standard for STS prepay meters and provides for only "Unit (kWh)" based transactions. Which means **MIDA will coordination with PURC to change all the tariff's to Flat Rates. To facilitate implementation of system based on IEC 62055-41**	the **current tariffs in Ghana are slab/ subsidy/ calculations based. Which is not covered under IEC 62055-41**. Hence the meters shall be capable of meeting the requirements of above beyond IEC 62055-41 to meet PURC tariffs. **And the standard to be followed will be declared later by MIDA**			**We make reference to IEC 62055-41 edition 2 which makes provision for currency based tokens.** **The 120 meters being supplied by the MMS Bidders should comply with this requirement.** **The meter firmware should be capable of implementing the PURC step tariff structure.**	**62055-41 edition 2.** **This edition has provisions for Currency based tariff but "ONLY FLAT TARIFF". a note on the subject with references to the standard IEC 62055-41 edition 2 is attached. In case you like any further clarification on the subject you can write directly to IEC committee or STS association.** **The SLAB/ time of use / SUBSIDIES/ LEVIES etc. are not covered under mentioned standard. Hence current PURC tariffs cannot be implemented using meters as per this standard.** **In View of the above, which standard is to be followed for implementation of prepay metering?**	Tariffs, including the current PURC tariff structure, shall be implemented at the MMS level and not on the meter. Refer to 2.1.2.3.8 of Section VII of the Bidding Document. No challenges are expected.

				Report facilities must include parameterization, data printing by range of dates, or other classifications based on parameters used into the Vending System (Section 2.3.2.1) Question: Engineering tokens: does the TOKENS need to be general-purpose for all meters?								
10	490	Section VII. 2.8.3	MMS Communications System - USB Modem	MMS Communications System – USB Modem The USB Modem need to do what function? Please clarify.	**The USB modem shall be plugged in to the vending work station to allow web connection to the Meter Management System.**	Vending station **should not get internet connectivity via Wireless/ Ethernet** and should use only dial-up modems for internet connectivity	Incase of non availability of USB dial-up modem the vending shouldn't take place	Incase of Non availability of mobile network via USB modem, the vending station should not connect to MMS		**The requirement is for the vending stations to be provided by the Bidder to have Ethernet or modem connectivity.**	**Noted**	
13	553 - 555	Section VII. E. Implementation Schedule	Schedule and Schedule Table	There is not any explicit allocation of time/effort in Phase 1 for: (a) Integration of MMS to existing Indra CMS and (b) 20 AMI and 20 PPM sample meters from the separate bidding process (mentioned in "Important Note" pg 551)? (c) Data migration from existing vending systems to MMS? Please can MiDA provide for this?	**a) This is not indicated in Implementation Schedule, but the Integration of MMS to the existing Indra CMS is planned to run concurrently with the Testing of AMI and Prepayment Meters on the MMS and Meters supplied by third party Bidders in separate Procurement processes for AMI and PPM on page 550. A revised schedule has been issued as Amendments 1 and 2 in an Addendum.** **b) The testing of 20 sample AMI and PPM per bidder from the separate bidding process is clearly indicated in the implementation schedule in Page 549 and 550.** **c) All STS compliant meters on existing vending systems should be migrated unto MMS platform**	**MIDA will declare later in due course the name of suppliers of 6 PPM and 6 AMI**	**There is NO STS compliant meter in existing system as the PURC Tariff is Slab/ Subsidy based which is not supported by STS. Hence MIDA will provide Tariff compliant STS Meters from existing system for its migration to MMS**	**MIDA is flexible between Clarification No. 13 and 37. Bidder can opt for any make of meters based on any system**	**MIDA will do Selective Bidding (NOT ICB) between the 6 manufacturers selected by the MMS supplier, for Implementation stage of PPM and AMI Meters as described on page 550**	**ECG confirms that there are STS compliant meters in its system and requires the Bidders to facilitate the testing of 20 meters each from existing STS Compliant meters in ECG system (max 100) as part of this scope, in addition to the 240 meters to be provided by the Bidders themselves.** **MiDA may not undertake Limited Bidding (LB) involving the six (6) PPM and six (6) AMI manufacturers proposed by the MMS Supplier.**	**Please refer to our query and comments against 440 above.** **So, Incase the ECG is not able to provide 100 STS compliant meters as mentioned as per the IEC 62055-41 standard. The integration responsibility rests with ECG and not with the MMS Supplier.** **Also please give a breakup of the meter makes and types in the 100 meters to be tested and integrated by the MMS supplier?**	The integration of 100 STS compliant meters is the responsibility of ECG. The breakdown of the STS compliant meters by make and type will not be needed now. This is a Support Service to be offered by the Supplier to ECG as and when the meters come for testing. The statement or answer that "All STS compliant meters on existing vending systems should be migrated onto MMS platform" is not applicable.
14	466	VII. Purchasers Requirements	Hardware The Supplier shall familiarize himself with the existing Vending Systems hardware utilized by ECG and take this infrastructure and systems into account in the proposed vending solution offered.	What are the existing vending systems in use at ECG?	**The Integration of the ECG's existing vending systems to the MMS is indicated as options (integration to other systems) and the relevant price shall be provided as requested under Schedule 6 (see item 86)**	MIDA will provide details/ quantity of ECG existing vending systems by make before MMS tender opening for fair evaluation				**There is no need for prior knowledge of the existing vending systems in use. The Supplier will be required to offer Support Services to integrate them only when awarded a contract.** **In this IFB, Bidders are expected to price their inputs on Daywork basis under Schedule 8 A5 of the Price Schedules.**		
				What platform(s) (hardware/software) do the existing vending systems run on?	**Software: Windows server and Linux hardware: hardware required for STS compliant meters**	As there is no specification for Vending hardware in STS, so MIDA will provide independent specifications before bidding	MIDA will specify the IEC standard to be complied with PURC tariff as well as ECG Specification			**We make reference to IEC 62055-41 edition 2.** **Also see answer above on existing vending systems.**	**Please see our comments and queries to 440 and 553-555 above.**	Please, refer to Answer (3) to question 8 above.
				How are the existing vending systems currently integrated in to Indra CMS?	**Through web services and DB link.**					**See answer above.**		
				Is there any specific roadmap for deprecating the existing vending systems and if so can ECG share those?	**Awaiting outcome of procurement processed.**	On successful implementation of MMS, existing/ legacy meters procured as per ECG specifications, in last 5 years, worth USD 500 million will be scrapped				**There is no intention of scrapping existing legacy meters upon successful implementation of the MMS.**	**Noted**	
				Is there any need to account for data migration efforts from existing vending systems in to MMS?	**This has not been quantified and is awaiting the outcome of procurement process.**	For data migration from existing systems to MMS will be through a separate procurement process	MIDA will quantify the migration efforts along with all details of work to be done so that it can be mitigated bid price for for fair evaluation			**See answer to 466 above.**	**Noted**	
16	458	2.3.4.1 Vending Station	□ Indra CMS Interfacing	Why does the RVS need separate Indra CMS interfacing when its vending software may be assumed to interface with the vending application server in MMS?	**The fifth bullet point in section VII 2.3.4.1-Indra CMS interfacing is no more required.** **RVS does not need a separate interfacing with the Indra CMS directly.**	MIDA will declare the Standard to be followed for Common Vending Application Server which will meet the PURC tariff (including calculation of slabs & subsidies), which is not supported by STS standard IEC 62055-41	Once the Existing PPM's are scrapped, CMS will also be decommissioned, which was recently procured at a cost of USD 11 million with loan from World Bank by ECG			**There is no intention to scrap the existing PPMs and the CMS.** **The relevant standard to be followed for STS is IEC 62055-41 edition 2**	**Noted**	
	/	/	□ 99% success rate for all 'full' meter reading packets (interval and register data, and meter events)	This is in contrast with the 98% success rate within 22 hours lower on the same page, Which one?	**98% success rate within 22 hours. This has been corrected in an Addendum.**	A methodology for calculating the success rate along with parameters and exceptions as per the clause will be published	A bidder not complying with 98% success rate will be disqualified during evaluation	A method of penalizing a complying bidder not practically achieving the 98% success rate shall be published before bid opening		**The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated.**	**Please refer the mentioned procedures, there is only evaluation criteria but No mention of the penalty measures to be taken if the supplier doesn't adhere to the contractually committed conditions committed to in their tender response..**	Tariffs, including the current PURC tariff structure, shall be implemented at the MMS level and not on the meter. Refer to 2.1.2.3.8 of Section VII of the Bidding Documents. The Supplier is obliged to achieve Operational Acceptance of the System in accordance with the Conditions of Contract, failure of which constitute breach of Contract. Please, refer to GCC Clause 41 of the Conditions of Contract for consequences of breach of Contract.
	/	/	□ The system availability must be at least 99.95%	This is in contrast with the 99.995% requirement elsewhere in document (p406) . Which one?	**The system availability shall be 99.95%. This has been corrected in an Addendum.**	A methodology for calculating the success rate along with parameters and exceptions as per the clause will be published	A bidder not complying with 99.95% success rate will be disqualified during evaluation	A method of penalizing a complying bidder not practically achieving the 99.95% success rate shall be published before bid opening		**The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated.**	**Please refer the mentioned procedures, there is only evaluation criteria but No mention of the penalty measures to be taken if the supplier doesn't adhere to the contractually committed conditions committed to in their tender response..**	Kindly refer to Answer immediately above.

