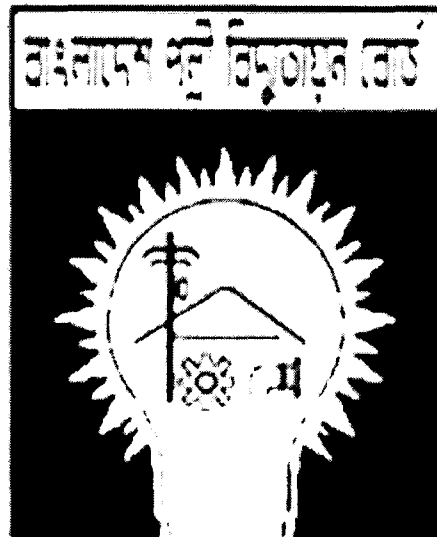# TERMS OF REFERENCE

For

Integrated Centralized Billing System for Palli Bidyut Samities

ISO 9001:2008, ISO 14001:2004
& OHSAS 18001:2007 Certified

Prepared by

Bangladesh Rural Electrification Board
Joarshahara, Khilkhet,
Dhaka-1229

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1. Background

The Rural Electrification Board of Bangladesh has been providing services to rural member consumers for the last 39 years. Continued support from the Government of Bangladesh, the donor community, consulting partners, and member consumers will help this program continue to expand by providing the gift of electricity to millions more Bangladeshi households, businesses, and industries.

Today there are 80 operating rural electric cooperatives widely known as Palli Bidyut Samity (PBS), which bring services to approximately 20 million connections being made and more than 3,74 thousand kms of line has been constructed.

Currently BREB is making huge financial losses each year due to practicing manually operated meter reading and operating billing process under sub-optimization level by 9 different vendors. To eliminate the revenue losses, BREB intends to introduce fully automated meter reading and billing system by adopting centralized, synchronized and integrated billing software in a holistic manner for 80 PBSs that will lead the system towards total customer satisfaction.

The existing 80 PBSs are using 9 (nine) different, un-integrated (distributed at billing station level with no integration), very manual data entry centric small scale billing systems, which is a very risky and inefficient in handling such important tasks. In this deployment architecture, the maintenance cost of the systems is observed to be unworthily high. The data accessibility, manageability and analyzability is close to zero. Data security is also a very big risk as the data is distributed in all billing stations with no scope for data consolidation at any point.

Moreover, these systems are developed using old/obsolete technologies with minimum stability, scalability, maintainability and functional maturity. On top of that, due to imbalanced engagement model and agreement related complexities, the manual billing system vendors are exploiting BREB in a very unusual manner, which is considered to be very non-standard of the global software industry practices. For example, these vendors have never handed over the system to BREB/PBS, never provided any access information (username, password etc.) to the system or database whereas the owner of the data is BREB! These vendors are not allowing BREB/PBS any kind of maintenance level access to their billing systems, these vendors periodically generate error at certain times every month in their respective systems, so that they are called for fee based support services; and every year they are taking huge amount of service and maintenance charges from BREB through very unprofessional and unethical manner. BREB is currently a hostage to all these vendors, being exploited on a monthly basis!

With BREB's rapidly increasing importance for national interest and presence throughout the country, it has become an inevitable need of time that BREB handles the above mentioned scenarios with serious attention by quickest implementation of Centralized Intelligent Meter Reading, Bill Processing, Generation, Delivery, Payment Processing, Collection and

Analytics System for all Billing Stations nation-wide including all required infrastructure, hardware, connectivity, and capacity building or training framework.

2. Objectives

The main objectives of the assignment can be summarized as follows:

- To ensure faster, systematic, better consumer service delivery;
- To ensure higher customer satisfaction level by introducing a faster, secure, tamper-proof, efficient meter reading, bill processing cycle management technology framework;
- To eliminate or drastically reduce meter tampering, reading manipulation etc. types of fraudulent activities;
- To ensure accurate, faster, tamper-proof billing (processing, generation, delivery, payment processing etc.) and revenue collection using centralized, state-of-the-art technologies;
- To ensure online, centralized / consolidated data & analytics visibility of at any organization levels e.g. central, PBS, Zonal Office (ZO), Sub-zonal Office (SZO) levels;
- To introduce or avail end-to-end centralized software, hardware, communication and infrastructure technology ecosystem to –
  - o ensure drastically improved customer service and satisfaction level;
  - o ensure introduction and usage of highly reliable, state-of-the-art technology ecosystem at BREB;
  - o eliminate / reduce disaster or business continuity risks for BREB;
  - o eliminate / reduce data security risks and cost;
  - o drastically reduce overall maintenance cost of BREB's billing ecosystem;
  - o ensure improved revenue collection and assurance;
  - o ensure reliable scalability of infrastructure for BREB's all future needs.

3. Review of Existing Service

3.1 About the Organization

The Rural Electrification Board of Bangladesh has been providing service to rural member consumers for over 38 years. Continued support from the Government of Bangladesh, the donor community, consulting partners, and member consumers will help this program continue to expand, providing the gift of electricity to millions more Bangladeshi households, businesses, and industries.

Rural Electrification Board Act, 2013 has been established instead of Rural Electrification Board Ordinance, 1977 (Ordinance No. LI of 1977) and the name of Board is Bangladesh Rural Electrification Board. Which was responsible for electrifying rural Bangladesh.

Since its inception, the purpose of the program has been to use electricity as a means of creating opportunities for improving agricultural production and enhancing socio-economic development in rural areas, whereby there would be improvements in the standard of living and quality of life for the rural people.

Today there are 80 operating rural electric cooperatives called Palli Bidyuit Samity (PBS), which bring service to more than 2,00,00,000 connection being made and more than 3,73,495 kms of line has been constructed. Under the PBSs, 450+ Zonal Offices (ZO) and Sub-zonal Offices (SZO) are distributed, each of which works as independent billing stations.

The BREB organization hierarchy can be represented as follows:

Enormous changes have occurred in areas all across rural Bangladesh due to people having access to electricity. The magnitude of changes and the impact of the RE Program is vast and diversified and information documenting these have become more acute in recent years. That is why it is inevitable for BREB to uplift its technology ecosystem and usage so that services can be delivered faster, more efficiently and more accurately.

3.2 Existing Service (As-Is)

Currently BREB is practicing very manual, distributed, highly error and fraud prone meter reading capture and billing process, because of which every year BREB is losing a
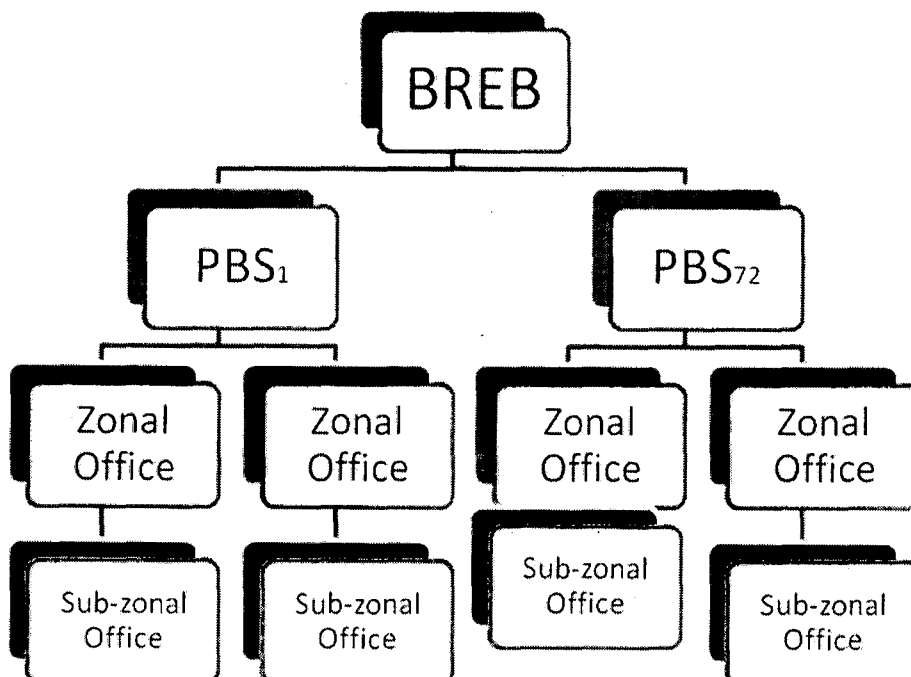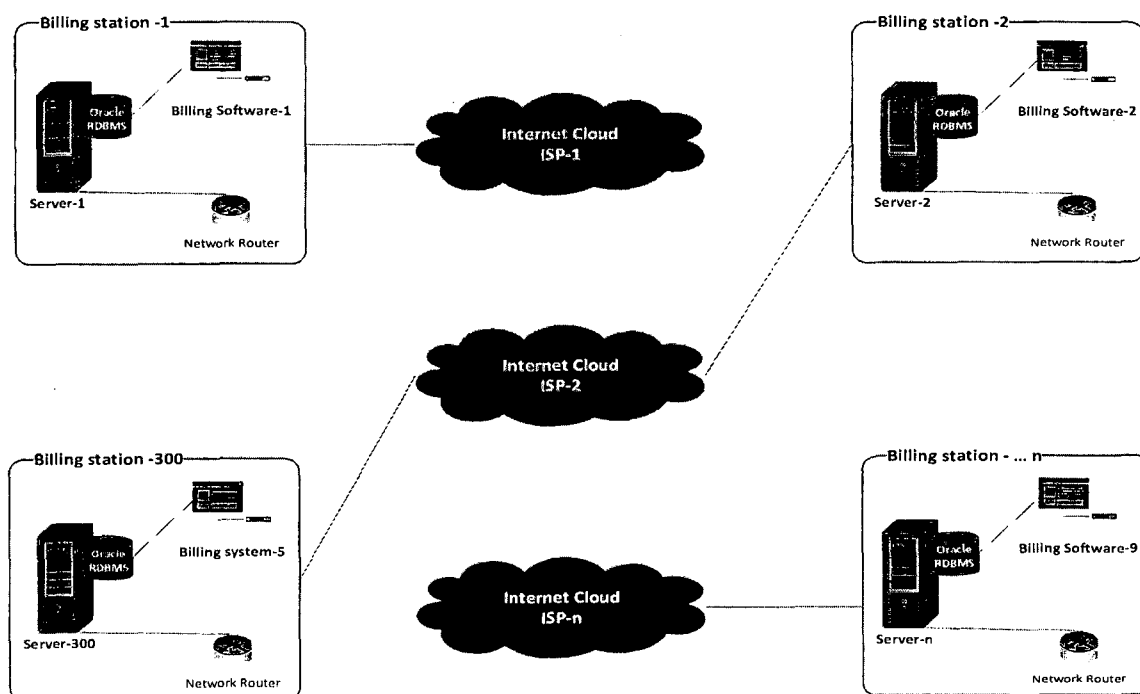

huge volume of revenue along with never achieved customer satisfaction level.

The existing 80 PBSs are using 9 (nine) different, un-integrated (distributed at billing

station level with no integration), very manual data entry centric small scale billing systems, which is a very risky and inefficient way of handling such important tasks. In this deployment architecture, the maintenance cost of the systems is observed to be unworthily high. The data accessibility, manageability and analyzability is close to zero. Data security is also a very big risk as the data is distributed in all billing stations with no scope for data consolidation at any point.

Moreover, these systems are developed using old/obsolete technologies with minimum stability, scalability, maintainability and functional maturity. On top of that, due to imbalanced engagement model and agreement related complexities, the manual billing system vendors are exploiting BREB in a very unusual manner, which is considered to be very non-standard of the global software industry practices. For example, these vendors have never handed over the system to BREB/PBS, never provided any access information (username, password etc.) to the system or database whereas the owner of the data is BREB! These vendors are not allowing BREB/PBS any kind of maintenance level access to their billing systems, these vendors periodically generate error at certain times every month in their respective systems, so that they are called for fee based support services; and every year they are taking huge amount of service and maintenance charges from BREB through very unprofessional and unethical manner. BREB is currently a hostage to

all these vendors, being exploited on a monthly basis!

The current billing related technology ecosystem can be presented as follows with the key points to be noted below:

3.3 Problems and Challenges:

- Nine (9) different vendors, different systems implemented in 80 PBSs!

- All 9 systems are semi-manual data entry centric systems with lower technical reliability

- Distributed Deployment of all 9 system means –

  a) Individual system is used for individual billing station

  b) Individual hardware (server) is in use at all 450+ individual billing stations

  c) Individual RDBMS (Oracle) is in use at all 450+ individual billing stations

  d) No centralized online data view is possible

- Separate hardware and software maintenance cost for all 450+ billing stations, which is observed to unworthily high!

- Access information or passwords for databases are maintained by the respective vendors in all 450+ billing stations. The data risk exposure is very high.

- Data accessibility, manageability and analyzability is close to zero for BREB because of this deployment architecture and access unavailability

- These systems are developed using old/obsolete technologies with poor stability, scalability, maintainability and functional maturity

4. Proposed e-Service (To-Be)

4.1   e-Service Scopes

- To design, develop, implement and manage a centralized intelligent meter reading and analytic software module which will cover the following high-level features:

  o Online Tamper-proof intelligent digital reading of Analog and Digital Meters
  o Retrieval of previous data from the integrated centralized billing system for calculation of current month's consumption
  o Offline reading and batch processing of digital/analog meter readings
  o Locate and find direction of Meters / Customers
  o View Reading Activities of Individual Meters and Meter Readers
  o Manage field level challenges faced by the meter readers etc.
  o Consolidated analytics and data view at central, PBS, Zonal Office and Sub-zonal office level

- To design, develop, implement and manage a centralized and integrated billing

system modules which will cover the following high-level features:

- o Customer database and history management
- o Bill processing integrated to intelligent meter reading modules
- o Bill generation with approval processes integrated to intelligent meter reading modules
- o Bill delivery management and monitoring
- o Electronic bill payment processing engine along with different payment channels management
- o Bill collection monitoring and Fraud Management
- o Analytics on different billing activities at different organizational levels, e.g. central, PBS, ZO, Sub-ZO level dynamic analytics

- To design, develop, implement and manage multiple relevant enterprise software modules which are strongly related to billing related activities, such as –

  - o Workforce management module for automated scheduling, locating, performance management, efficiency analysis, activity history management etc. of the Workforce at different organizational levels, e.g. central, PBS, ZO, Sub-ZO level

- To develop and execute a Capacity Building and Efficient Training Framework for all workforce individuals at different organizational levels, e.g. central, PBS, ZO, Sub-ZO level to achieve proficiency and efficiency in using digital, modern, centralized software systems and other technologies related to the ecosystem

- To establish a comprehensive and dedicated IT helpdesk for the entire technology ecosystem (software, hardware, environmental software, infrastructure, network and connectivity etc.)

- To optimize the existing LAN/WAN, internet connectivity, i.e. data communication infrastructure at different organizational levels, e.g. central, PBS, ZO, Sub-ZO levels.

- To foster the prevention and recovery of security violations and fraud, a specialized arrangement of software module is required; such as-

  - o System security and audit management.

5. e-Service Functional Requirements

5.1 Solution Architecture

Solution architecture is expected to define and describe an architecture of the

proposed e-Service Solution in the context of the mentioned prevailing service delivery process i.e. Digital Rural Electrification System. The solution architecture should assist in the translation of the service to e-Service transformation requirements into a solution vision, high-level operations and/or ICT application specifications and a portfolio of implementation scope. The expected architecture of a solution, where the solution is a e-Service system that should offers a coherent set of functionalities to it's environment. As such, it should concern those properties of a solution that are necessary and should be sufficient to meet its essential requirements. The vendor shall propose comprehensive solution architecture on Digital Rural Electrification System which may cover the following items in their descriptive and diagrammatic presentation

- Goals/Results
- Service Recipients
- e-Service Operators/User (Service providers)
- e-Service Observers (Service administration and performance monitor)
- Database application components:
- Entity application component:
- Utility component
- System federation (Systems to be integrated)
- Process application component
- Interaction application component
- Application
- Accessible Points
- Networks
- Types or Layers of Service Delivery Points
- Hosting Site
- Change management and update policy
- Risk assessment and Business Continuity Plan (BCP)

5.2 e-Service Functions and Features

The Integrated Centralized Billing System (ICBS) shall have to adopt and implement the latest versions of the RE Program related Policies and Rules, Statutory Regulatory Orders (SROs), Guidelines, Explanations and all other instructions made there under.

The following is a general summary of the functionality required in each Business Process.

5.2.1 E-meter Reading System (EMRS)

Item No.	Features Name	Features Description	Actor	Media
1.	Meter Registration	A meter must be registered first to the core server side engine. To	Meter Reader &	Mobile

		register, the user (meter reader or lineman) will take a snap shot of the full meter (clear image with visible meter number), will input digital bill book no., account no., customer no., meter no., the system will then dynamically retrieve GPS parameters of the location of the meter, after which the user will post the Meter Registration request to server side core engine, which will then perform de-duplication (if any) and complete the meter registration process.	System	
2.	Data Transmission	Data Upload and Download through Wi Fi or GSM (mobile internet) from meter reading collection device	Meter Reader & System	Mobile/Tab
3.	Data Migration	Collection of billing station wise customer information and verification with the migrated data from BREB's existing billing systems databases.	Meter Reader & System	PC
4.	Image Capture	Capture the picture/image of meter with reading of the meter instantly using the Intelligent Meter Reading Application hosted into the meter reading collection device	Meter Reader & System	Mobile/Tab
5.	Converting Image to Text	Identification of the meter reading from the image and conversion of the meter reading instantly into numeric data entry in the meter reading device	System	System/Mobile/Tab
6.	Converted Data Insertion into Server	Insert and update the converted numeric format data from the picture of the meter reading in the meter reading device database's reading fields like the numeric data entry in the meter reading device	System	Server
7.	Data Comparison	Comparison with previous and average readings and generate real time instant warning message from the meter reading device to meter reader for any deviations or questionable values	System	Server
8.	Give Exception	Marking, identification and instant reporting to centralized back-office about suspected meters like (Damage, Tempered, Unused, Unlocked, meter reading reset,	System	Server
9.				