	/	/	□ 4 hours maximum recover time if a catastrophic failure is corrected	This is in contrast with the 15 min MTTR requirement elsewhere in document (p406). Which one?	**4 hours maximum recover time if a catastrophic failure is corrected. This has been clarified in an Addendum.**	A methodology for calculating the success rate along with parameters and exceptions as per the clause will be published	A bidder failing to comply in the bid will be disqualified during evaluation	A method of penalizing a complying bidder not practically achieving the 4 hour recovery time shall be published before bid opening		**The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated.**	**Please refer the mentioned procedures, there is only evaluation criteria but No mention of the penalty measures to be taken if the supplier doesn't adhere to the contractually committed conditions committed to in their tender response..**	Please, refer to the Answer above.
	/	Operation life of System components.	□ MMS Centre (hardware) – 5 years.	Elsewhere in document(p405)it is mentioned as 10 years. Which one?	**The Software for the MMS shall be supported for at least 10 years and the expected life for the hardware shall be at least 5 years.**	After 5 years MIDA will provide new hardware and port the MMS application and data to new hardware	The new hardware provided by MIDA after 5 years shall be maintained and supported by MIDA	AMC cost of 10 years for software and first 5 years for hardware should be incorporated in bid price		**The Hardware shall be supported by warranty (3 years) and post warranty (2 years)**	**Noted**	
22	430	2.3.1	The system availability must be at least 99.5%	This is in contrast to 99.995% on page 406 and 99.95% on page 408. Which one?	**Please refer to answer 19 above.**	A methodology for calculating the success rate along with parameters and exceptions as per the clause will be published	A bidder not complying with 99.95% success rate will be disqualified during evaluation	A method of penalizing a complying bidder not practically achieving the 99.95% success rate shall be published before bid opening		**The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated.**	**Please refer the mentioned procedures, there is only evaluation criteria but No mention of the penalty measures to be taken if the supplier doesn't adhere to the contractually committed conditions committed to in their tender response..**	Please, refer to the Answer above.
	/	/	□ 4 hours maximum recover time if a catastrophic failure is corrected	This is in contrast with the 15 min MTTR requirement elsewhere in document (p406). Which one?	**Please refer to answer 19 above.**	A methodology for calculating the success rate along with parameters and exceptions as per the clause will be published	A bidder failing to comply in the bid will be disqualified during evaluation	A method of penalizing a complying bidder not practically achieving the 4 hour recovery time shall be published before bid opening		**The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated.**	**Please refer the mentioned procedures, there is only evaluation criteria but No mention of the penalty measures to be taken if the supplier doesn't adhere to the contractually committed conditions committed to in their tender response..**	Please, refer to the Answer above.
28	403	Section VII. B 1.1.1.	One hundred and twenty (120) STS prepayment Meters based on open protocol system, (Twenty (20) meters each from six (6) different manufacturers). One hundred and twenty (120) AMI meters based on open protocol system (Twenty (20) meters each from six (6) different manufacturers)	1) What is the quantity list of meter on different types going to be delivered in the Proof of Concept (PoC)? 2) We have found five types of meters mentioned in the tender, but no specific quantities. We attach a draft table to highlight these different meters. Please can you provide the number of meters per type? 3) Since the number of meters for the PoC is only 240 and thus very small, do we as the MMS bidder need to provide the different meters and fully comply with the meter requirements? In other words can we provided meters with a deviation for the 240 only? The reason for the question is cost based and in order to provide meters that fully comply means that there may be a cost to mitigate any deviations! 4) Is MiDA expecting the 6 meter vendors to supply their own HES (Head End System), or is the Ghana MMS Tender expecting the bidder to supply only one "universal" HES?	**1) 20 meters from six different manufacturers.** **2) The twenty (20) prepayment meters to be supplied from six different manufacturers shall consist of:** **a. Ten (10) Single phase prepaid meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively.** **b. Eight (8) Three phase prepaid meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively.** **c. Two (2) Three phase CT-connected meters for large commercial applications, with a rated current and maximum continuous current rating of 5 and 10A/phase respectively.** **This has been clarified in an Addendum** **3.) Bidders are required to fully comply with the meter requirements in 2.8.22 , 2.8.23.& 2.8.24.** **4.) One universal HES is expected to be**	Only companies globally who are manufacturers for all three types of meters i.e. Single Phase/ Three Phase/ LTCT Prepayment are permitted to be selected by MMS supplier	MIDA will coordinate with PURC to modify the tariffs for LTCT prepay consumers so as to do away with Maximum Demand and Power Factor Penalty which is part of current tariff but has no mention in IEC 62055-41 (STS)	Maximum primary current will be published by MIDA before bid opening so as to get meter prices from vendors for fair evaluation	MIDA to confirm the supply of in home display with meters before bid opening to facilitate fair evaluation	**MMS supplier can select meters from any manufacturer provided the meters can interface with the MMS seamlessly and meets the specifications.** **The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated. Kindly check Section VII Purchaser's Requirements to comply with requirements.**	**Please refer the mentioned procedures, there is only evaluation criteria but No mention of the penalty measures to be taken if the supplier doesn't adhere to the contractually committed conditions committed to in their tender response.** **Also the MMS supplier would get to know the deviations only after they start to interact with the various meter suppliers after the award of the project. at that stage there will be a cost of addressing the deviations in the meter specifications which suppliers may not agree to for supplying on 10-20 meters of a particular type.** **This query has been raised in column "E" but remains unanswered.**	Please, refer to the Answer above. The MMS Supplier can select meters from any manufacturer provided the meters can interface with the MMS seamlessly and meets the specifications. The 240 meters are small in number but must fully comply with the meter requirements,
37	403	B 1.1.1. e) f)	One hundred and twenty (120) STS prepayment Meters based on open protocol system, (Twenty (20) meters each from six (6) different manufacturers). One hundred and twenty (120) AMI meters based on open protocol system (Twenty (20) meters each from six (6) different manufacturers)	Do the supply of meters need to conform to any Ghana localization requirements? Who is to install the total of 220 meters? Bidder or ECG?	**There is no special preference for meters from any country. All meters that meet the requirements are acceptable.** **Supplier will be required to install a total of 240 meters.**	MIDA will publish the locations of 240 meters installation so that the cost of installation can be considered in bid price for a fair evaluation	MIDA shall publish bill of quantities for installation material for each of 240 sites for incorporation of its value in Bid Price for a fair evaluation			**The 240 meters for testing the open architecture of the MMS shall all be installed in the Kaneshie District of ECG.** **Supplier shall be responsible for installation of these meters.**		

38	405	B. BUSINESS FUNCTIONS AND PERFORMANCE REQUIREMENTS	The Centralized Meter Management System shall have enough capacity and capability for scalability to cover the entire ECG operations for now and for the next ten (10) years. The MMS shall support an initial capacity of 3,000,000 metering end points with capability of anticipated 10% growth rate (ECG internal data) every year for the next ten (10) years (expandable to	Please clarify if the system is to be ready from day one of operations for 3,000,000 meter points, or is the initial value 200,000 meter points as per the following: "The RCC shall support an initial capacity of 200,000 metering end points"? What is the initial phase for system readiness and if so what rollout plan to 3,000,000 meters points and effective 6,500,000 over ten years? Please provide detailed meter rollout plan for system readiness?	**a) Yes, RCC shall support an initial 200,000 metering end points whilst centralized MMS shall support an initial 3,000,000 metering end points.** **b) The initial system readiness shall be 3,000,000 metering end points.** **c) The roll out plan is not part of this scope**	MIDA will manage further expansion of the system be undertaken to 6,500,000 meters. The expansion would need further computing hardware, lease lines, OS / Data base licenses etc.				**The MMS shall have the capability to fully support 3,000,000 meters. The expansion to 6,500,000 will definitely require further hardware and software and is outside this scope.**	**Noted**	
39	120	SCHEDULE-6 – SYSTEM INTEGRATION	SYSTEM INTEGRATION A1 Integration of central MMS and RCCs to CMS A2 Integration to SCADA A3 Integration to OMS A4 Integration to ERP A5 Integration to CIS A6 Integration to GIS A7 Integration to Any Other	Please can a full clarification including detailed information be provided how the MMS system needs to integrate the 3rd party applications A1 to A7? Are these systems are already up and running? if so, could you please provide their types, versions, vendors and technical information required for their integration into MMS? What API functionality shall be provided for full integration requirement? For those with no detail, what can be assumed? If the initial phase in not important for MMS integration to these systems, please can they be excluded in the list for costing purposes?	**a) Integration of the MMS shall be the RCCs and the Indra CMS.** **b.) Integration of the MMS to other Systems is indicated as options and the relevant prices shall be provided as requested under Schedule 6 of the Price Schedules.** **c) Detailed documentation on the Indra CMS prepayment interface shall be provided to Bidders in an Addendum.** **d) Bidders are expected to provide prices for all items in the Price schedule.**	MIDA shall publish interface details of all future integration, so as all bidders have same reference to arrive at the optimum pricing for the purpose of fair evaluation				**Integration between this system and other enterprise applications as listed shall be as per IEC 61970/68 standards -Common Information Model (CIM).** **Bidders to note that A7 herewith does not include integration to existing vending systems. See answer to 466 above.**	**Noted**	
40	124 | 427	SCHEDULE-8 – RECURRENT COST | 2.2.2.2 Telecommunications Services:	Telecommunication Services	Who is to provide for and supply the "Telecommunication Services" i.e. the physical communication cloud such as GPRS | Fiber etc.? Is this for the bidders account? If so, can a full details description be provided on this service?	**shall be provided by ECG** **b.) Communication between Meters and MMS shall be via 3rd party communication channels and the relevant GPRS SIMs for the sample meters shall be provided by the bidder.** **c.) The following links are to be provided (cost to be included in bid) by the Bidder through the Telecom Service Providers - New Leased Fibre Links:** **1. Primary Site to RCC (Avenor)** **2. Recovery Site to RCC (Avenor)** **3. Primary site to RCC (Makola)** **4. Recovery Site to RCC (Makola)** **d) The duration of the lease shall be valid 3 years warranty and 2 years post-warranty** **There is a conflict between points a and c since ECG has already laid fibre links to these centers.** **Bidders shouldnt be responsible for fibre links**	Bidder should not consider the cost of links in their final bid	Bidder should consider the indicative cost of links which will not be in its scope. So the same cost will not be considered for all bidder during commercial evaluation for the purpose of fair evaluation			**ECG has already laid fibre links to these centers.** **Bidders shall not be responsible for fibre links.**		
42		General	General	The tender documentation is requesting for a central MMS system with 2 x regional systems: 1) Does the regional systems conform to the same "high availability" of the central system e.g. 99.995% including a DR site? 2) Where are the Primary sites and DR sites for the two regional centres?	**a) "High Availability" of the central system shall be 99.95% inclusive of the DR site The regional Systems should have 99.95%.** **b) The two regional centres shall use the Primary Site (Central MMS) and Disaster Recovery site(Legon) as back up 1 and 2 respectively. This is well explained in Figure 1, issued with the Bidding Document.**	A methodology for calculating the success rate along with parameters and exceptions as per the clause will be published	A bidder not complying with 99.95% success rate will be disqualified during evaluation	A method of penalizing a complying bidder not practically achieving the 99.95% success rate shall be published before bid opening		**The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated.**		