		meter consumption is specified percentage higher than average consumption, meter consumption in specified percentage lower that average consumption, etc.) from the meter reading device. Generate real time instant meter reports for suspected meters from the back-office web server system		
10.	Meter Reading Dashboard	Receive and update PBS/ZO/SZO/Division/District etc. wise meter reading related analytics	System	Web/PC
11.	Data Editing	Data Edit facility with frozen logging in the meter reading device before uploading the data to central billing server	Meter Reader & System	Mobile/PC
12.	Central Server Registration	Registration of meters at the centralized billing server system using GPS location tagged to consumers	Vendor & System	Mobile/Tab
13.	Notification	Notification module to broadcast notifications/instructions for meter readers, and others	System	Mobile/SMS /PC
14.	Reporting	Reports module in the meter reading device for meter reader to get update of reading collection progress	System	SMS/Mail/Web
15.	Location Identification	Household GPS location identification from the meter reading device and update in the database	Meter Reader & System	GPS Locator
16.	GPS Map	GPS map in app for location and meter search	Vendor & System	Mobile/Tab/PC
17.	Batch Meter Reading	Batch meter reading and processing facility in case of unavailability of internet connections at the reading collection device	Meter Reader & System	Mobile/Tab
18.	New Book Registration	Elaka/route wise New Digital Bill Book Registration/Creation, Assign New Book to User (Meter reader), Tracking User & Book wise Activity, Update Book Status, reading progress view & notifications etc. from the server side application and terminal application (device)	Billing Supervisor & System	PC
19.	New CMO Information	Entry of CMO site data (last reading and image of old meter, initial reading and image of new	Billing Supervisor & System	PC

		meter etc.) and online and batch upload at server side centralized billing database		
20.	User Management	Controlled user access with logging facility	Higher Authority & System	PC
21.	User Authentication	Device mapping with users to avoid potential security breach. System Administrator will register a device at the server side with its IMEI, then assign a user from "User Group" feature, then will create a 'UserId' & 'password' for individual registered users. When the user will open the application for the first time, Device Activation feature will dynamically retrieve its IMEI and activate through authentication from the server side.	System	Mobile
22.	Ensure Security	Data transmission security between terminal device and server side centralized billing database must be controlled using a secured middleware which will control and configure the cryptology features to ensure security in transmission	System	Server/Firewall
23.	Image Processing Engine	The bidder must demonstrate a core image processing engine developed by the bidder using different areas of artificial intelligence such as machine learning, back propagation algorithm, linear and logistics regression, neural network etc. to perform efficient conversion of meter image to relevant data. Usage of any 3rd party image processing engine will be considered as a serious dependency risk exposure with the core system for BREB, hence will not be accepted. Failure to comply with this requirement will cause a bid to be considered as non-responsive.	Vendor	Server
24.	Image Processing Engine Accuracy	The accuracy of the core image processing engine developed by the bidder must demonstrate an accuracy level of 80% or above. The bidder will have to prove this practically before the final selection.	Vendor	Server

25.	Demonstration of functional of Technical Compliance / Readiness	As the e-meter reading software module is the most critical, technologically challenged and likely to consume very large amount of R&D time for its readiness for the purpose, preference will be given to bidder(s) who would be able to demonstrate the E-Meter Reading Management related functional and technical compliance of the software module within Fifteen (15) days from the date of submission of the bid at any mutually agreed billing station of BREB.		

5.2.2 Consumer Information Management (CIM)

Item No.	Features Name	Features Description	Media	Actor
CIM-01	Add/Edit New Consumer	Add/Edit New Consumer by Application	System	Billing Supervisor
CIM-02	Change Account Information	Change Account information	System	Billing Supervisor
CIM-03	Change Consumer Book	Change Consumer from one book to another	System	Billing Supervisor
CIM-04	Customer Tariff Management	Conversion of consumer tariff from Domestic to Commercial or Vice-versa	System	Billing Supervisor
CIM-05	Customer Tariff Management	Conversion of consumer tariff from Commercial to GP or Vice-versa	System	Billing Supervisor
CIM-06	Bulk Meter Management	Assign Bulk Meter	System	Billing Supervisor
CIM-07	Sub-Meter Management	Assign Sub-Meter under a Bulk Meter	System	Billing Supervisor
CIM-08	Pole Meter Management	Assign Pole-Meter with Consumers	System	Billing Supervisor
CIM-09	Membership Management	Update Consumer Membership Information	System	AGM (MS)
CIM-10		Print Membership Certificate		
CIM-11		Print Certificate of		

Item No.	Features Name	Features Description	Media	Actor
		Payment		
CIM-12		Type-1 for no outstanding		
CIM-13		Type-2 with outstanding		
CIM-14	Meter Reporting	Meter Reports	System	AGM (MS)
CIM-15	Bill Management	Opening Balance of Due Bills	System	Customer
CIM-16	Voter List Management	Voter List Management – provisional & final	System	AGM (MS)
CIM-17		Print Voter List		

5.2.3 Membership and Voter Management (MVM)

Item No.	Features Name	Features Description	Media	Actor
MVM-01	Membership Management	Membership Information Management	System	AGM (MS)
MVM-02		Membership Certificate Management		
MVM-03		Print Membership List		
MVM-04		Other Membership List		
MVM-05		Membership Approval List		
MVM-06		Member List Distribution Format		
MVM-07		Certificate Create and Issue		
MVM-08		Certificate List		
MVM-09		Certificate Delivery / Receipt Info		
MVM-10		Management of Non-Voter Option For Consumer		
MVM-11		Voter List Management		
MVM-12		Voter List By Elaka		
MVM-13		Non Voter List By Elaka		
MVM-14		All Consumer In Voter List Format		

5.2.4 Tariff Management (TFM)

Item No.	Features Name	Features Description	Media	Actor

TFM-01	Tariff Management	Tariff Code Registration	System	AGM (Fin)
TFM-02		Consumer Classification by Tariff		
TFM-03		Tariff Rate & Parameter Configuration for different type of bill		
TFM-04		Rate Schedule Update on demand		
TFM-05		The system might utilise a configurable method to store and maintain all rates applicable to for the computation of interest, penalty, and surcharge etc. calculation. The method of calculation of interest (simple or compound) should be configurable.		

5.2.5 Change Meter Order / CMO Management (CMO)

Item No.	Features Name	Features Description	Media	Actor
CMO-01	CMO Management	CMO Initiation Management	System	Billing Supervisor
CMO-02		CMO Execution Management		
CMO-03		Add/Edit New CMO for – • New Connection of a Meter • Re-connection of a Meter • Disconnection of a Meter • Change Meter		
CMO-04		CMO Print [REB Form # 201A]		
CMO-05		Tracking CMO Status		

5.2.6 Bill Processing (BP)

Item No.	Features Name	Features Description	Media	Actor
BP-01	Bill Processing	Review Reading Sheet by Route i.e. by Elaka/Village for	System	Billing

Item No.	Features Name	Features Description	Media	Actor
		Irrigation/Industrial Consumers		Supervisor
BP-02		Prepare Billing Schedule		
BP-03		Capture Current Month Reading from e-meter reading system module		
BP-04		Current Month Reading Adjustment (if applicable)		
BP-05		Handle Resale Connection		
BP-06		Bulk Meter & Sub-Meter Reading Adjustment		
BP-07		Pole Meter Reading Adjustment		
BP-08		Prepare & Process Normal Bill for different tariff consumers		
BP-09		Prepare & Process Average Bill		
BP-10		Prepare & Process Estimated Bill		
BP-11		Prepare & Process Penalty bill		
BP-12		Print Combined Bill & Collection		
BP-13		Handle Installment provision for due bills		
BP-14		Month Close – Approval / Cross check		
BP-15		Month Close Management		

5.2.7 Adjustments and Corrections (ADC)

This module facilitates special adjustments and corrections of generated bills.

Item No.	Features Name	Features Description	Media	Actor
ADC-01	Adjustment & Correction	Bill Correction & Print by higher authority for Current month	System	GM/DGM
ADC-02		Bill Correction & DM/CM by higher authority for closed month		
ADC-03		Debit Memo/Credit Memo		
ADC-04		Bill Adjustment from Security Deposit		

Item No.	Features Name	Features Description	Media	Actor
ADC-05		Bill Adjustment from Advance		
ADC-06		Bill Adjustment from Double Payment		
ADC-07		Irrigation bill adjustment from Irrigation Advance		
ADC-08		Irrigation Advance or Security Deposit re-collection		
ADC-09		Re-adjustment of Irrigation Advance from consumer due bill when paid		

5.2.8 Approval and Bill Generation (BG)

Item No.	Features Name	Features Description	Media	Actor
BG-01	Approval & Bill Generation	Review & Approve processed Normal Bill for different tariff consumers	System	GM/DGM & Billing Supervisor
BG-02		Review & Approve processed Average Bill		
BG-03		Review & Approve processed Estimated Bill		
BG-04		Review & Approve processed Penalty bill		
BG-05		Generate Final Bills with a unique auto-generated barcode printed in the generated bill		
BG-06		Management of Bills Printing		

5.2.9 Bill Delivery Management (BD)

Item No.	Features Name	Features Description	Media	Actor
BD-01 .	Bill Delivery Management	The system shall facilitate management of delivery of BREB bills through variety of communication channels with its consumers including hardcopy, email, and mobile based on participation of the consumer at different communication channels	SMS/E-mail/ Hardcopy	Messenger
BD-02		Configure and create elaka/book etc. wise virtual lots of printed bills		
BD-03		Configure automatic assignment of lot(s) of printed bills to messengers		

Item No.	Features Name	Features Description	Media	Actor
BD-04		Assign lot(s) of printed bills to individual messengers		
BD-05		The system shall facilitate optional feature of bill delivery notification module as part of the android app, using which all messengers will view the list of printed bills to be delivered by him, and at completion of delivery of each individual bill, the messenger will have to press a button to complete the delivery and the system will remove the item from the list of bills to be delivered after validating.		
BD-06		The system shall automatically and instantly validate the completion of delivery of every individual printed bill delivered by every individual messenger using the pre-registered GPS location of the meter assigned to a customer. This will ensure elimination of fake delivery.		
BD-07		The system shall facilitate real-time billing station/elaka/messenger etc. wise bill delivery progress view, notifications, alerts etc. to different user groups as specified		
BD-08		The system shall facilitate through a web interface and/or android app and/or sms interface a feature for the consumers to check the status of the delivery of their bills online; i.e. a consumer can find if his bills are delivered through the channels of his preference or not using all or any of the above mentioned channels.		

5.2.10 Payment Processing Channel Management (PPC)

Item No.	Features Name	Features Description	Media	Actor
PPC-01	Payment Processing Channel Management	The system shall facilitate configuration of payment channels, e.g. • Cash at own counter • Cash at bank counter • Cash at 3rd party counter • Mobile banking channel • Internet banking / EFT • At ATM and/or cash deposit machines (CDM) etc.	Any Banking/ Mobile Banking Channel	Consumer/ AGM (Fin)

Item No.	Features Name	Features Description	Media	Actor
PPC-02		Create and configure Individual Payment Processing Channels		
PPC-03		Monitor connectivity, interfaces and transactions with each payment processing channels		
PPC-04		Generate channel performance report, different types of statistics and report related to payment processing channels		
PPC-05		System shall facilitate a payment collection module / interface to be used by all collection agencies at all collection points using which the collectors will be able to enter specified payment information during the collection, on completion of the collection process, the data will be available online in the server side core engine. The collectors will also be able to view their statements online as and when required.		
PPC-06		On completion of the payment collection through any channel, the system will send a payment confirmation notification through SMS/ email to the consumer and this activity will be logged in the system for future reference.		

5.2.11 Collection and Consumer Accounting (CCA)

Item No.	Features Name	Features Description	Media	Actor
CCA-01	Collection & Consumer Accounting	Collection Point Registration i.e. Office, Bank-Branch, Spot Collection, SMS, UISC etc.	System	DGM/ AGM/ Accountant/ Cashier
CCA-02		System shall facilitate a payment collection module / interface to be used by all collection agencies at all collection points using which the collectors will be able to read the barcode printed on the bill to fetch all bill related data and enter specified payment information during the collection, on completion of the collection process, the data will be available online in the server side core engine along with automatic Chart of Accounts entry as collection head. The collectors will also be able to view their statements online as and when required.		

Item No.	Features Name	Features Description	Media	Actor
CCA-03		Real-time view of Daily Bill Collection by office, bank-branch, collection point, with special permission etc.		
CCA-04		Collection of rebated Office Bill – Auto adjustment		
CCA-05		Other Zonal/Area office bill collection		
CCA-06		DNP (Disconnection for Non-payment fee) Bill collection		
CCA-07		Daily Other fee collection through "Other Receipt" (OR)		
CCA-08		Bank Deposit – Collection & VAT		
CCA-09		Cash Closing Management		
CCA-10		Generate Collection Register - REB Form-13 [Office]		
CCA-11		Generate Collection Register REB Form-13 [Bank]		
CCA-12		Print Collection Register by book, by tariff, by collection point, by user & by date etc.		
CCA-13		The system shall facilitate the creation of ledger accounts for consumer, consumer type, and bill period.		

CCA-14		The system shall provide for a variety of accounting transactions ("money events"), which include but are not limited to:
		 • Payment
		 • Refunds & Refunds Interest paid
		 • Charges (Penalty, Surcharge, Interest)
		 • Other Charges - Ability to identify and define
		 • The format of accounting transactions must identify:
		   – Transaction code
		   – Description
		   – Transaction dates (received, posted, effective, etc.)
		   – Whether it is a debit or credit (could be represented as positive or negative number)
		   – Etc.		

CCA-15		The system shall record all transactions and provide the ability to view the basis of these transactions		
CCA-16		The system might allow for consumers within the same type to have different due dates		
CCA-17		The system will enable all consumer types to		

Item No.	Features Name	Features Description	Media	Actor
		be viewed in the same style of consumer account.		
CCA-18		The system will structure the account details so that all transaction types are clearly identified while being able to present all the consumer's account balances across all types.		
CCA-19		The system shall allow proper identification and posting of all information passed to it from the payment, enforcement, rebate management etc. modules/systems.		
CCA-20		The system will allow for multiple configurable views and reports involving different consumer types consolidated by the account no. and billing station.		
CCA-21		The system will allow, with appropriate security, consumers to view their account via an online browser facility (including an android app).		
CCA-22		The system will provide the capability for user groups to view a summary of the transactions posted for a given consumer and consumer type and billing period.		
CCA-23		The system shall facilitate the maintenance of a record of aging of debts; aging would be by user definable dates (i.e.: >90 days) or by size of debt.		
CCA-24		The system will allow off-sets of credit with debits within consumer types and across consumer types. The system will allow for automatic or manual intervention of this function depending on consumer type.		
CCA-25		The system shall have the ability to display information at a point in time in the past		
CCA-26		The system shall have the ability to generate consumer statements for a specific period or a summary statement for a consumer.		
CCA-27		The system shall have the ability to conduct an Account Integrity Check on a periodic basis at the billing system level and consumer level. The integrity of the billing		

Item No.	Features Name	Features Description	Media	Actor
		system and consumer ledger will be checked to ensure that logical relationships between transactions are intact and that no transactions appear to be missing or have incorrect values.		

CCA-28		The system shall generate management reports:
		• Age of the outstanding debt
		• For each consumer type, branch office, region and be able to consolidate this information on a national level.
		• An audit trail of any adjustments made
		• An overall account status by:
		  – Consumer
		  – Consumer type		

5.2.12 Revenue Accounting (RA)

This covers the accounting for revenue paid by consumers through the cash, banking system and electronic channels

Item No.	Features Name	Features Description	Media	Actor
RA-01	Revenue Accounting	The system shall recognise and interface with Payment Channels such as: • Cash at own counter • Cash at bank counter • Cash at 3rd party counter • Mobile banking channel • Internet banking / EFT • At ATM and/or cash deposit machines (CDM) etc.	System	AGM (Rev)/ Accountant
RA-02		The system shall recognise Electronic Payment Types such as: • Credit/Debit Card • Electronic Transfers (Online, EFT) • Mobile Banking etc.		
RA-03		The system shall have the capability to record the following attributes (not limited to) of all payments: • Payment period • Payment date and time • Payment type(s) • Payment location / Collection point • Payment amount.		

Item No.	Features Name	Features Description	Media	Actor
		• Bill Reference • Identification of payer and/or agent etc.		
RA-04		System shall have the capability to define parameters for payments which can check for validity of: • Payment amount • Effective and Expiry Dates • Location • Etc.		
RA-05		The system must fully account for all payments received with detailed tracking of individual transactions from receipt through deposit and posting to consumer and revenue account. All the applicable payment information must be captured from the various payment channels.		
RA-06		The system shall have the capability to report on all payment types.		
RA-07		The system must accept and record the issuance of refunds through the ICBS system.		
RA-08		The system shall allow for real time update of transactions conducted through all electronic channels of all transactions with end-of-day update.		
RA-09	'	The system must allow a journal entry to be done where any subsequent adjustment of the payment transaction to any consumer account is different from the initial/receipted "consumer type", bill period and billing station. This must be done with the appropriate security and control measures inclusive of an audit trail.		
RA-10		The system shall provide a mechanism for the processing of payments that cannot be properly posted to the Consumer's account. That is, it shall have the ability to recognise payments in Revenue Accounting although not in Consumer Accounts (i.e.: through the use of Suspense Accounting).		
RA-11		The system must provide the capability for different specified user groups to view revenue for a given reporting period by segments and sub-segments, namely: • PBS • Zonal Office		

Item No.	Features Name	Features Description	Media	Actor
		• Sub-Zonal Office • Consumer • Consumer Type, etc. The system shall facilitate the reporting of the revenue using any mix of the above segments.		
RA-12		The system shall, on a predetermined schedule or on data entry, calculate interest, penalty etc. on amounts subject to interest/penalty and post this amount to the consumer' current account for the affected bill period.		

RA-13		The system shall facilitate aging management through following features / reports:
		
		 • Aging By Book
		 • REB Form : 550 Part-B
		 • REB Form : 550 Part-D
		 • By Tariff
		 • By Billing Asst. (Tariff Wise)
		 • By Billing Asst. (Grand Total)
		 • Aging Reconcile-By Book
		    o Consumer Due Balance List
		    o Consumer Extra Balance List
		    o Consumer Diff. Balance List
		    o Consumer Equal Balance List
		    o Aging By Consumer [Reconcile]
		    o Aging Reconcile [View]
		 • Defaulter List
		    o DNP-Disconnection For Non-Payment
		    o DNP-Previous Month
		    o Top Defaulters
				·

5.2.13 Revenue Management (RM)

This covers the reconciliation of revenue received in the bank accounts to the revenue posted to consumer's current accounts using supporting documents provided through different collection channels/agencies.