46	526	2.18.22 Form MMS - CT/VT OPERATED METERS	27		**s a ecified in oly with the**	The hardware for meter reading instruments for all 240 meters will be provided by MIDA	Bidder should not consider cost of any meter reading instrument for the pilot batch of 240 meters			**MiDA is not providing Hardware. Bidder is responsible for the Hardware.**		
55	3 | 101 | 10	SCHEDULE-2 – SUPPLY SCHEDULE-3 – DELIVERY TO SITE SCHEDULE-4: SERVICES – SYSTEM DESIGN, INSTALLATION AND COMMISSIONING	Table Quantities - Price Schedules	There are numerous items listed with a "ZERO" inserted in the Qty column. Please advise: 1) Does the Bidder price these items? 2) Please can a detailed description and specification be presented so that the Bidder can ascertain if this item listed as Zero will indeed be adequate enough for the operational running of the system and respective applications? 3) In terms of the "High Availability (HA) - 99.995% or 99.95% (TBA)" required from the system as per the tender, there could be a conflict of interest with the Bidders system and those that ECG will supply in terms of maintaining the HA standard. How will ECG	**1) Yes. The quantities are zero so it will not add to the total price.** **2) Yes. This is provided at Forms MMS except F5 Load Balancer which is has been provided in an Addendum.** **3) "High Availability" is 99.95%. ECG is committed to providing support for these items. There is a commitment letter MiDA signs to this effect.**	A methodology for calculating the success rate along with parameters and exceptions as per the clause will be published	A bidder not complying with 99.95% success rate will be disqualified during evaluation	A method of penalizing a complying bidder not practically achieving the 99.95% success rate shall be published before bid opening		**The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated.**		
57		In MMS Functional Requirements No. 10	The headend system shall support energized status checks (i.e., Pings) of one or more meters.	1. Normally only GPRS meter has IP address. 2. If the head end system is going to Ping the meter, the IP address should be static IP address but it is impossible to get static IP address for all of the GPRS meters. 3. The meter can be found online or offline by responding to the master requests and the head end system can be set to execute scheduled reading every 15 minutes if it is necessary. Meter will be shown online if it responds to the master question otherwise it will be shown offline. 4. Therefore, we suggest to modify it by stating "The head end system shall support energized status checks (i.e., sending reading request) of one or more meters."	**5, 15 (default), 30 or 60 minute of interval data (page 429) hence every 15 minutes is OK.** **Yes. Modified to include "*The head end system shall support energized status checks (i.e.,pings) of one or more meters. It shall also send reading request.*"**	Bidder should consider the cost of all computing hardware (Data Center/ Disaster Recovery/ RCC Equipment) to meet the demand of reading 3 million customer data every 15 minutes, with the efficiency of 98% over 22 hours	A methodology for calculating the success rate along with parameters and exceptions as per the clause will be published	A bidder not complying with said efficiency will be disqualified during evaluation	A method of penalizing a complying bidder not practically achieving the reading efficiency of 98% over 22 hours for 3 million meters every 15 minutes shall be published before bid opening	**The procedures for Bid Review and Evaluation is given in Section III of the Bidding Documents, details of which are given in ITB Clause 28; and includes how this feature will be evaluated.**	**It is understood that memory size at the data centre has to be calculated for 3,000,000 meters for reading of 15 minutes interval and for 5 years . Pls confirm**	Yes. But for 5 years plus.
58	161	Section VII. In Network Security Functional Requirements No.1	Purchaser reserves the right to commission a third-party security review or penetration test of all components of the Bidder's solution prior to production implementation. Security issues or vulnerabilities discovered must be remediated by the Bidder prior to production implementation, at the Bidder's expense	Could you clarify as below: 1. Can the bidder select the third-party to do security review and test of all components of the bidder's solution? 2. Which software will be used for the third-party test?	**1) MiDA will select the third party to do the security review or penetration test of all components of the Bidder's solution prior to production implementation.** **2) Software can not be pre-determined.**	MIDA will publish the test plan for security review before bid opening for consideration of cost by all bidders for the purpose of fair evaluation	Bidder is not necessarily required to obtain ISO 27001, which is an international standard to verify security of the IT systems			**MiDA reserves the right to commission a third-party security review.** **MiDA will not publish the test plan before bid opening.**		
86		Section VII. Purchaser's Requirements – 2.3.4.2.	Vending Software Specifications. Vending Operations	The F of: Vendi (propl Pleas generate tokens for proprietary non STS protocols meters	 **vendors should be /ment meters .** **Token generation for STS meters only. see item 14**	MIDA will publish the details of proprietary systems to be integrated to MMS before the bid opening so as to ensure fair evaluation				**On-line payments by vendors should be possible for all prepayment meters (proprietary and STS).** **Token generation for STS meters only. see item 14**		
94				The different types of meters to be tested and supplied with the system: 1. is this the responsibility of the contractor? 2. Which manufacturers are to be chosen 3. Who will approach the manufacturers regarding these meters 4. What's the proportion in percentage between single and three phase meters 5. Are these prepayment or credit meters? 6. Are these meters to follow the same communication platform as indicated on the architecture? 7. We believe that the two RCCs of the nine are not ready yet, when will they be ready?	**1. Yes. It is the responsibility of the Supplier (contractor).** **2. It is up to the Bidder's choice.** **3. The Bidder.** **4. The twenty (20) prepayment meters to be supplied from each manufacturer shall consist of:** **a. Ten (10) Single phase prepaid meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively.** **b. Eight (8) Three phase prepaid meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively.** **c. Two (2) Three phase CT-connected meters for large commercial applications, with a rated current and maximum continuous current rating of 5 and 10A/phase respectively.** **5. Prepayment and AMI meters.** **6. Yes.** **7. The Two RCC is part of the scope of**	Bidder should consider the STS Meters offered with MMS, which will receive credit information from the MMS and will in turn do real time tariff application and take decision on disconnection with in the meter itself, ensuring the PURC tariff compliance The meter shall not get into debt/ negative credit	Bidder should consider the STS Meters offered with MMS, wherein MMS shall retain credit information and will in turn do real time tariff calculation and take decision on disconnection at the MMS server then communicate to the meter for disconnection/ connection, ensuring the PURC tariff compliance The meter shall not get into debt/ negative credit			**Bidder should consider the STS Meters offered with MMS, which will receive credit information from the MMS and will in turn do real time tariff calculation and take decision on disconnection with in the meter itself, ensuring the PURC tariff compliance** **Emergency and friendly credit should be configurable.**		

97				Confirm if the communication platform between the RCC + meters will be the responsibility of MiDA	**The communication platform between the RCC + meters <u>shall be the responsibility of the Bidder</u>. See Page 466 and also Schedule 2, 3 and 4.**	Bidder should not consider the cost of links in their final bid	Bidder should consider the indicative cost of links which will not be in its scope. So the same cost will not be considered for all bidder during commercial evaluation for the purpose of fair evaluation			**All Communications with the meters shall be through the head-end systems which is the responsibility of the Bidder to provide.**		

ANNEX 2
CLARIFICATION QUESTIONS & RESPONSES FOR METER MANAGEMENT SYSTEM (MMS) FOR ECG
BID REFERENCE: 5130400/IFB/CB/04/18

Sl	Reference			Question	Answer	Further Clarification 25.06.2018	Answer
	Page (Bidding doc)	Section	Item				
					***Kindly take note of the following in the Answers given: -Bidders mean Companies in competition to win this project and the Supplier means the eventual winner of the project. -Where the page number given has slipped, Bidders kindly search for the relevant section.**		
1	General	-	Budget	Is there a proposed budget for this project?	**No budget shall be provided to Bidders. Bidders shall be required to submit their most competitive price.**		
2	50	BDS ITB 21.1	Deadline for Bid submission	In relationship with the opportunity 5130400/IFB/CB/04/18 - Meter Management System (MMS) for Electricity Company of Ghana Limited (ECG) and in order to prepare a comprehensive technical response, our company requests an extension of three weeks of the closing date.	**Bidders are being notified of extension in deadline for Submission of Bids to 27th July 2018.**		
3	413	Section VII. 2.1.2.3	MMS-Accounting/Management/SMS Server	MMS-Accounting/Management/SMS server (Section 2.8.11) On demand SMS request through SMS for Instantaneous Parameters (Section 2.1.2.3). Question: What is the purpose of the SMS SERVER? The SMS equipment is provided by the meter system company or the local telecommunication operator? How to achieve the function of sending and receiving SMS message.	**The Supplier shall provide an SMS Server at ECG side as per the requirements in FORM MMS 11 (page 189); this shall interface with an SMS Server of the Telecom Service Provider(s) via SMPPv3 protocol.**		
4	479	Section VII. 2.8.1	2.8.1 MMS Functional Requirements	System Requirements: The solution is able to meet all NERC CIP compliance standards, Use of cryptographic module mechanisms for authentication consistent with FIPS 140-2 and NIST **(Section 2.8.1)** **(Network Security Functional Requirement-Serial Number 3).** Question: Please kindly provide relevant standard document for understanding related system security standards, such as NERC CIPE, FIPS 140-2 and NIST.	**Please refer to NERC CIP, FIPS 140-2 and NIST documentation. Bidders shall procure their own copies.**		
5	419	Section VII. 2.1.2.3.8	2.1.2.3.8 Functional Specification	P+E24:E28ower Outage Notification: In the event of an outage, the GPRS MODEM should be able to send the outage alert to Data centre, thereafter SMS to predefined number to notify the outage event with date and time of occurrence/restoration (Section 2.1.2.3.8) Question: The event notification is reported by text message or through GPRS directly?	**The event notification to Data Centre (via MMS) by GPRS and notification to predefined number by SMS via the Telecom Service Provider(s).**		

6	512	Section VII. 2.8.20	SQL Type Database Software Version	SQL Type Database Software Version： SQL type database Enterprise Edition for LINUX (64-bit)、SQL type database Enterprise Edition for LINUX (64 bit) (Section 2.8.20) Question Database operation software must be Linux? The system must be Oracle? Can we use the SQL service system?	**The OS can be Linux or Windows.** **Database should include Oracle and Microsoft SQL.**		
7	428	Section VII. 2.3.1.2.4	GIS coordinates acquisition for the meter	Allow for GIS coordinates acquisition for the meter (Section 2.3.1.2.4) Question How to implement the GIS function? Does the GIS function needed to be added in the meter? Please explain how to achieve this function. Please clarify.	**Yes. The GIS acquisition function should be resident in the meter.**		
8	440	Section VII. 2.3.2.1	2.3.2.1 Meter Management	The databases shall NOT be encrypted as the design of customized reports is essential. The system shall allow for the generation of engineering tokens for the following application: New meter installation: tokens for a limited number of units in the meter for activation and validation of the installation. Repair/checking of meters where customers indicate that the meter has failed - provision of small quantify energy units. Report facilities must include parameterization, data printing by range of dates, or other classifications based on parameters used into the Vending System (Section 2.3.2.1) Question: Engineering tokens: does the TOKENS need to be general-purpose for all meters?	**The Engineering tokens shall be specific to the meter and shall comply with *IEC 62055- 41 - Electricity metering – Payment systems – Part 41: Standard transfer specification (STS) – Application layer protocol for one-way token carrier systems*, as in section VII page 406.**		
9	468	Section VII. 2.3.4.2	Vending Software Specifications - Payment System	Payment System The vending system shall be capable of supporting the following: Vending clients: a. Windows PC b. Hand held device c. Cell phone vending d. Web based vending (Section 2.3.4.2) (PAYMENT SYSTEM) Question How to collect electricity charge in Cell phone vending / web vending function？ Please clarify.	**For mobile vending agents;** **It is intended that the cellular phone / web based vending can be done using cell phones and mobile PCs to sell electricityby agents as required in page 459 (Section VII, 2.3.4.2).** **For ECG customers;** **it is also intended that customers should also be able to purchase credits through their phones or web based applications**		

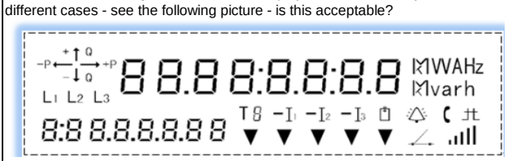
10	490	Section VII. 2.8.3	MMS Communications System - USB Modem	MMS Communications System – USB Modem (Section 2.8.3) The USB Modem need to do what function? Please clarify.	**The USB modem shall be plugged in to the vending work station to allow web connection to the Meter Management System.**		
11	481	Section VII. 2.8.1	Network Security Functional Requirements	Can MIDA recommend any Company that can help with FIPS 140-2 and NIST Certification? (Section 2.8.1)	**No. MiDA shall not recommend any Company but will accept certification from accredited companies worldwide.**		
12	565	Sectrion VII.	Section VII. Attachment 1.	I would like to know about the proposed meter replacement plan as mentioned in Section VII, Attachment 1. It states that the ECG is implementing a phased replacement of some of the Legacy postpaid meters as well as old pre-pay meters and replacing them with new pre-paid meters. Will the orders be placed with this tender should the meters be replaced on an s and when basis? Or will it be a separate tender? What is the quantity of this, OR does this cover a fraction of the 3,000,000 meters that you would like to MMS to be able to support.	**Replacement of the legacy postpaid meters is out of scope of this tender.**		
13	553 - 555	Section VII. E. Implementation Schedule	Schedule and Schedule Table	There is not any explicit allocation of time/effort in Phase 1 for: (a) Integration of MMS to existing Indra CMS and (b) 20 AMI and 20 PPM sample meters from the separate bidding process (mentioned in "Important Note" pg 551)? (c) Data migration from existing vending systems to MMS? Please can MiDA provide for this?	**a)This is not indicated in Implementation Schedule, but the Integration of MMS to the existing Indra CMS is planned to run concurrently with the** *Testing of AMI and Prepayment Meters on the MMS and Meters supplied by third party Bidders in separate Procurement processes for AMI and PPM* **on page 550. A revised schedule has been issued as Amendmets 1 and 2 in an Addendum.** **b) The testing of 20 sample AMI and PPM per bidder from the separate bidding process is clearly indicated in the implementation schedule in Page 549 and 550.** **c) All STS compliant meters on existing vending systems should be migrated unto MMS platform.**	**Question:** Please can MiDA provide for a list of all STS meters with respective meter data sheets on the existing vending systems as per the statement: "c) All STS compliant meters on existing vending systems should be migrated unto MMS platform."	The statement or answer "All STS compliant meters on existing vending systems should be migrated unto MMS platform." is not applicable. The statement or answer is not applicable and therefore the list of all STS meters is required.
14	466	VII. Purchasers Requirements	Hardware The Supplier shall familiarize himself with the existing Vending Systems hardware utilized by ECG and take this infrastructure and systems into account in the proposed vending solution offered.	What are the existing vending systems in use at ECG?	**The Integration of the ECG's existing vending systems to the MMS is indicated as options (integration to other systems) and the relevant price shall be provided as requested under Schedule 6 (see item 86)**		
				What platform(s) (hardware/software) do the existing vending systems run on?	**Software: Windows server and Linux** **hardware: hardware required for STS compliant meters**		
				How are the existing vending systems currently integrated in to Indra CMS?	**Through web services and DB link.**		
				Is there any specific roadmap for deprecating the existing vending systems and if so can ECG share those?	**Awaiting outcome of procurement processd.**		
				Is there any need to account for data migration efforts from existing vending systems in to MMS?	**This has not been quantified and is awaiting the outcome of procurement process.**	Refer to anwer "13.c) All STS compliant meters on existing vending systems should be migrated unto MMS platform." **Question:** "Does this imply that only STS meters need to be migrated from existing vending systems to new MMS vending system?" Refer to answer #86 86 – "On-line payments by vendors should be possible for all prepayment meters (proprietary and STS).Token generation for STS meters only. see item 14". **Question:** "Does this imply that both STS and non-STS (proprietary) meters need to be migrated from existing vending systems to new MMS vending system?"	Please, refer to the Answer immediately above. Only existing ECG STS meters will be tested for conformity.but not migrated. The proprietary meters shall not be tested and shall not be migrated. Please, Refer to the Answer immediately above.
				What are the functional capabilities of Indra CMS?	**Specification document for Indra CMS has been issued as an Amendment 3 in an Addendum.**		
15		General	General	Are all the AMI meters (3P4W) intended only for bulk supply / boundary point metering and NOT for deployment as credit meters/'thin' prepayment meters for any special load tariff consumers (loads > 100A)?	**The AMI meters shall be for the purpose of metering at bulk supply stations, primary stations and critical boundary points only, as indicated in Attachment 1 page 565.**		
16	458	2.3.4.1 Vending Station	Indra CMS Interfacing	Why does the RVS need separate Indra CMS interfacing when its vending software may be assumed to interface with the vending application server in MMS?	**The fifth bullet point in section VII 2.3.4.1-Indra CMS interfacing is no more required.** **RVS does not need a separate interfacing with the Indra CMS directly.**		

17	417	VII. Purchasers Requirements	2.1.2.3 GSM/GPRS Modem	It is mentioned that these are for both AMI and STS meters. Why are these are not specified in the "FORM MMS*" subsections of VII Purchaser's Requirements as done for other components?	**This has been included in the FORM MMS as Amendment 4 in an Addendum.**		
				What numbers of GSM/GPRS modems should be considered?	**Each meter should be equipped with a GSM/GPRS /3G Modem.**	**Question:** Some meters such as DIN rail meters are collectively coupled to a seperate modem such as a "Data Collector" or "Data Concentration Unit". Does this impact the statement: Each meter should be equipped with a GSM/GPRS /3G Modem?	In case four (4) DIN rail meters are installed in one (1) 4-way meter enclosure, one (1) GSM/GPRS modem shall be installed. But in situiations where only one (1) DIN rail meter is reqiired and installed in a one (1) 4-way meter enclosure, one (1) GSM/GPRS modem shall be installed. So, each modem should be equiped with a GSM/GPRS modedm.
				FORM MMS for CT/VT AMI meters (2.8.22) and CT PPM (2.8.23) mention built-in internal modems - how does this tally with the requirement for external modems?	**The in-built GPRS/GSM modems shall be plug-in type and shall comply with the requirement provided in the 4.33 Form MMS 22 (Page 211).** **Or external modem refers to a removeable plug in modem situated in the metering device.**		
				Is the choice of built-in or external modems up to the bidder's discretion?	**Please refer to answer above.**		
18	98	Communications - Hardware	C2	If the SIM cards are meant to enable remote communication for the STS and AMI meters, what does their proposed number (35,000) correspond to?	**The required text has been replaced by:** **The** quantity is 240 in which is in Price Schedule 2,3,4		
19	408	1.1.2 System Performance	In complete production and operation, the System must guarantee the following efficiencies:				
	/	/	99% success rate for all 'full' meter reading packets (interval and register data, and meter events)	This is in contrast with the 98% success rate within 22 hours lower on the same page, Which one?	**98% success rate within 22 hours. This has been corrected in an Addendum.**		
	/	/	The system availability must be at least 99.95%	This is in contrast with the 99.995% requirement elsewhere in document (p406) . Which one?	**The system availability shall be 99.95%. This has been corrected in an Addendum.**		
	/	/	4 hours maximum recover time if a catastrophic failure is corrected	This is in contrast with the 15 min MTTR requirement elsewhere in document (p406). Which one?	**4 hours maximum recover time if a catastrophic failure is corrected. This has been clarified in an Addendum.**		

20	409	System capacity for data.:	System capacity for data.:	Initial size may be bigger. Estimated growth is more than 10TB per month with 3 million meters.	**Our assessment was that the initial 20TB shall suffice for the initial quantity of meters to be installed. However the Bidder is free to suggest any improvements.**		
	/	/	20 TB expandable by addition of modules of 10TB when required.				
	/	Operation life of System components.	MMS Centre (hardware) – 5 years.	Elsewhere in document(p405)it is mentioned as 10 years. Which one?	**The Software for the MMS shall be supported for at least 10 years and the expected life for the hardware shall be at least 5 years.**		
21	413	2.1	2.1.1 Processing unit 1:	Hardware requirements refer to 1 physical server. We will require many physical servers in order to support the amount of virtualised servers in the solution. Individual Virtual machines may run on one or more physical machines or virtual resource pools. Is this acceptable? We have to virtualise the environment due to high CPU, memory, storage requirements.	**It is acceptable and preferable.**		
	/	/	2.1.1.1 Processing unit performance: As configured for the bid, the processing unit must, at a minimum;				
	/	/	(a) achieve: 3.1 GHz, 2 x dual Core, DDR4 DIMM ECC Fully Buffered)	CPU and memory resources will be pooled in Virtual pools for consumption by virtual machines. Please confirm if this is acceptable?	**It is acceptable and preferable.**		
22	430	2.3.1	The system availability must be at least 99.5%	This is in contrast to 99.995% on page 406 and 99.95% on page 408. Which one?	**Please refer to answer 19 above.**		
	/	/	4 hours maximum recover time if a catastrophic failure is corrected	This is in contrast with the 15 min MTTR requirement elsewhere in document (p406). Which one?	**Please refer to answer 19 above.**		
23	467	Security	The system shall allow for the addition of an unlimited number of named operators.	"Unlimited" is not reasonable. There is a limit of approximately 1 billion security identifiers (SIDs) over the life of a domain in Active Directory (AD). 4 Billion user limit on Linux.	**ECG currently uses Active Directory and this is proven to be acceptable. 4 billion seems like an excessive requirement**		

24	467	Communication	Network communication shall include but not be limited to the following:	Several outdated technologies are mentioned such as X.25, ISDN, Dial-up modems etc.. Please confirm only applicable communications technologies will be required.	**Only communications technlogies that will be requlred.**		
25	474	Passwords	1. User Passwords must be changed every forty [30] days.	Typo on document .Text says forty, but numerals show 30. Please confirm 30 days?	**30 days is confirmed. This has corrected in an Addendum**		
26				Please provide Meter Rollout Plan or statistics: - What is the total number of meters per phase? - How many Months for Rollout of Meters per phase? - What is the meter split i.e. single phase, three phase and three phase CT?	**a) The bulk roll out of meters is out of this scope.** **b) Refer to (a) above.** **c) Refer to (a) above.**		
27	449	2.3.2.1	Meter Management	Please provide detail process on: - Are there any requirements for Asset Management, otherwise how 3 Million Meter Installation information will be managed. - Installation of New Meters. (What parameters are reuired to be captured from Field). - Removal / Replacement of old Meters (What Parameters / Last Reading etc. to be captured from field). - Are there any requirements for using Hand-Held device / Smart device to capture field Activity Information / Site Survey Information. - Are there any requirements to manage Pre Installation Site Survey Information. - Are there any requirements to capture photographs while carrying Installation / Replacement work. If Yes, how many photographs to be collected per activities. - Are there any requirements to manage other assets (E.g. Communication Module, Cabinet, Antenna etc.) apart from Meters. - Are there any requirements to manage the life cycle of the Meters and other assets. - Are there any requirements for Field Activity related (Installation, Replacement, Removal etc.) Dashboard & Reports (Status, Performance etc.). - Are there any requirements for Work Order based Field Activities.	**The bulk supply of meters is out of this scope.** **This project scope involves only 240 meters and does not include asset management.** **Howebver by Section 2.3.2.1 and the information needed to support these meter management functions will require that the activities listed in the query are provided.**		
28	403	Section VII. B 1.1.1. e) f)	One hundred and twenty (120) STS prepayment Meters based on open protocol system, (Twenty (20) meters each from six (6) different manufacturers). One hundred and twenty (120) AMI meters based on open protocol system (Twenty (20) meters each from six (6) different manufacturers)	1) What is the quantity list of meter on different types going to be delivered in the Proof of Concept (PoC)? 2) We have found five types of meters mentioned in the tender, but no specific quantities. We attach a draft table to highlight these different meters. Please can you provide the number of meters per type? 3) Since the number of meters for the PoC is only 240 and thus very small, do we as the MMS bidder need to provide the different meters and fully comply with the meter requirments? In other words can we provided meters with a deviation for the 240 only? The reason for the question is cost based and in order to provide meters that fully comply means that there may be a cost to mitigate any deviations! 4) Is MiDA expecting the 6 meter vendors to supply their own HES (Head End System), or is the Ghana MMS Tender expecting the bidder to supply only one "universal" HES?	**1) 20 meters from six different manufacturers.** **2) The twenty (20) prepayment meters to be supplied from six different manufacturers shall consist of:** **a. Ten (10) Single phase prepaid meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively.** **b. Eight (8) Three phase prepaid meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively.** **c. Two (2) Three phase CT-connected meters for large commercial applications, with a rated current and maximum continuous current rating of 5 and 10A/phase respectively.** **This has been clairified in an Addendum** **3.) Bidders are required to fully complyy with the meter requirements in 2.8.22 , 2.8.23.& 2.8.24.** **4.) One universal HES is expected to be provided.**	please refere to the pilot meter list	
29	528	VII 58	Must (two samples of each type of meter)	Shall sample of meters to be submitted with the bid, during bid evaluation, after contract award or during project implementation? Please specify exactly when? Will deviation or alternative suggestion be accepted?	**Sample meters (AS SPECIFIED BY THE BIDDER IN HIS BID) to be submitted during implementation of the MMS.** **Deviations are only accepted if they offer a better solution.**	**Question:** 1) Will these "samples" be the 240 meters as per Phase 1? 2) Is it a strict requirment that the "Samples" above include cables, latching relays, meter boxes?	1)Yes. "Sample" meters are part of the 240 meters. 2) Yes. The complete set of a meter should be supplied including all assessories: I.e cables, latching relays, meter boxes, etc.
30	540	VII 3.0	Operating /storage Temperature	Are the ranges of tempretures correct? Could you please either verify them or provide the revised figures?	**Up to 70 deg C for "storage".** **up to 60 deg C for "operating".** **An Addendum has been issued.**		
31	520	VII No.21	Carrying arrangement :Handle or suitable slot for carrying	We do not understand? Handle/carrying for what purpose? Is this a compulsory requirement or will deviations be accepted?	**Depending on size, suitable handling facilities shall be provided.**		