Item No.	Features Name	Features Description	Media	Actor

Item No.	Features Name	Features Description	Media	Actor
RM-01	Revenue Management	The system shall facilitate the reconciliation of daily deposits/transactions information	System	AGM (Fin), Accountant
RM02		The system shall produce Revenue Management Reports on overall account status, general ledger for the administration, reports for other stakeholders such as the Ministry, and audit trail of adjustments made.		
RM-03		The system shall produce reports of payments received and posted/un-posted to bank account by: • Payment type (cash, credit/debit card, EFT etc.) • Location / payment processing/collection agents • Consumer type etc.		
RM-04		The system will enable the generation and assignment of a list of transactions to a specified user or user group for work in order to balance the bank reported deposits and the accounting system with bank accounts.		
RM-05		The system shall have the capability to compare current revenue with target over a configurable period.		
RM-06		The system shall have the capability of 'dash-boarding' revenue collection against predetermined budgets for specific consumer types and for the revenue as a whole.		
RM-07		The system shall generate Revenue Statements and Financial Reports for various purposes.		
RM-08		The system will provide an integrated General Ledger to manage reporting of revenues by revenue type.		

5.2.14 Rebate/Subsidy Management (RBT)

Item No.	Features Name	Features Description	Media	Actor
RBT-01	Rebate/	Rebate consideration for Irrigation consumers by	System	AGM

Item No.	Features Name	Features Description	Media	Actor
	Subsidy Management	GOB, setup of rebate period		(Fin)
RBT-02		Rebate consideration for Industrial agro-based consumers by GOB		
RBT-03		Rebate consideration for Charitable Consumers by GOB		
RBT-04		Rebate consideration for Office use consumers by PBS		
RBT-05		Receive GOB allocation & Rebate Adjustment by auto-distribution		
RBT-06		Rebate Collection		
RBT-07		Rebate Collection Posting		
RBT-08		Subsidy Collection		
RBT-09		Subsidy Collection Posting		
RBT-10		Rebate-Subsidy Auto Collection		
RBT-11		Reports On Agricultural Report		
RBT-12		Reports On Agri(Account Wise)		
RBT-13		Reports On Subsidy (By Book)		
RBT-14		Reports On Subsidy (Quarterly)		
RBT-15		Reports On Freedom Fighter By Book		
RBT-16		Reports On CI Rebate By Book		
RBT-17		Reports On CL Rebate (Quarterly)		
RBT-18		Reports On CL [Rebate,Vat,Meter Rent]		

5.2.15 Report Engine (RPT) & Dashboard Management

Item No.	Features Name	Features Description	Media	Actor
RPT-01	Report Engine	The system shall facilitate the default reports to be: • Exported in csv, pdf, excel formats • Generated as scheduled and dumped at specified locations • Circulated via configured email	System	AGM (Fin)/ System
RPT-02		The system shall facilitate the following default reports . User can view on dashboard with filtering, export, and printing: 1. Consumer List – by different parameters 2. Meter Reading Sheet – by different parameters 3. Electricity Billing Sheet 4. Consumer Billing Data		

Item No.	Features Name	Features Description	Media	Actor
		5. Electricity Sales Journal – KWH [Detail & Summary] 6. Electricity Sales Journal – Taka [Detail & Summary] 7. DM/CM Journal 8. DNP (Disconnection for Non-payment) List - by different parameters 9. List of Disconnected consumers 10. Consumer Subsidiary Ledger 11. Consumer Subsidiary Ledger with Rebate 12. Consumer Subsidiary Ledger Control 13. Irrigation Subsidiary Ledger Irrigation Rebate by GOB 14. Irrigation Subsidiary Ledger Minimum Bill 15. Consumer Advance for Irrigation Subsidiary Ledger 16. Account wise Summary Balance 17. Quarterly Rebate Statement 18. Collection Register 19. Collection Report 20. REB-Form-550 Part B 21. REB-Form-550 Part D 22. Top Defaulter List 23. Certificate for Payment/Non-payment 24. Voter List 25. Aging report by book/ billing assistant/summary		
RPT-03		The system shall facilitate dynamic report creation feature where the system administrator can create new reports on user demand with management approval using a dynamic user interface		

5.2.16 Master Data Management (MDM)

Item No.	Features Name	Features Description	Media	Actor
MDM-01	Master Data Management	Facility for configuration and management of Location Information – Division, District, Union, Thana, Elaka	System	Admin
MDM-02		Functionality for configuration and management of Post Code registration		

Item No.	Features Name	Features Description	Media	Actor
MDM-03		Functionality for configuration and management of consumer information such as: • Consumer (Basic Info, e.g. name, address, account no, meter no, digit count, seal no., load etc.) • Consumer Status • Change Account • Opening Balance, etc.		
MDM-04		Functionality for configuration and management of PBS basic data registration		
MDM-05		Functionality for configuration and management of BREB, Billing station department, designation		
MDM-06		Functionality for configuration and management of PBS Employee registration – department & designation wise		
MDM-07		Functionality for configuration and management of Yearly Holiday Schedule, calendar		
MDM-08		Functionality for configuration and management of collection agency information		
MDM-09		Functionality for configuration and management of payment processors or gateways information		
MDM-10		Functionality for configuration and management suppliers information		
MDM-11		Functionality for configuration and management of other master data such as currency, asset type, asset status, etc.		

✓5.2.17 System Security and Audit Management (SSAD)

Item No.	Features Name	Features Description	Media	Actor
SSAD-01	Security Monitoring	• Monitoring of activities that can raise system security threat and trend to make violation of defined security measures. • Classification and notification of enlisted security threats with an index of priority like EMERGENCY, HIGHEST, MEDIUM, LOWEST and so on.	System	Security Analyst
SSAD-02	Security Prevention	Blocking of activities that are classified as higher priority index of certain threshold.		
SSAD-03	Monitoring of Fraudulent Activities.	• Monitoring of activities that can raise abnormalities and trend to make fraud. • Classification and notification of enlisted fraud with an index of priority like EMERGENCY, HIGHEST, MEDIUM, LOWEST and so on.		System Auditor

Item No.	Features Name	Features Description	Media	Actor
SSAD-04	Reporting Engine	Specialized set of confidential reports for auditors only to make its processes more easiest and accurate		System Auditor

5.3 Users and User roles

Types of users	Titles of users	No of users	Geographical office location	Activity
E-service operator	Meter Reader	7000	District-61, Upazilla-460	e-Meter Reading related all activities
	Billing Asstt.	4000	District-61, Upazilla-460	Bill Processing, Bill Generation related job
	Billing Supervisor	500	District-61, Upazilla-460	Update CMO, Tariff Switiching
	AGM (F)	80	District-61	Tariff Management, Bill Correction
	AGM (R)	80	District-61, Upazilla-460	Tariff Management, Bill Correction
	AGM (MS)	80	District-61	Membership/Voter Management
	DGM	370	District, Upazilla	Bill Correction related
	Cashier	450	District, Upazilla	Collection Related
	Asstt. Cashier	450	District, Upazilla	Collection Related
	Accountant (Rev)	450	District, Upazilla	Accounting Related
	Total	13460		
E-service observer	Chairman, BREB	1	Dhaka	Observe all features
	Member (F)	1		Observe all features
	Controller (F & A)	1		Observe all features
	D (FM)	1		Observe all features

	D (ICT), BREB	1		Observe all features
	GM	80	District	Observe all features particular PBS
	DGM	370	District, Upazilla	Observe all features Particular Zonal
	Total	455		
E-service admin	System Analyst, ICT, BREB	1	Dhaka	Assign Role
	JE (IT)	80	District, Upazilla	Monitor system particular PBS
	Vendor	1	District, Upazilla	Update the system in any need
E-service Users	Consumer	1.85 crore	Nation-wide	Error free bill, Online bill payment

Vendor should have submit a comprehensive plan and approach covering different types of users and their roles providing accessibility, privacy, confidentiality and transparency based on the given statics. Also have to mention the user friendliness login system.

Special note: Who has the e-Filing integration option:

If the proposed e-Service application need to integrate and interoperable with government prescribed e-Filing system (a2i e-Filing) then vendor should have design the seamless, smooth and user friendly single login system.

5.4 Security and Privacy Requirements

The vendor should submit an extensive and complete security and privacy plan for this e-Service application considering the following issues

- Project technical scope
- Functional and nonfunctional requirements and Ultimate objectives
- Concerned service provider organization's operational environments and capacity
- User roles - Accessibility, Authorization and Accountability
- Importance of data management
- Technologies to be used for development & run
- Hosting
- Client and service side
- Overall standard application security requirements.

Apart from this the vendor should keep in account the following considerations also as well as vendor should provide a checklist based on system and hosting security plane (i.e fraud, hacking, money laundering etc) & have to provide the test report of that checklist.