32	520	VII No.22	Calibration arrangement :No screws to be used for calibrating meter. Calibration should not be disturbed by any means in the field.	Calibration is normally done in the factory. There is NO need for the calibration in the field. What is this requirement meant for?	**This is to emphasise that meters that allow field calibration by means of screws are not acceptable.**		
33	546	3.4 Quality Assurance		Are the documents,reports, inspections, site monitoring necessary for delivering pilot meters? Because there are very few meters from each vender?	**This section lay emphasis on Quality Assurance requirements of the MMS. It shall suffice to supply test certificates for the sample meters.**		
34	222	VI 43 a) i)		Does "missing potential " mean " voltage lose"? Does " Invalid phase association " mean " reverse phase sequence"?	**a) Missing Potential means loss of one , two or three phases.** **b) Invalid Phase Association arises when the phase current and phase voltage are different in phase for one winding.**		
35	214	VI 4.33 Form line 3	Standard to which meter conforms IEC 61850	Please be more specific regarding the IEC61850? There are lots of sub-standards under IEC 61850.	**Sub-Standards of IEC 61850 which are applicable to meters with external GPRS/GSM modem facility, apply.**		
36	241	IV 25	Meter Reading :Meter must have RS485 communication ports for communication between meters and via GPRS to the MMS	Will both built-in and external GPRS modem be acceptable?	**Yes.The in-built GPRS/GSM modems shall be plug-in type and shall comply with the requirement provided in the 4.33 Form MMS 22 (Page 211/514).**		
37	403	B 1.1.1. e) f)	One hundred and twenty (120) STS prepayment Meters based on open protocol system, (Twenty (20) meters each from six (6) different manufacturers). One hundred and twenty (120) AMI meters based on open protocol system (Twenty (20) meters each from six (6) different manufacturers)	Do the supply of meters need to conform to any Ghana localization requirements? Who is to install the total of 220 meters? Bidder or ECG?	**There is no special preference for meters from any country. All meters that meet the requirements are acceptable.** **Supplier will be required to install a total of 240 meters.**		
38	405	B. BUSINESS FUNCTIONS AND PERFORMANCE REQUIREMENTS	The Centralized Meter Management System shall have enough capacity and capability for scalability to cover the entire ECG operations for now and for the next ten (10) years. The MMS shall support an initial capacity of 3,000,000 metering end points with capability of anticipated 10% growth rate (ECG internal data) every year for the next ten (10) years (expandable to 6,500,000)	Please clarify if the system is to be ready from day one of operations for 3,000,000 meter points, or is the initial value 200,000 meter points as per the following: "The RCC shall support an initial capacity of 200,000 metering end points"? What is the initial phase for system readiness and if so what rollout plan to 3,000,000 meters points and effective 6,500,000 over ten years? Please provide detailed meter rollout plan for system readiness?	**a) Yes, RCC shall support an initial 200,000 metering end points whilst centralised MMS shall support an initial 3,000,000 metering end points.** **b) The initial system readiness shall be 3,000,000 metering end points.** **c) The roll out plan is not part of this scope**		
39	120	SCHEDULE-6 – SYSTEM INTEGRATION	SYSTEM INTEGRATION A1 Integration of central MMS and RCCs to CMS A2 Integration to SCADA A3 Integration to OMS A4 Integration to ERP A5 Integration to CIS A6 Integration to GIS A7 Integration to Any Other System	Please can a full clarification including detailed information be provided how the MMS system needs to integrate the the 3rd party applications A1 to A7? Are these systems are already up and running? if so, could you please provide their types, versions, vendors and technical information required for their intergration into MMS? What API functionality shall be provided for full integration requirement? For those with no detail, what can be assumed? If the initial phase in not important for MMS integration to these systems, please can they be excluded in the list for costing purposes?	**a) Integration of the MMS shall be the RCCs and the Indra CMS.** **b.) Integration of the MMS to other Systems is indicated as options and the relevant prices shall be provided as requested under Schedule 6 of the Price Schedules.** **c) Detailed documentation on the Indra CMS prepayment interface shall be provided to Bidders in an Addendum.** **d) Bidders are expected to provide prices for all items in the Price schedule.**	**Question:** "Thanks for the interface specifications for the integration of Indra CMS with the vending system. Do these specifications apply to both STS prepayment meters as well as AMI meters? That is, when the new AMI meters are being deployed, will the MMS get their information from Indra CMS via the same interfaces or will it come through any other ECG system?"	The specifications are for STS prepayment meters and AMI meters.
40	124 | 427	SCHEDULE-8 – RECURRENT COST | 2.2.2.2 Telecommunications Services:	Telecommunication Services	Who is to provide for and supply the "Telecommunication Services" i.e. the physical communication cloud such as GPRS | Fiber etc.? Is this for the bidders account? If so, can a full details description be provided on this service?	**a.) Fibre Optic Cable between centres shall be provided by ECG** **b.) Communication between Meters and MMS shall be via 3rd party communication channels and the relevant GPRS SIMs for the sample meters shall be provided by the bidder.** **c.) The following links are to be provided (cost to be included in bid) by the Bidder through the Telecom Service Providers - New Leased Fibre Links:** **1. Primary Site to RCC (Avenor)** **2. Recovery Site to RCC (Avenor)** **3. Primary site to RCC (Makola)** **4. Recovery Site to RCC (Makola)** **d) The duration of the lease shall be valid 3 years warranty and 2 years post-warranty** **There is a conflict between points a and c since ECG has already laid fibre links to these centers.** **Bidders shouldnt be responsible for fibre links**		
41	406	Figure 1: Overall architecture of proposed MMS system		Please can MiDA provide separate "MS Visio" diagrams of all figures tabled? Some of them are not readable.	**a) All diagrams has been issued in clear PDF in Amendment 5 in an Addendum.**		
42		General	General	The tender documentation is requesting for a central MMS system with 2 x regional systems: 1) Does the regional systems conform to the same "high availability" of the central system e.g. 99.995% including a DR site? 2) Where are the Primary sites and DR sites for the two regional centres?	**a) "High Availability" of the central system shall be 99.95% inclusive of the DR site The regional Systems should have 99.95%.** **b) The two regional centres shall use the Primary Site (Central MMS) and Disaster Recovery site(Legon) as back up 1 and 2 respectively. This is well explained in Figure 1, issued with the Bidding Document**		

43	524	2.18.22 Form MMS - CT/VT OPERATED METERS	6.1	It describes "Classes 0.2S and 0.5S for active", please specify what accuracy of meter is required to comply with 0.2S or 0.5S?	**The accuracy class is standard for all meters .**		
44	525	2.18.22 Form MMS - CT/VT OPERATED METERS	15	It describes "Bidders have to confirm single or multiple displayed parameters through symbol/legends with minimum 10-digit display." Our meters have 8 digits for main value display and have other symbols for different cases - see the following picture - is this acceptable? 	**Bidders must comply with the specification.**		
45	526	2.18.22 Form MMS - CT/VT OPERATED METERS	24	It describes "Beneath the meter cover.", Can we print information on meter cover?	**Bidders must comply with the specification.**		
46	526	2.18.22 Form MMS - CT/VT OPERATED METERS	27	It describes "This shall be through Meter Reading Instruments", Does the "Meter Reading Instruments" mean a software which is installed on laptop and read/set meter parameters via optical port?	**The meter reading instrument is a software provided on CD as specified in Form MMS. Bidders must comply with the specification.**		
47	527	2.18.22 Form MMS - CT/VT OPERATED METERS	32	Please explain the meaning of display items: 1) Meter Sl no. 2) Cumulative Reactive Energy kVArh for kWh import. (Our meter will record kWh import and kVArh import)	**1) Meter Sl no means Serial Number.** **2) Bidders must comply with the specification.**	**Question:** Please can a specific answer be reponse be issued for the question 2) in this SI	Cumulative Reactive Energy kVArh import for kWh import.

48	528	2.18.22 Form MMS - CT/VT OPERATED METERS	35	Do the RS485 and RS232 ports need to both support an external GPRS module ? What does the 'UDP/IP/PPP/GPRS capable' mean? Is it a requirement for module? There is requirement in Page 523 that the module should be built-in	**RS-485 and RS-232 ports need to support an external GPRS modem as specified in Form MMS.** **The terms are defined as follows:** **UDP - User Datagram Protocol.** **IP - Internet Protocol.** **PPP - Point to Point Protocol.** **GPRS - General Packet Radio Service.** **Bidders must comply with the specification.**	**Question:** From the explanation we under the GPRS modem/Module can be either internal and external. See above item 36?	The GSM/GPRS modem shall not be internally mounted. The GSM/GPRS modem shall be plug-in or externally mounted. The GSM/GPRS modem shall be detachable without opening of the meter.
49	528	2.18.22 Form MMS - CT/VT OPERATED METERS	36	Does it mean the GPRS module should be built in the meter? Or it should be an external module?	**Refer to 36 above.**		
50	530	2.18.22 Form MMS - CT/VT OPERATED METERS	44	It describes "Voltage magnitude check and voltage indicator for voltages outside the +/-10%". Does it mean display voltage of each phase on the LCD?	**LED/LCD indication are required for each phase separately as specified.**		
51	532	2.18.22 Form MMS - CT/VT OPERATED METERS	50	It describes "Read, write & Modify", what's the different between write and modify ?	**Write means creating new text.** **Modify means changing an existing text , deleting or adding a new text.**		
52	530	2.18.22 Form MMS - CT/VT OPERATED METERS	44	It describes "Meter shall have provision to be read in the absence of power" Does it means read meter data by SW or display data on LCD?	**Reading of the meter in the absence of power shall be by software.**		
53	531	2.18.22 Form MMS - CT/VT OPERATED METERS	44	It describes "Display parameter scroll lock facility", please explain what this means?	**It is a function required to allow locking of the scrolling of display.**	**Question:** Please can this question be answered specifically and with detail?	To lock scrolling.
54	533	2.18.22 Form MMS - CT/VT OPERATED METERS	51	It describes "Tamper persistence time", please explain what does this mean?	**The maximum amount of allowed time the meter will endure any form of tampering before shut down.**	**Question:** Does "shut down "means " Trip/ cut off the power supply"? Normally if there is a tamper, meter will alarm in LED, create a new event log, and push the alarm to HES if configurated and wait for engineer to check onsite. And CT/CT meter has no internal relay to trip. utilty need to define what should be regarded as tamper and how the meter should act when there is a tamper.	In the case of CT/VT meter not having a latching relay internally to trip, relay connection shall be made to the external port of the CT/VT.
55	93 | 101 | 107	SCHEDULE-2 – SUPPLY SCHEDULE-3 – DELIVERY TO SITE SCHEDULE-4: SERVICES – SYSTEM DESIGN, INSTALLATION AND COMMISSIONING	Table Quantities - Price Schedules	There are numerious items listed with a "ZERO" inserted in the Qty column. Please advise: 1) Does the Bidder price these items? 2) Please can a detailed description and specification be presented so that the Bidder can ascertain if this item listed as Zero will indeed be adequate enough for the operational running of the system and respective applications? 3) In terms of the "High Availability (HA) - 99.995% or 99.95% (TBA)" required from the system as per the tender, there could be a conflict of interest with the Bidders system and those that ECG will supply in terms of maintaining the HA standard. How will ECG seperate these issues?	**1) Yes. The quantities are zero so it will not add to the total price.** **2) Yes. This is provided at Forms MMS except F5 Load Balancer which is has been provided in an Addedum.** **3) "High Availability" is 99.95%. ECG is commited to providing support for these items. There is a commitment letter MiDA signs to this effect.**		
56	48	In section II. Bid Data Sheet ("BDS") ITB 19.2	If the Bidder did not submit a JV or Association agreement or a letter of intent to execute the same: The written authorization shall consist of the original copy of a Board resolution or certification from the Corporate	Since Ghana Consul is not available in the province we are in and according to Ghana Consul, the authentication procedures take an uncertain period of time which may surpass the tender submission deadline, is it acceptable if our Power of Attorney is only duly notarized by a notary public?	**Bidders are urged to search for Ghana Consul responsible for their countries and comply.** **Bidders are required to respond to requirements. Bid submission deadline has been extended.**		

57		In MMS Functional Requirements No. 10	The headend system shall support energized status checks (i.e., Pings) of one or more meters.	1. Normally only GPRS meter has IP address. 2. If the head end system is going to Ping the meter, the IP address should be static IP address but it is impossible to get static IP address for all of the GPRS meters. 3. The meter can be found online or offline by responding to the master requests and the head end system can be set to execute scheduled reading every 15 minutes if it is necessary. Meter will be shown online if it responds to the master question otherwise it will be shown offline. 4. Therefore, we suggest to modify it by stating "The head end system shall support energized status checks (i.e., sending reading request) of one or more meters."	**5, 15 (default), 30 or 60 minute of interval data (page 429) hence every 15 minutes is OK.** **Yes. Modified to include "*The head end system shall support energized status checks (i.e.,pings) of one or more meters. It shall also send reading request."***		
58	161	Section VII. In Network Security Functional Requirements No.1	If selected, Purchaser reserves the right to commission a third-party security review or penetration test of all components of the Bidder's solution prior to production implementation. Security issues or vulnerabilities discovered must be remediated by the Bidder prior to production implementation, at the Bidder's expense	Could you clarify as below: 1. Can the bidder select the third-party to do security review and test of all components of the bidder's solution? 2. Which software will be used for the third-party test?	**1) MiDA will select the third party to do the security review or penetration test of all components of the Bidder's solution prior to production implementation.** **2) Software can not be pre-determined.**		
59	161	In Network Security Functional Requirements No.2	The solution can meet all NERC CIP compliance standards	Could you clarify NERC CIP standards apply to which part in this project?	**NERC CIP standard is a security feature that will be applied in the firewall and the routers.**		
60	163	In Network Security Functional Requirements No.20	Via solution internal groups	Could you clarify what is "internal groups"?	**Solution internal groups are group of IT personnel who will work on the MMS.**		
61	164	In Network Security Functional Requirements No.23	In the proposed solution, can roles within the application be mapped to Active Directory groups for role-based administration?	Please kindly clarify.	**An administrator can use dynamic role-based access control (RBAC) to define which users can perform which operations in the system. You can grant a role to one or more Active Directory (AD) groups.**		
62	166	In Network Security Functional Requirements No.47	Logon banners can displayed prior to all logon on all interfaces	Please kindly clarify.	**As a security feature prior to all log-on interfaces, a log on banner should be displayed.**		
63	168	In Network Security Functional Requirements No.70	Application can use a certificate(s) issued by a certificate authority located within the ECG environment	1. Who is the certificate authority? 2. What will they do for this project?	**ECG has a self-signed certificate authority that can be used but is not mandatory. Preference is for public certificate authority.**		
64	168	In Network Security Functional Requirements No.71	Credentials are not hardcoded directly in any component of the system	Could you kindly clarify the requirement in a detailed manner?	**Security Authority should not be embedded in the application code.**		
65	169	In Network Security Functional Requirements No.78	an application security code review been performed on the product by a 3rd party specializing in software security defects If so, state the period	Is the third party at the bidder's own choice?	**No. It is MiDA's responsibility to secure a third party specializing in the security defects.**		

66	169	In Network Security Functional Requirements No.79	the solution vulnerability test by a 3rd party individuals on an ongoing basis	1. Can the bidder select the third-party to do security review and test of all components of the bidder's solution? 2. Which software will be used for the third-party test?	**1. MiDA shall select Third Party for the reviews** **2. The software to be used shall not be pre-determined. It shall be determined by MiDA later in during the implementation.**		
67	169	In Network Security Functional Requirements No.81	the solution test for resiliency to network auditing tools such as Nessus on an ongoing basis	Could you clarify what is "solution test"?	**A solution test is to test a patch solution**		
68	164	In Network Security Functional Requirements No.84	all components of the solution been tested against IEC 62443 for both known and unknown vulnerabilities (software, hardware, meters, mesh equipment, etc.)	Could you clarify the below questions: 1. What does the "components" refer to? 2. Is IEC 62443 mandatory	**1. Components refer to Modules of the software solution.** **2. Yes. IEC 62443 is mandatory.**		
69	170	In Network Security Functional Requirements No.85	publish all vulnerabilities regardless of the reporting source. If so, where? How many vulnerabilities have been reported or published in the last year?	Please kindly clarify	**This refers to Vulnerability assessment reports mostly issued by 3rd parties.**		

70	170	In Network Security Functional Requirements No.86	The procedure used to release/disclose security vulnerabilities in the system	Please kindly clarify	**There is a procedure for releasing / disclosing security vulnerability. Bidders are required to state the procedure.**		
71	170	In Network Security Functional Requirements No.87	The regular recurring schedule in which updates/patches are released.	Please kindly clarify	**This refers to the regular release of software updates / patches by the software vendor.**		
72	516, 525?	In Part 2.18.20 Form MMS 22 -CT/VT OPERATED METERS Sr.No. 15 Display (No. of digit and Characters height)	Bidders have to confirm single or multiple displayed parameters through symbol/legends with minimum 10-digit display. Display should also have features to show legends for different tampers. This will be verified during the factory acceptance test of the meters	If the meter supplied should comply with this requirement, the digits will be squeezed to a small size which may cause visual problem. Therefore, we suggest the meter required to be equipped with a function that the meter should be capable of displaying at least 6 digits integer, 2 fixed decimal digits and will automatically switch the measurement unit from kWh to MWh in order to display the value more than 9 digits. 	**The requirement is to have a minimum of 10-digit display and bidders are required to comply.**		
73	516, 525	In Part 2.18.20 Form MMS 22 -CT/VT OPERATED METERS Sr.No. 23 Sealing arrangement	1 no. on optical port	Normally the optical port will be used frequently for data checking if the remote reading cannot be done properly, so the sealing is not necessary for it. Otherwise the sealing needs to be redone again and again. Therefore, we suggest the sealing of optical port for CTVT meter provided is not mandatory.	**It is not envisaged that the optical port will be used frequently. Sealing is required and the bidder must comply.**	**Question:** For the Optical port sealing, will a password to access the port be sufficient as manual sealing is not pratical?	A password to access the port may be sufficient.

74	528?	In Part 2.18.20 *(not 23?)* Form MMS 22 -CT/VT OPERATED METERS Sr.No. 32 Display – Push Button display mode	Rising demand with elapsed time	Question: 1. Which kind of demand does it refer to? 2. How to define the cycle? Suggestion: The variation of demand can be shown by reading load profile, the interval time is configurable, maximum demand measurement method can be selected (such as sliding type or block type), is it acceptable?	**1. this is Apparent demand within a selected integration period.** **2. the cycle should be programmable, default 15 minutes**		
75	518?	In Part 2.18.20 *(not 22?)* Form MMS 22 -CT/VT OPERATED METERS Sr.No. 32 Display – Push Button display mode	Meter Reading count	Please kindly help to clarify.	**This refers to a count of the number of times the meter is connected to via the optical port.**		
76		In Part 2.18.20 Form MMS 22 -CT/VT OPERATED METERS Sr.No. 44 Tamper persistence time	5 min ±10 sec	Please help to clarify the details of this requirement	**The maximum amount of allowed time the meter will endure any form of tampering before shut down is the tamper persistence time**	**Question:** Does "shut down "means " Trip/ cut off the power supply"? Normally if there is a tamper, meter will alarm in LED, create a new event log, and push the alarm to HES if configurated and wait for engineer to check onsite. And CT/CT meter has no internal relay to trip. utilty need to define what should be regarded as tamper and how the meter should act when there is a tamper.	In the case of CT/VT meter not having a latching relay internally to trip, relay connection shall be made to the external port of the CT/VT.

77		In Part 2.8.23 MMS - WHOLE CURRENT PREPAYMENT METER Sr.No. 25 Meter Display on key in of numeric codes (Mandatory Sequence)	GPRS communication status: ON/OFF This status indication shall be as follows; a) The ON status means that the signal level is strong enough for communication b) The OFF status low signal level The ON/OFF indication shall be available both on meter and split unit displays at all times.	In our meters and split units, there is a signal level indication icon to show the strength and weakness of signal, is it acceptable?.	**A bar graph indication of the signal strength should suffice.**	**Question:** Din rail meters generally do not have a built-in modem and are typically daiy chained to a GPRS modem. Will a signal strenght fo rhte SIM ccard not suffice?	. The signal on the external modem may suffice.
78		In MMS Technical Requirements No.32	Energy usage comparisons using the MMS data (e.g., unbilled usage, zero usage, abnormal usage, energy usage while disconnected) must be available for revenue protection and theft analysis	Please kindly clarify	**The MMS provided should be able to generate reports of such conditions such as unbilled usage,zero usage etc by customer meters for revenue protection and analysis.**		
79	25	16.2(d)	With reference to 16.2 (d) " a written confirmation that the Bidder accepts responsibility for the successful integration and inter-operability of all components of the Information System as required by this Bidding Document"	This is rather high level and with the expectation that a bidder would have to know how to understand the ECG business processes that defines an integration document. You should provide all the integration specifications as a component of the tender document.	**The specification document for the Indra CMS Prepayment Interface has been provided as an Addendum.**		
80				There is a requirement to interface all 9 of the existing systems and if so you need to provide all the information required to do so.	**It is only two (2) RCC (Accra East and Accra West) that will be integrated. The Bidder is providing this two (2) with the Bid.**		
81				"Full integration of the MMS to the existing ECG Indra Customer Management System (CMS);" A full integration specification needs to be provided based on their unique business requirement.	**The specification document for the Indra CMS Prepayment Interface has been provided in an Addendum**		
82	45	ITB 6.1 (a)		The requirement is for 3 references of 3 million plus STS MMS sites. There is only one company in the world who would come close to meeting this requirement, a company that consists of multiple legal company entities throughout the world, any of which won't be qualified by itself. The 3 million customers deployment requirement is had to fulfill because most STS utility companies are based in developing countries (because of their low revenue recovery on post pays), which have a smaller customer base, but specially because they usually split their market among several meters vendors, each with its own MMS to cover a fraction of the customers. Instead of a qualification requirement could this be a scored requirement. That will allow companies that are closed to this requirement to be favored over those that don't without eliminating them. Qualification requirement will eliminate companies that don't meet the requirement.	**The Bidder should have successfully implemented these systems in the last five (5) years at electric distribution utilities of an equivalent size, growth rate, complexity, and stature of ECG (i.e. 3,000,000 customer base, 29 Bulk Supply Points, 108 Primary Substations, 12,206 Secondary Substations and Energy Sales of 8,000,000 Megawatt-hours). Three (3) references.**		