5.5 Integration Requirements

As a government system or e-Service application, integration with the required and other prescribed national system is very important and essential. Only by proper integration making interoperable, an e-Service application can drive the ultimate citizen benefits with the optimum use of technology from service to e-Service transformation. Here vendor is expected to come up with an integration plan in their technical proposal considering and understanding the scope of the e-Service application as per this TOR. The possible integration scopes of this e-Service application are mentioned below as reference for the vendor.

System Name	Purpose	Dependent Organization
Online Connection Software	To retrieve the consumer information data	OWN
TMLM Software	To retrieve the consumer load status	OWN
MyPBS (Complaint Management System)	Consumer get their billing information, bill payment, receive complain and solve etc.	OWN
NPF	Bill payment, awareness, easy to accessible, easy to search	A2i
P2G (National Payment Gateway)	To Pay the bill	A2i or Payment gateway company &Telco

5.6 Hosting Requirements

It is important to mention here that the vendor will be hosted developed application in his own arrangement datacenter for testing purpose before the delivery to the client and the client will rent a colocation service for six months at the time of piloting. Therefore, vendor is requested to submit a preliminary hosting plan for this e-Service application considering the issues mentioned below:

- Hosting requirement /environment (hardware, servers, network, security, storage, traffic, firewall, bandwidth etc)

- Hosting architecture

- Data Growth and Scalability plan

- User handling/load balancing mechanism

- Licensing issues

- Scheduled backup & Restore Requirements

- Disaster recovery requirements

- Monitoring tools requirements

6. e-Service Non-Functional Requirements

6.1 Application Compliance Requirements

6.1.1 Web Application

- The application which is a web based solution, has to be hosted in a centralized Web-server

- The application should be developed following Service Oriented Architecture (SOA)

- Application should support MVC framework.

- Considering the operating/client environment at different level of this application, it should be developed in such a way so that it requires low bandwidth to run.

- The web-based application should support cross browser platforms (popular web-browsers such Mozilla Firefox, Opera, Chrome, Internet Explorer, Safari etc.)

- Should have ability to seamless integration with future module/components/applications

- Application should be lightweight and rich client-side scripting

- UI should be developed based on the analysis of UX.

- Any web interface of this application should be fully responsive

6.1.2 Mobile Application Requirements

- The mobile application version of the system should be developed for Android and iOS.

- The mobile app should have capability of displaying system notifications

- Functionality for registration options for service recipients

- App should enable compact view of services for service recipients.

- There should be an option to auto synchronization with the central database with apps local data based on the availability of the internet connectivity.

6.2 Sizing, Performance and Scalability Requirements

- The system shall be capable of handling online functionalities for a database of at least 24 crore service recipients and in terms of service provide 455 Offices and 2.5 crore System Users.

- The system processing shall be scalable to support the volume estimates for a period of 10 years at a 20% annual growth rate.

- The system shall be designed to handle estimated large scale 25 Lac simultaneous connection (online users) when it is ultimately rolled out.

- The vendor must conduct an extensive load-testing task taking above factors into consideration and submit a load testing results.

- The database architecture should be such that the system is available to user 24 x 7 x 365 days a year without any unapproved downtime.

- Page load time, login response-time, on-click" load time for the web application should be less than 3 seconds while this is accessed over the intranet.

- Average transaction response time, on-submit response-time, or any other database access/ search time should be less than 5 seconds when the system solution is accessed over the intranet.

- Considering the network infrastructure challenges in Bangladesh, the solution must support low bandwidth conditions for the services defined in the functional requirements.

- In case of mobile application also, this should support very low bandwidth even in 2G network provided internet bandwidth.

- The proposed solution should be highly scalable to accommodate current and future requirements within the scope of the scope mentioned in the

TOR

- Analyze the requirements whether both horizontal scaling (scale out) and vertical scaling (scale up) will be required for this e-Service application or not?

- The e-Service application should be provided with appropriate caching mechanism to handle very high-traffic scalability

- The vendor may propose here other relevant measures for the e-Service application scalability.

6.3 Risk Assessment and Business Continuity Plan (BCP)

Vendor is requested to prepare full assessment of all possible risk during the period of project inception to its life time. As per assessed risk, a mitigation policy and business continuity plan (bcp) is also requested to be documented properly. Business Continuity plan will play a very important role by creating the systems of prevention and recovery to deal with potential threats and risk of the e-Service operation. Vendor is requested propose a Business Continuity Plan for this e-Service application. Regarding business continuity you may take in account the followings issues if applicable or suitable for this e-Service Application

- All standard backup facilities should be supported by the system which can be started with disk based backup facility, gradually moving to Storage Area Network (SAN) based backup system.

- Data and the Operating system core component will be separated. A ghost image of the Operating system will always be available in case of rebuilding the server. All data can be restored in the data drive once the Operating System is restored.

- System can also have an automated Backup mechanism by which users can schedule the backups and the system will take the backups without manual intervention.

- System must check for the media and generate a report on backup with date time and details of backup.

- If a restoration fails for any reason, the system should prompt with proper error messages and suggest what has to be done to rectify the situation via on-screen, logs, email and text messages.

- System should maintain an automated recovery system and all versions of backup will be maintained. At any given point in time, the versions and

incremental backup details can be retrieved from the system.

- The system may be hosted in virtual servers or containers. A restore of a virtual server/container is much easier and faster compared to a single host server.

6.4 Interoperability and Data Exchange

The selected vendor must develop this e-Service system following all the standards and protocols of interoperability, integration and data exchange with other systems. It is expected that the system will be based on open architecture and will be fully interoperable with the current and future systems.

The following are the key expectations on interoperability requirements:

a. The system should be designed for interoperability using industry standard protocols.
b. System must expose data by Advanced Message Queuing Protocol and REST via TLS
c. All imported data must undergo data validation to ensure full integrity.
d. Data exchange within the system at different levels via the internet shall be encrypted.
e. The system should have functionality to exchange data with other own systems or external institute systems.
f. The system shall have functionality to export/import files based on the standard template defined through web services and/or API

Full API documentation must be provided so that third party integrators can integrate their system with this system.

6.5 System Audit

This e-Service system will maintain an audit trail of any changes or updates made in any information that are considered as vital and should maintain the audit log with information such as

- Log the users who are accessing the system

- Log the parts of the application that are being accessed

- Log the fields that are being modified

- Log the results of these modifications

- Log attempted breaches of access

- Log attempted breaches of modification rights

- Timestamp.

Ensure an audit trail is kept for all transactions and all audit transactions logged are kept on the trail file or trail database from where system can generate different audit reports as and when required.

6.6 IT Audit

Vendor should supports client and/or authorizes person or organization while it audit will be required.

6.7 UI/UX.

The vendor must propose a UI/ UX plan containing UI designing method and tools, prototype or Mockup design (if applicable) , UI review method , process for study and analyze UX , collaboration of basic web and mobile UX issues and expected result and outcome of UX, finalizing the UI/UX design. Apart from this, the vendor should consider the following issues as requirement at the time of UI/UX plan.

- The system interfaces should be highly user friendly, easy to navigate and ensure fast loading.

- The UI shall design by using well-established, supported and lightweight UI framework so that it follows widely used industry flow patterns

- UI shall be easily configurable if any changes are needed

- Menu, content and navigation shall be based on the user entitlements, roles and permissions.

6.8 Language Support

The e-Service system should support multilingual option i.e. Bangla and English for both the Web version and Mobile Apps. All the user interfaces will be able to display and input controls can take input both in Bangla and English. System/App users can choose and set his/her preferred language in profile setting for the the system interfaces. The system should support Unicode for the Bangla Language.

6.9 Accessibility

Vendor must develop this e-Service application ensuring access for the citizen (Service Recipients) with disabilities in different standard accessible formats. e-Service application should be developed in "universal design" and "assistive technologies". Accepting and facilitating the use of sign languages, augmentative

and alternative inputs and all other accessible means, modes and formats for inputs and outputs as per their choice by "Service Recipients" with disabilities; All e-service features (Web application or Mobile Application) should be be usable with the help of screen reading software by the service recipients with disability.

6.10   Coding Conventions

The vendor must follow the standard coding styles to produce high-quality code for further uses of the code in terms of reusability, refactoring, task automation, language factors etc. The vendor should submit a standard coding convention approach which may include different conventions like commenting, indent style, naming etc. following the best coding practices.

6.11   Documentation

Detail and proper documentation of such ICT based project like e-service Application development and implementation for Government is very vital and essential. Documentation is required for any such project as reference, knowledge transfer, analysis of development and implementation history, baseline information for any modification or change, guidance etc. In this issue, Vender is expected the highest-level professionalism for delivering the standard documentation approach at each phase of e-Service development and implementation project. Vendor is requested here to include an extensive documentation plan of this project in their technical proposal, which may cover the followings:

- Documents titles phase or activity wise
- Purpose of document
- About the format of documents (if possible only index or fields)
- Type of expert and skilled resource will be used for documentation
- Document priority and dependency
- Time requirement for preparation (If applicable)

6.12   Tools and Technologies to be used

Vendor is recommended to choose the appropriate tools and technologies to be used for the development and implementation of the e-Service application. The selected vendor has to consult with A2I and Bangladesh Rural Electrification Board to finalize the tools, technologies, framework and platform with the approval of same authorities consent.