83				The Bidder Qualification Requirements would pretty much eliminate any company that has the STS MMS and HES software solution.	**Bidders are to comply with the specification.**		
84				In the bidding forms we have to price the following: a) Telecommunication Services (recurrent cost). Which telecom costs are you referring to? b) New Leased Fibre Links: 1. Primary Site to RCC (Avenor) Does the bidder need to provide the Leased Lines? It was my understanding this will be provided by the Telecom providers, am I correct? 1. 2. Recovery Site to RCC (Avenor) 2. 3. Primary site to RCC (Makola) 3. 4. Recovery Site to RCC (Makola)	**- Acquisition of SIM cards from the Telcos for the GPRS modems for the 120 STS PPM and 120 AMI meters.** **b) The following links are to be provided (Price to be included in bid) by the Bidder through the Telecom Service Provider(s) - New Leased Fibre Links:** **1. Primary Site to RCC (Avenor)** **2. Recovery Site to RCC (Avenor)** **3. Primary site to RCC (Makola)** **4. Recovery Site to RCC (Makola)** **Also refer to:** **- Schedule 2 – Supply, Item A20** **- Schedule 3 – Delivery to site, Item A18** **- Schedule 4 – Services – System Design, Installation & Commissioning, Item A18 - Fig 9** **The period is 5 years (warranty and Post warranty). Supplier are are asked to quote in the price achedule.**		
85	54	BDS ITB 28.7 ©	The Purchaser will not accept deviations in the schedule of installation and commissioning specified in the Implementation Schedule.	Question: We believe this schedule is very challenging and can we propose to submit our own schedule and this be qualified for the bid?	**Bidders are not permitted to make changes.**		
86		Section VII. Purchaser's Requirements – 2.3.4.2.	Vending Software Specifications. Vending Operations	The RFP states: "The system shall be capable of: Vending on-line to all prepayment meters (proprietary and STS) in the ECG's Please confirm that the vending should also generate tokens for proprietary non STS protocols meters	**On-line payments by vendors should be possible for all prepayment meters (proprietary and STS).** **Token generation for STS meters only. see item 14**	**Question:** "After successful completion of online payment transaction for a non-STS meter customer, how do the credits/payment results get transferred to the meter? Is there a separate process for this proposed outside of the MMS?"	The non-STS prepayment meters are out of scope. The statement or answer that "On-line payments by vendors should be possible for all prepayment meters (proprietary and STS)" is not applicable.
87	453		Communication outside of the IT RACK's	Comfirm that all regional communication, LAN and GSM remains the responsibility of the MiDA (communication outside of the IT RACK's) (Diagram page 453) a. Leased lines b. Fibre c. LAN throughout buildings d. APN cost e. etc	**All coomunication links, LAN and GSM / GPRS links (except those marked as "out of scope") <u>are to be provided by Bidder.</u>**		
88				Project office, will this be an allocated space from MiDA (need clarity on the project office) Address, location, accomodation availability for project team, transport?	**The Project Office is an ECG office dedicated to Projects. The address is provided in ITB 14.4a.**		
89				Would the supplier be able to update or change any of the IT specifications given.	**If there is an improvemement in a product or system or subsystem over the requirements, the Bidder must indicate in the relevant Bidding Form.**		
90				Pre-Audit, could we get a time frame for the audit and when will the Indra system be updated with new data, this is critical for the MDMS and MMS systems	**This will be provided by a team during the project phase**		
91				Will we have an Indra team to work with on the MDMS integration?	**Yes. This will be provided by the project team**		
92	403, 448			Meter solutions, could we offer alternatives communication layout to the proposed 4 x meters (RS485) in a box connected via GSM? We would recommend a cost effective solution based on G3 PLC solution connected via DC450 Refer to Page 403 & 448	**PLC is not acceptable.**		

93				What is the planned date to begin meter installations	**The Implementation Schedule provides the answer. Implementation Schedule is revised in an Addendum.**		
94				The different types of meters to be tested and supplied with the system: 1. is this the responsibility of the contractor? 2. Which manufacturers are to be chosen 3. Who will approach the manufacturers regarding these meters 4. What's the proportion in percentage between single and threephase meters 5. Are these prepayment or credit meters? 6. Are these meters to follow the same communication platform as indicated on the architecture? 7. We believe that the two RCCs of the nine are not ready yet, when will they be ready?	**1. Yes. It is the responsibility of the Supplier (contractor).** **2. It is up to the Bidder's choice.** **3. The Bidder.** **4. The twenty (20) prepayment meters to be supplied from each manufacturer shall consist of:** **a. Ten (10) Single phase prepaid meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively.** **b. Eight (8) Three phase prepaid meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively.** **c. Two (2) Three phase CT-connected meters for large commercial applications, with a rated current and maximum continuous current rating of 5 and 10A/phase respectively.** **5. Prepayment and AMI meters.** **6. Yes.** **7. The Two RCC is part of the scope of this Bid.**		
95				Can you please provide clear architectural drawings?	**Drawings (Figure 1 to Figure 10) provided in clear PDF in an Addendum.**		
96				As this tender is quite extensive with a number of documents, can MiDA look at an extension of the due date?	**See answer to Question 2. above.**		
97				Comfirm if the communication platform between the RCC + meters will be the responsibility of MiDA	**The communication platform between the RCC + meters shall be the responsibility of the Bidder. See Page 466 and also Schedule 2, 3 and 4.**		
98				Confirm that the DR centre is not part of the scope of the tender	**The DR centre *shall be part of the scope* of this Bid. See Schedules 2. 3 and 4).**		
99				Confirm that the provision of meters is not part of this tender rather phase two	**These Meters are part of scope of this Bid:** **Phase1:** **One hundred and twenty (120) STS prepayment Meters based on open protocol system, (Twenty (20) meters each from six (6) different manufacturers).** **One hundred and twenty (120) AMI meters based on open protocol system (Twenty (20) meters each from six (6) different manufacturers).** **Phase 2 of this scope is the supply and installation of 37 vending stations.** **Phase 1 and Phase 2 are all part of this scope.**		
100				Confirm the system license capability in terms of metering points for MMC and RCCs	**200,000 metering points for each RCC and 3,000,000 metering points for the central MMS scalable to 6,500,000.**		

101				Could we get a MiDA Smart team Org Chart, has the team be defined yet?	**If by this statement, it is meant that MIDA has a supporting team, then you can find MIDA organisation structure at www.mida.gov,gh**		
102	45	In Section II. Bid Data Sheet ("BDS") ITB 6.1(a)	The Bidder should demonstrate experience in the design, supply and installation of Metering Management Systems and associated vending systems for revenue Prepayment Meters (PPM) as well as Advanced Metering Infrastructure (AMI) meters installed on utility facilities. The Bidder shall have successfully implemented these systems in the last five (5) years at electric distribution utilities of an equivalent size, growth rate, complexity, and stature of ECG (i.e. 3,000,000 customer base, 29 Bulk Supply Points, 108 Primary Substations, 12,206 Secondary Substations and Energy Sales of 8,000,000 Megawatthours). Three (3) references.	We humbly request for clarification for the above mentioned "Vending systems for revenue Prepayment Meters (PPM)." Do the systems have to comply with the STS (Standard Transfer Specification) for Prepayment Solution which is initiated by Eskom and widely adapted in the African countries. Or all vending systems adhrere to any other specifications may also be considered as a reference?	**The references are not necessarily for only STS meter projects but for vending systems STS is a requirement and references should preferably reflect this requirement.**		

103				How many meters will be read via the MMS in totality?	**3,000,000 metering end points initially but with scalability to 10 years projection of 6,500,000 metering end points.**		
104				Is it safe to assume 120 for the pilot and proof of concept?	**The samples required are 120 Prepayment Meters and 120 AMI meters. The breakdown of the prepayment meters is issued in an Addendum.**		
105				Will the bidding company be required to supply and or install the 120 smart meters from the manufacturers?	**Yes. 240 meters (STS and AMI).**		
106				Are there 6 specific manufacturers that must be supported or will any eligible 6 be considered.	**No. There is no special preference for any country or manufacturer. All meters that meet the requirements are acceptable.** **Bidder to install total 240 meters.**		
107				How many channels of communication are expected? Send request and Receive readings? Tamper management (Remote tamper alerts and switch off)	**Low-functionality (one-way communication) STS-compliant EMM units will not be acceptable for this project.**		
108				Is the customer portal required?	**Yes. Interface with web services and ECG Portal is included in the evaluation criteria in ITB 28.5.**		
109				Is MMS pricing expected to be once off or on a per channel/meter?	**The Bid is for a one-off supply and installation of the MMS (plus 2 Nos.RCC) and RVS.**		
110				Can you supply the web services list or file formats that the vending system communicates with?	**Not now**		
111				Please supply list of web services or/and file examples to integrate to the following: a. Integration to SCADA b. Integration to OMS c. Integration to ERP d. Integration to CIS e. Indra Customer Management System (CMS)	**Integration between this system and other enterprise applications as listed shall be as per IEC 61970/68 standards -Common Information Model (CIM)**		
112				Is hardware included or excluded?	**The Bid Document clearly indicates all the hardware and software requirements.**		
113				Is installation to the system include or will ECG have a team on the ground who will install meters in the system?	**Suppliers will install the 240 meters, and not ECG team.**		
114				Shall we supply the hardware with Operating System?	**Yes. Supply hardware with Operating System.**		
115				Shall we host the hardware?	**The MMS shall be based on an open protocol system consisting of two servers, one for the Primary site located at ECG Project Office, Accra and the other for the Recovery site located at ECG Legon District Office, Accra;** **Two Regional Metering Control Centres (RCCs), one at the Accra West Region (Avenor, Accra) and the other at Accra East (Makola, Accra) all integrated with the Centralized MMS.**		
116				In terms of your requirements - is possible to order the rate of importance?	**All the hardware and software to be supplied by the Bidder are all important.**		
117				What is your projected growth over the next 10 years in terms of required scalability?	**Required growth over the next ten (10) years is 10% per annum from the base of 3,500,000 metering end points.**		
118				Are you also looking for a strong data management and analystics solution i.e. predictive analytics and pattern recognition? Is this very important to you?	**Meter Data Management System (MDMS) that interfaces with all metering systems to provide:** **A single interface for other applications to access all metering data/information (both commercial and operational). Page 43.** **On-Line Analytical Processing (OLAP) for answering Multi-Dimensional Analytical (MDA) queries swiftly. Page 43.**		
119				We assume you are looking for an installation of the entire solution infrastructure in both the primary data center and the disaster recovery. What is your desire in terms of keeping these two sites in sync. Is it near real time or batch over night will suffice?	**Refer to 2.3.2.2 fof the bidding document for further details. It is near real time.**		
120				In your current infrastructure, do you have an existing integration platform you use to communicate between your various applications	**No.** **The integration to MMS is the Indra CMS (existing) and the 2xRCCs (which the Bidder is providing under this project).**		

121				Can you supply us the characteristics of the systems required to be integrated to in terms of technology they are based on i.e. SAP, Oracle, Java, Net, homegrown, Cobol based	**Specification document for CMS refers. See Addendum issued.** **API Interface (SOAP/RESTFUL) that will enable integration. Page 456.**		
122				The bid does not mention how access to the data and reports is to be facilitated. Do you see this as being done through the standard reports in the MDMS or via the integration of such data into a dta warehouse, with reporting build on top of it?	**The MDMS shall provide data pool for analytics and reporting purposes. Page 424**		
123				Are you looking to expose some of the functionality to the public? If so - how many people would be accessing your system?	**Yes. As many customers as will subscribe.**		

124				Can you clarify on your requirement to comply with Environmental, Health and safety requirements? We assume this would apply on the hardware manufacturing side.	**The Bidder must demonstrate compliance to the Environmental, Health and Safety requirements provided.**		
125	402	Page 402 of RFP and SMEC presentation on MMS RFP	The information provided on the MMS in this presentation does *not* tally with those in the bidding document; some performance requirements have emerged; for e.g., in the presentation, the availability value is 99.995% as against 99.95% in the bidding document	Could you please confirm the performance requirement and also that any impact of the hardware / communications provide by ECG / MiDA on the system would be excluded while evaluating the system once it is deployed	**99.95% is the system performance.** **The impact of systems provided by ECG/MiDA will be taken into consideration when evaluating the Supplier's system after deployment.**		
126		RFP documents	The figures and diagrams (Architecture & Work Plan) are really very small.	Can they be provided in larger formats and clearer pictures?	**Yes. The drawings has beeen provided in PDF in an Addendum.**		
127		RFP documents	Head End system	Would this be a common Head end to collect data from all meters under ECG which are deployed with Smart meters under AMI? Should the Head end system only cater to the GPRS communications (which may become obsolete in the next 2-3 years) as stated in the RFP or should it also be capable of collecting data from devices over 3G / 4G / RF / PLC communications, as any of them could be used for your AMI system roll out in the future?	**a) Yes there will be universal Head End.** **b) Communication between the MMS and the meters shall be through GPRS communication via public mobile phone network. It shall support other communications such as 3G,4G, etc. Page 423.**		
128		RFP documents	Supply and integration of 240 meters (6 makes of STS prepay meters @20 each and 6 makes of AMI meters @20 each)	Can you please confirm- The vendor can decide on the makes of the meters What is the break-up of meters in terms of single phase and 3 phase whole current meters? For AMI meters, would be use meters with the internationally accepted open DLMS protocol? Meters being currently used in Ghana ask for Tamper features. The OBIS codes for these are not included in the DLMS protocols. So can we use DLMS with their appropriate DLMS Companion specifications to standardize on open protocol?	**a) There is no special preference for meters from any country or manufacturer. All meters that meet the requirements are acceptable.** **b) The twenty (20) prepayment meters to be supplied from each of the six different manufacturers shall consist of:** **1. Ten (10) Single phase prepaid meters for residential applications, with basic current and maximum continuous current rating of 5 and 60A/phase respectively.** **2. Eight (8) Three phase prepaid meters for medium commercial applications, with a basic current and maximum continuous current rating of 10 and 100A/phase respectively.** **3. Two (2) Three phase CT-connected meters for large commercial applications, with a rated current and maximum continuous current rating of 5 and 10A/phase respectively.** **c) Yes .** **d) Any system that supports open protocol and meets the requirements indicated in the bidding document is acceptable.**		
129		RFP documents	With respect to interface with the System, we are asked to deploy only two (2) out of the nine (9) RCCs.	Does the centralised MMS have to interface with the others too?	**The centralised MMS will be required to interface with the Indra CMS and 2xRCC. See answer to Question 120 above.**		

130		RFP documents	With respect to Integration with other ECG Systems; are we to interface with all of them?	1. We understand that ECG has already rolled out the CMS system. Can you please share the details on a. Level of integration required? b. Data and frequency of exchange? c. Data structures and interfaces. 2. For the other systems that have not been deployed by ECG, would our scope be limited to publishing our interfaces / APIs? 3. Should the interfaces for the MMS be conforming to open standard such as IEC 61968 / Web services?	**1. Specification document has been provided in an Addendum.** **2. Yes. Bidder's scope will be limited to publishing our interfaces / APIs.** **3. Yes, interfaces for the MMS should be conformed to open standard such as IEC 61968 / Web services.**		
131	120 etc	Section IV. Bidding Forms: Price Schedules - Schedule 7 Page 120 of RFP	Operational acceptance	1. What is the process / test plan for operational acceptance? 2. What is the hardware and software requirement for operational acceptance? Please clarify	**1. The test plan for operational acceptance should be provided by the Supplier.** **2. Supplier shall be required to provide other tools for operational acceptance for approval.**		
132	48	BDS ITB 19.2RFP documents	Power of Attorney:	Is the Ghana Embassy or Consul in the Bidder's Country to notarise or is it to be notarised by notary public in the Bidder's Country and authenticated by the Ghana Consul?	**Refer to Answer to 56 above.**		
133	401	Section VII. Business Requirements to Be Met by the System Page 401 of RFP	There is a requirement for the RCC to support an initial capacity of 200,000 metering end points; and MMS + HES to have initial capacity of 3,000,000 metering end points with capability to expand to 6,500,000.	Can you please confirm- 1. What are the number of licences / end devices to be supported under the project? Is it 200,000 or 3,000,000 or 6,500,000? 2. What is the specific number of the various types of STS Prepayment and AMI meters to be supplied i.e. 1-phase, 3-phase or CT-connected?	**1. 200,000 metering units for each RCC.** **2. 3,000,000 metering units for the Centralised MMS.** **3. The specific number of the various STS Prepayment meters is provided in answer (b) to Question 128 above.**		
134	93-	Section IV. Bidding Forms Price Schedules ~~BDS in RFP~~	Are the items with zero quantities going to be provided by MiDA / ECG?	Can you please confirm that the hardware to deploy the HES + MMS would be provided by MiDA / ECG and the specifications of same would be finalised in consultation with the chosen vendor?	**Yes. Only Items with zero quantities are available in ECG. The specifications of these items are as provided in the purchaser's requirements (section VII.) and the price schedules.** **Except for items with zero quantities in the Price Schedules, Bidder shall provide all other items and in the stated quantities.**		
135	45	BDS ITB 6.1 (a) Qualifying requirements	The Bidder should demonstrate experience to have delivered MMS in a country in sub-Saharan Africa or any other developing country with similar conditions as in Ghana. Two (2) references.	Can you please confirm if the following is acceptable as a qualification experience The Bidder should demonstrate experience to have delivered MMS in a country in sub-Saharan Africa or any other developing country or <u>any other country worldwide</u>. Two (2) references.	**Bidders must comply with this requirement.**		
136	45	BDS ITB 6.1 (a) Qualifying requirements	The Bidder should demonstrate past experience with complying with Environmental, Social, Gender, Health and Safety Requirements of at least two similar project in past five years. Two (2) References.	Can you please confirm if a self-certification by the bidder to support this requirement would suffice to meet the requirements of the RFP?	**Bidders shall be required to provide Environmental, Social, Gender, Health and Safety Performance from two references. Self-certifications will not be accepted.**		
137	66	Clause 4.3.1	Historical Financial Performance	Can you please confirm that if the bidder is a JV, then financials of the lead bidder would be sufficient to meet the requirements of this clause of the RFP	**No. The requirements are provided in Table 4.3.1 in Section III of the Bidding Document.**		

138	67	Clause 4.3.2	Annual Average Turnover	Can you please confirm that if the bidder is a JV, then financials of the lead bidder would be sufficient to meet the requirements of this clause of the RFP	**No. The requirements are provided in Table 4.3.2 in Section III of the Bidding Document.**		
139	68	Clause 4.3.3	Financial Resources	Can you please confirm that if the bidder is a JV, then financials of the lead bidder would be sufficient to meet the requirements of this clause of the RFP	**No. The requirements are provided in Table 4.3.3 in Section III of the Bidding Document.**		
140	50	General / BDS ITB 21.1	Last date for submission of bids – 6th July 2018	Considering the clarifications requested during the pre-bid conference and as above would be provided to us only by 6th June 2018 and that a further round of clarifications may be required in case the clarifications are not sufficient, we would request you to consider an extension in due date of bid submission to 6 weeks from the date of last clarifications by MiDA.	**Kindly see Answer to Question 2 above.**		
141		Section VII. Purchaser's Requirements – 1.1 Business Requirements to Be Met by the System		• Are the AMI meters the meters at CT and boundaries? • Should these meters be controlled by 61850? • Could you provide a precise use of the AMI meters? Are they use for post-paid customers? In that case, are they only used for billing? • Conversely, if AMI meters are used for Secondary Substations, please confirm if they should be accessed by DLMS/COSEM protocol.	**a) AMI meters are to be installed at critical nodes, primary substation / bulk supply station, regional and district boundary.** **b) AMI meters should comply with IEC61850.** **c) AMI meters are not for billing purrposes. AMI meters are not postpaid billing.** **d) AMI meters shall be accessed by DLMS/COSEM protocol.**		
142		Section VII. Purchaser's Requirements – 2.1.2.3 GPRS/GSM Modem		• Please provide which DLMS version should be supported by the system, Green book 7 and bluebook 10 or another books? • The modems GPRS should behave as a data concentrator storing information of the meters, or they just can act as a gateway? Please confirm.	**a) The lastet version of the DLMS.** **b) GPRS modem should act as gateway only.**		
143		Section VII. Purchaser's Requirements – 2.3.1.3 General Features of the PPM Related MMS		About meters • AMI and PPM should support Load Profile, Billing, Events, TOU and Tariffs. Please confirm • Any PPM meters should support Friendly and emergency credit?	**1. The requirements for the AMI and PPM are clearly specified in the bidding document.** **2. The ability to administer "Friendly Credit" is a requirement for the MMS, as indicated in section 2.1.2.3.8 (page 419) and all PPM to be connected to the MMS should support it.**		
144		Section VII. Purchaser's Requirements – 2.3.2.1 Meter Management		• Should the MMS system be able to communicate with 61850 meters? (The ones that are placed at the limit boundaries. Confirm they just need to be read by a Scada system. Vending on-line engineering tokens • Please confirm if anyone outside the utility can generate a ClearCredit, ClearTamper or KayChange Token?	**a) Yes. The MMS shall be able to communicate with the AMI meters complying with IEC 61850.** **SCADA system shall use IEC61850 to read but the MMS shall use the GSM/GPRS facility to read.** **b.) No. These shall only be done by the Utility.**		

145	455	Section VII. Purchaser's Requirements – 2.3.4.2 Vending Software Specifications. Software support system		STS Prepayment System • Please confirm which type of certification does the system need, STS Legacy or STS6. • Confirm if the generated token should be a 20 digit token. • Could you provide some information about CIM and what type of object? • STS Prepayment with current non STS System STS Prepayment System with current non STS System • For each current non STS Prepayment provider should the system prepare an interface? Please confirm. • ECG should assure every provider is going to generate an interface, which is going to be able to connect with them in order to generate their kind of tokens, to be written in a magnetic card, please confirm. • ECG is going to obtain from every current non STS provider the way to store the information at every magnetic card reader, after obtaining the tokens. Please confirm. "The Vending system shall have automated activation dates for tariff changes" • When these tariff changes occur, should a message be issued to reprogram the counters with the previous rate? Please confirm. "The system should be able to reserve and expire vouchers as and when it is redeemed for resources. The system should be able to generate voucher numbers. Where the system generates its own vouchers, customizable vouchers should be printed with unique voucher numbers." • Are these coupons generated by the system associated with recharge amounts in advance of their sale? Kindly detail.	**1. The system shall comform to IEC 62055 (STS).** **2. The tokens shall be 20 digit and comply with IEC 62055.**		

146	540	Section ~~IV.~~ VII. Purchaser's Requirements	2.8 Techncal Data Sheet - 2.8.24 MMS - WHOLE CURRENT PREPAYMENT METER	"a. 2 of single-phase meter installed complete in enclosures (1 each of 2-way and 4-way arrangement)" Please indicate what is meant by 2 way and 4 way arrangement? Does it mean number of meters in per enclosure?	**a) 2-way means two meters per enclosure and 4-way means four meters per enclosure.**	**Question:** With reference to the Three Phase DIN Rail meters - can we also presernt a BS mounted meter as Three Phase DIN Rail meters are not readily availabe?	The specification is Three Phase DIN Rail meters..
147			General	I would like to find out with regards to the following tender: CB No: 5130400/IFB/04/18, will it be awarded to multiple suppliers since there are quite a lot of items to supply?	**No. This bid will be awarded to only one Supplier (Contractor) or one winning Bidder.**		