The main components of the software will be web-based application and the database will be platform independent. It should be run in Windows/Linux/OSx

operating system at user end and should be compatible to all major browsers such as – Internet Explorer, Firefox, Google Chrome, and Opera etc.

The System UI should be compatible with Tab & Smart Phone browsers and in case of Mobile Apps should be support both Android and IOS

Understanding the details scope of this project, vendor is requested to submit a comprehensive plan in their technical proposal regarding tools and technologies to be used.

6.13   Quality Attributes and Assurance

The Quality attributes and Assurance plan will describe the standards, processes and procedures in this e-Service Application development life cycle which will be used to support the consistent delivery of high-quality, professional standard e-Service application and services provided in the support of an automated environment. The quality assurance process will be concerned with establishing the authority of the QA function, quality assurance standards, procedures, policies, and monitoring, and evaluation processes to determine quality in relation to established standards. Quality assurance activities will concentrate on the prevention of problems through the continuous improvement of processes.

In order to provide high quality products and services, each support team will adhere to processes, procedures and standards. Quality Assurance (QA) is a process used to monitor and evaluate the adherence to processes, procedures, and standards to determine potential product and service quality. It will involve reviewing and auditing the products and activities to verify that they comply with the applicable procedures and standards, and will assure the appropriate visibility for the results of the reviews and audits.

The vendor is requested to provide an extensive Quality Assurance plan with measurable attributes for each phases of this e-Services development life cycle in their technical proposal.

6.14   Copyright

Bangladesh Rural Electrification Board shall be entitled to all proprietary rights including but not limited to patents, copyrights and trademarks, regard to many Vendor. All kinds of source code including code documentation and other approved documents (all versions trail, products , developed applications, documents and all kinds of deliverables which bear a direct relation to or is made in consequence of the services provided by the vendor under this scope of this TOR.

The vendor shall assist in securing such property rights and transferring them in compliance with the requirement of the applicable law. After the completion of

the project such rights will be handed over to the Bangladesh Rural Electrification Board that will be produced at the time of entire system development and implementation life cycle under the scope of this TOR will be owned by Bangladesh Rural Electrification Board.

The vendor should properly deliver all the entire approved source codes and other deliverables to the Bangladesh Rural Electrification Board. The vendor cannot claim any royalty or authority of any sort in case of replicating the source code or database or any other deliverables under this TOR for any future use that Bangladesh Rural Electrification Board and the Government of Bangladesh may see fit.

Any studies, documents, reports, graphics or other material prepared by the vendor for this project under this TOR shall belong to and remain the property of Bangladesh Rural Electrification Board

The firm cannot use part or whole of the document / source code of this assignment elsewhere without the permission of BREB.

√6.15   Change Management and Update Policy

Vendors are requested to prepare a policy of change management and future upgradation of system to foster the system maintenance more easily and accurately. The policy shall include the instructions and explanation of all possible upgradation path; adaption requirements and guidelines of any operational and technical change.

7. Scope of Work

7.1 Development and Implementation Methodology

Development methodology i.e. SDLC plays a very important role to clear the ultimate project objectives precisely, to stable the project requirements, to monitor the progress with measurable deliverables and managing the entire project efficiently. Here the vendor is requested to propose and submit a best possible suited SDLC approach for this project considering the project scopes, requirements of e-Service, objectives, organizational environmental factors and behavior, project timeline, ultimate deliverables and various resources to be used.

7.2 System Requirement Analysis

Requirements finalization will be a very important milestone of vendor's proposed development methodology. It is expected that, the selected vendor will carry out detailed requirement study and analysis on the each and every scope of e-Service that mentioned in the TOR. Under this scope of work, the selected vendor has to analyze

the detail functions, processes, documents, actors, sites and infrastructure of the relevant prevailing system precisely of the concerned organization. At this phase, vendor's ultimate objective will be finalization of the e-Service requirements in details under the scope of TOR and approval of the concern organizational authority . Here vendor is requested to propose and submit a system requirement analysis plan which should cover the scope of work at this phase, relevant activities to be performed, timeline, deliverables to be produced, dependencies and resources to be used.

7.3 System Design

Basically at this phase the detail functional scope defining and designing as per the standard of software engineering approach for the proposed e-Service system tasks are being performed. . This is very vital and important phase of any SDLC. Considering the ultimate development and implementation scope, the proposed system design should be robust, scalable, user friendly and interoperable enough.

At this system designing phase vendor may perform different following designing related task and will produce various standard System designing Documents (SDD)

- Identifying module, components, tasks, I/O and functional features.

- Specifying technical and functional requirements.

- User Interface design.

- Description of UI and requirements.

- Preparing the use cases.

- Defining Integration and interoperability scope.

- Designing system architecture.

- Determine process and data flow.

- Database design.

- API Design.

- Finalizing tools, technologies and frameworks to be used etc.

Here vendor is requested to cover details system designing plan in their technical proposal which may include relevant activities, approaches, methods, documentations and deliverables.

7.4 Development

At this stage vendor must take prior acceptance or approval from the concerned authority on tools, technologies and framework that will be used for the development of the e-Service Application. Based on approved SRS and SDD vendor will prepare a comprehensive development plan for the e-Service Application which should include a schedule consisting development item wise start date, test date, review date, completion date etc. At the development stage, vendor must follow the standard code convention, code level documentations, header of each file, algorithms, interfaces, code compression and APIs should be supplied with proper description and documentations. All kinds of standard testing tasks that are required to be performed at the development phase should be mentioned in the plan. Considering the scope mentioned in the TOR for this e-Service application, vendor is requested to include a preliminary development plan (standard approach) in their technical proposal.

7.5 Integration

Considering the above mentioned Integration requirements and scopes for this e-Service application, vendor must include a phase in their proposed Development and implementation methodology approach. At this stage, the vendor will perform all necessary tasks regarding integration to make the e-Service application interoperable.

7.6 Testing

The vendor must propose a testing plan for this e-Service application starting from development to deployment. This testing plan should cover all the standard suitable testing approaches for this e-Service application which may include phase wise testing activities like test scripting, test cases, testing tools, testing process, test log, result and report formats i.e. expected test deliverables based on the application development requirements. The vendor should submit testing plan, which may include standard test approaches. Some are mentioned below as examples for reference

- Unit Test
- Functional Test
- Installation testing
- Compatibility testing
- Smoke and sanity testing
- Regression testing
- Stress Testing
- Acceptance testing
- Alpha testing
- Beta testing
- Functional vs non-functional testing

- Continuous testing
- Destructive testing
- Software performance testing
- Usability testing
- Accessibility testing
- Security testing

7.7 Hosting

Vendor should submit primary hosting requirements for this application related to hardware, servers, network, security, storage, traffic, firewall, bandwidth etc. i.e. complete hosting infrastructure that will be requires for their developed application hosting considering the implementation scope. Based on their submitted requirements, regarding hosting Bangladesh Rural Electrification Board will provide detail hosting infrastructure, facility and environment.

7.8 User Acceptance Test (UAT)

User Acceptance Test (UAT) is a very vital and essential phase in the e-Service development lifecycle. At this phase, all types of users must test the developed e-Service application by themselves and have to provide a details feedback/ test report . Based on the UAT report, vendor has to update the application accordingly to ensure user satisfaction by making it more user friendly. Here, it is expected that, considering the type of users and their role in the e-Service application, the vendor must propose a comprehensive UAT plan in their technical proposal which may cover the followings:

- UAT activities to be perform (planning, designing test cases, selection of testing team, Executing test cases and documenting, Bug fixing, sign-off etc),
- types of user wise roles and test items distribution
- resource requirement,
- activity wise time requirement
- activity wise test case , test results/ deliverables
- detail user feedback / test reports
- System update plan

7.9 Management and Migration of Legacy Data

Under the process of service to e-Service transformation, during e-Service activation or deployment, it may be necessary to move the legacy data of prevailing services. In this case, vendor may require performing different relevant activities that may include data collection, softcopy conversion, data filter, data

cleansing, data verification, data process, data entry, data migration and overall data management. Here, it is expected that, the vendor will propose their detail data management and data migration plan for this e-Service application considering the estimation of legacy data mentioned below which will be required to migrate into the developed application.

Description	Location	Existing format	Current Status	Amount of Data	Dependency
Consumer's billing and collection related all information	450+ Locations under 80 PBSs	Developed by 9 Software firms	Soft Copy	2 core (approx) consumer data with history	Data to be collected from existing vendor

Tab: Estimation of Legacy Data to be migrated

The plan may cover amount of data to be migrated, Activities to be performed, amount of resources to be used, required time for different data migration phases for different activities (data collection, hardcopy to softcopy conversion, data entry, data transformation from soft copy, data filtration, data cleaning, data verification) etc.

7.10 Deployment and Implementation

This is the phase of SDLC, when the consent is being given to "GO LIVE" of the developed system after completed all kinds of development, integration , testing and hosting. This is very crucial and sensitive stage for a Government application because at this stage the system becomes public and expose to access towards all levels of users. The Pilot or full-scale implementation period starts formally in this stage only. Vendor is requested to propose their Deployment and Implementation plan covering the major activities to be performed, the deliverables to be provided etc.

7.11 Training and Knowledge Transfer

- The vendor have to provide detail training for the following users:

  Pilot phase: All users of piloting PBSs.
  For nationwide implementation: Training of Trainers (TOT) for 200 trainers
  　　　　　　　　　　　　　　　　　: Training for all (about 8000) users
  Administration: 10 Users (for technology transfer)

- The vendor must propose a detail training plan for the users of the e-service application.

- The vendor has to develop training modules and curriculums and conduct TOT course for the prospective Trainers. After that they will be able to provide training to Users of PBSs if necessary.
- The vendor should include necessary training methodology, documentation and training aids support in their training plan

- The training materials may include user manual, administration manual, quick start tutorial, online help, frequently asked questions

- The training plan must describe the sequencing, time, duration and resources involved in implementation of each of the consultant's proposed training activities.

- The training plan should contain full course descriptions for all courses that to be carried out for respective users.

- The vendor should develop multimedia training materials for all users. These materials shall be available for viewing and reviewing for all users through a web portal.

- The training instructions should support both English and Bengali language.

- The training activities should cover the training feedback, evaluation and report also.

- The vendor also need to propose their smooth, efficient and effective knowledge transfer idea and plan here in this technical proposal with the training plan.

7.12 Maintenance and Support Service

The selected Vendor has to provide a period of 3 years maintenance and support service. After the development and deployment phase when the implementation period starts the vendor has to provide maintenance and support service for the 3 years. Here it is expected that, the vendor must provide detail maintenance and support service plan in the technical proposal, which may include the followings-

- Support service types and mode of services

- Service desk functionalities

- Configuration management

- Change management

- Service layers for support

- Tools will be used for Support service management

- Communication management and modality

- Release management

- Incident management

- Problem management

- SLA (Service Level Agreement)

- Maintenance and support service related reporting

- Support service types

- Service Log Management

Apart from the above-mentioned issues, if vendor thinks any other issue to be included in their plan, it would be considered as added value addition.

7.13 Duration of the assignment

The selected vendor will need to work for the above-mentioned scope as per approved project management schedule. The selected vendor must complete e-Service application development and deployment i.e. development life cycle as per their proposed development methodology within 1.5 years excluding the maintenance and support service period.

The vendor shall submit detail action plan using a Gantt chart indicating the following tasks (not limited to) :

- Total duration of the e-Service application development i.e. ICBS development
- Implementation plan on pilot basis (in min two PBSs)
- Nationwide implementation plan (78 or more PBSs)
- Total duration of the Maintenance and support service after implementation
- Proposed SDLC Phase-wise and deliverable-wise time distribution and duration
- The schedule may cover Activity, Deliverables, and Time in Days, Dependencies etc.

8. Educational Qualification and Experiences of Key Professional Staff

The vendor is expected to provide work distribution and team composition plan as deemed suited based on this project requirements and milestones and as per their proposed development and implementation methodology approach. The interested applicant should provide a team composition plan in their proposal describing the position, roles, tasks to be assigned, expected man-days of involvement, expected deliverables and required skill and expertise.

However, for proper execution of the project firm/applicant may constitute the team focusing on following position and criteria.

SI. No.	Position	Educational Qualification	Relevant Experience	Professional Certification
1	Project Manager			
2	Software Architect / Sr. Software Engineer			
3	Sr. Business Analyst	* Please see the page no. 46 & 47.		
4	System Analyst			
5	Database Designer / Administration	Min Graduation in CSE/EEE or equivalent	5 years (Min)	
6	UI Designer	Min Graduation in CSE/EEE or equivalent	3 years (Min)	
7	UX Expert	Min Graduation in CSE/EEE or equivalent	3 years (Min)	
8	Sr. Programmer	Min Graduation in CSE/EEE or equivalent	7 years (Min)	Must have Professional certification issued by accredited body
9	Programmer	Min Graduation in CSE/EEE or equivalent	5 years (Min)	Must have Professional certification issued by accredited body
10	Jr. Programmer	Min Graduation in CSE/EEE or equivalent	3 years (Min)	-
11	QA Expert	Min Graduation in CSE/EEE or equivalent	5 years (Min)	CAST or relevant
12	Interoperability Expert	Min Graduation in CSE/EEE or	5 years (Min)	

		equivalent		
13	System Administrator	Min Graduation in CSE/EEE or equivalent	5 years (Min)	CCNA/CCNP
14	Trainer	Min Graduations in any subject	3 years (Min)	
15	Technical Document Writer	Min Graduations in any subject	3 years (Min)	-
16	Surveyor	Min Graduations in any subject	3 years (Min)	
17	Technical Assistant	Min Graduations in any subject	3 years (Min)	

Note: Qualification and Experience must be supported by proper documents/ certificates.

Qualifications & Experience of Project Manager (Team Leader):

- Must have at least Graduate in Computer Science or equivalent, preference will be given those who have relevant higher degree.
- Preference will be given in case of professional experts with PMP, Prince2, SSGB, SSBB certified .
- Experience on Enterprise Resource Planning (ERP) solution may be considered as an added advantage.
- Must possess 15 (fifteen) years of overall experience in which 10 (Ten) years of working experience in the area of software development, implementation, support and project management.
- Preference will be given in experience in Government or semi government organization software project development and delivery.

Qualifications & Experience of Software Architect/ Sr. Software Engineer:

- Must have at least Graduate in Computer Science or equivalent, preference will be given those who have relevant higher degree.
- Must possess 10 (Ten) years of overall experience in which 7 (seven) years of working experience in the area of software development, implementation, support and software architecture.

Qualifications & Experience of Sr. Business Analyst:

- Must have at least Master Degree in Commerce background from any recognized university with IT/MIS education.
- Must possess 10 (Ten) years of overall experience in which 5 (Five) years of working experience in the area of software development, implementation, support and project management.
- Preference will be given in experience in Government or semi government organization software project development and delivery
- Good experience required in high-level requirements and capture business needs and clearly articulates the Business Requirement Documentation (BRD) and translate to functional specification

- Experience in coordinating a project delivery by participating in design reviews and walk-through to communicate systems designs and validate proposed solutions
- Have very good command in Bangla and English

Qualifications & Experience of Sr. System Analyst:

- Must have at least Graduate in Computer Science or equivalent, preference will be given those who have relevant higher degree.
- Must possess 10 (Ten) years of overall experience in which 5 (Five) years of working experience in the area of software development, implementation, support and project management.

Qualifications & Experience of System Analyst:

- Must have at least Graduate in Computer Science or equivalent, preference will be given those who have relevant higher degree.
- Must possess 7 (seven) years of overall experience in which 5 (Five) years of working experience in the area of software development, implementation, support and project management.

9. Expected Deliverables

Considering the scope of service and scope of work of this project and based on the proposed project development & implementation methodology, the vendor has to submit here a complete list of all types of deliverables will be produced throughout the entire project timeline whether those are materials, services, applications, source codes, documents, plans, reports etc in a table format mentioning the stages, activities and timelines.

Some examples of the deliverables are mentioned here under for your reference.

- Project inception and management report

- System requirement specification (SRS)

- System design document (SDD)

- Complete source code

- Detail source code documentation

- Test plan with test scripts and testing reports

- Technical documentation (system architecture, module integration points, workflow engine, data dictionary, user manual etc)

- Training plan and reports
- Training materials and user manuals

- Integration plan and reports

- Audit log

- Mobile Application

- Web application

- UAT Report

- Maintenance, agreement & SLA

- Maintenance and support log

- Hosting requirement specification, plan and report

- Implementation plan and report

- HR activity plan and report

- Progress and review reports

10. Responsibilities of the Client

- BREB and PBS will provide information as per requirement of study.

- The firm has to develop the software at the client's premises.

- BREB will provide office space and sitting arrangement during development phase but the firm have to provide all sorts of logistic support i.e. server, desktop PC, laptop, internet, refreshment etc. for their deputed personnel to carry out the assignment.

11. Reporting

- The firm will report to the Superintending Engineer, ICT, BREB.
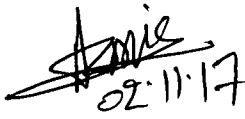
12. Conclusion

BREB is trying to ensure faster, systematic and much higher consumer service delivery by introducing a faster, robust, secure, tamper-proof, efficient meter reading, bill processing cycle management technology framework. BREB expect that the vendor will complete this project in time and help to serve the nation.
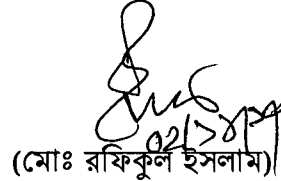
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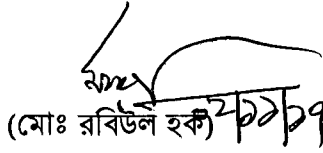
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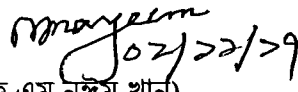
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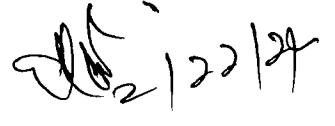
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গাজীপুর পবিস-১ এর পক্ষে

(মোঃ রবিউল হক)
জেনারেল ম্যানেজার (অঃদাঃ)
ঢাকা পবিস-৪।

(কে এম নঈম খান)
তত্ত্বাবধায়ক প্রকৌশলী
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(হেদায়েতুল ইসলাম)
পরিচালক, আইসিটি পরিদপ্তর,
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