

SI	Features Name	Features Description
		assistant/summary 26. Receivable of consumer, SnD-wise, ministry-wise, category-wise 27. Sector-wise receivable (Autonomous, Govt, Private) 28. Drill down from summary to individual transaction, receivable, ledger, rate
3		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.

8.14 Master Data Management (MDM)

SI	Features Name	Features Description
1	Master Data Management	Facility for configuration and management of Location Information - Division, District, Union, Thana, Elaka etc.
2		Functionality for configuration and management of Post Code registration
3		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.
4		Functionality for configuration and management of WZPDCL basic data registration.
5		Functionality for configuration and management of WZPDCL, Billing station department, designation.
6		Functionality for configuration and management of WZPDCL Employee registration - department & designation wise.
7		Functionality for configuration and management of Yearly Holiday Schedule, calendar.
8		Functionality for configuration and management of collection agency information.
9		Functionality for configuration and management of payment processors or gateways information.
10		Functionality for configuration and management suppliers' information.
11		Functionality for configuration and management of other master data such as currency, asset type, asset status, etc.

8.15 System Security

SI	Features Name	Features Description	User
1	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.	Security Analyst
2	Security Prevention	Blocking of activities that are classified as higher priority index of certain threshold.	

8.16 Audit Management

SI	Features Name	Features Description	User
1	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
2	Reporting Engine	Specialized set of confidential reports for auditors only to make its processes easiest and more accurate.	System Auditor

8.17 Users and User roles

Vendor should have submitted 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.

Types of users	Titles of users	No of users	Geographical office location	Activity
Web applications operator	Meter Reader	1200	District-21, Upazilla-21	Meter Reading related all activities
	Bill Distributor	1200	District-21, Upazilla-21	Meter distributing related all activities
	Billing Operator	300	District-21, Upazilla-21	Bill Processing, Bill Generation related job.
	Billing Supervisor	100	District-21, Upazilla-21	Bill Processing, Bill Generation, Bill Supervising and Update Consumer Data related job.
	SAE	500	District-21, Upazilla-21	Bill Supervising, Update Consumer Data and report generating related job
	SDE/AE	200	District-21, Upazilla-21	Bill Supervising, Update Consumer Data and report generating related job.
	XEN/RE	60	District-21, Upazilla-21	Bill Correction and others approving related job.
	SE	10	District-6	Bill Correction and others approving related job.

	Accountant	100	District-21, Upazilla-21	Accounting Related job.
	Total	3670		
Web applications observer	MD	1	Khulna	Observe all features
	ED (F)	1		Observe all features
	GM (F & A)	1		Observe all features
	DGM (F/A/Audit)	3		Observe all features
	SE (Commercial)	1		Observe all features
	XEN/Manager (Commercial)	2		Observe all features
	SDE/AE (ICT/Commercial)	8		Observe all features Particular ESU
	Total	16		
Web applications admin	SE (ICT)/XEN (ICT)	3	Khulna	Assign Role
	SDE/AE/SAE (ICT)	5		Monitor system particular ESU
	Vendor	1	NA	Update the system in any need
Web applications Users	Consumer	18 lacs	West Zone of Bangladesh	Error free bill, Online bill payment

8.18 Security and Privacy Requirements

The vendor should submit an extensive and complete security and privacy plan for this web 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 plan (i.e. fraud, hacking, money laundering etc.) & have to provide the test report of that checklist.

8.19 Integration Requirements

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

System Name	Purpose	Dependent Organization
Online New Connection Software	To retrieve the consumer information data	OWN
Online Miscellaneous Software	To retrieve the consumer information data	OWN
Complaint Management System/Call center	Consumer get their billing information, bill payment, receive complain and solve etc.	OWN
Prepaid Metering System	To transfer the consumer information data.	OWN

8.20 Hosting Requirements

Vendor may be hosted developed application in WZPDCL datacenter for testing purpose before the delivery to the client. However, Vendor must be hosted developed application in WZPDCL datacenter after the delivery. Therefore, vendor is requested to submit a preliminary hosting plan for this application considering the issues mentioned below:

- Hosting requirement /environment (hardware, servers, network, security, storage, traffic, firewall, bandwidth.
- Hosting architecture
- Data Growth and Scalability plan
- User handling/load balancing mechanism
- Licensing issues
- Scheduled backup & Restore Requirements
- Disaster recovery requirements
- Monitoring tools requirements

8.21 Application Compliance Requirements

- The application which is a web-based solution, has to be hosted in centralized Web-server.
- The application should be designed and built using Service Oriented Architecture (SOA).

- Application should Asp.net core 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.
- 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.
- The proposed solution should be highly scalable to accommodate current and future requirements within the scope of the scope mentioned in the TOR.
- The application should be provided with appropriate caching mechanism to handle very high-traffic scalability.
- The vendor may propose here other relevant measures for this application scalability.

8.22 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 this application operation. Vendor is requested propose a Business Continuity Plan for this application. Regarding business continuity you may take in account the followings issues if applicable or suitable for this 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.
- Vendor ensures to make a backup strategy plan as well as implement it by hosting on a server in our Disaster Recovery (DR) in Jessore.
- 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.

8.23 Interoperability and Data Exchange

The selected vendor must develop this 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.

8.24 System Audit

This 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.

8.25 IT Audit

Vendor should support client and/or authorizes person or organization while IT audit will be required.

8.26 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.

8.27 Accessibility

Vendor must develop this application ensuring access for the citizen (Service Recipients) with disabilities in different standard accessible formats. 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 features (Web application) should be usable with the help of screen reading software by the service recipients with disability.

9. 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.

10. Documentation

Detail and proper documentation of such ICT based project like Postpaid Billing Application development and implementation for WZPDCL 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 application 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)

11. 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 application. The selected vendor has to consult with WZPDCL to finalize the tools, technologies, framework and platform with the approval of same authority's 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.

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.

13. Quality Attributes and Assurance

The Quality attributes and Assurance plan will describe the standards, processes and procedures in this Application development life cycle which will be used to support the consistent delivery of high-quality, professional standard 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 phase of this application development life cycle in their technical proposal.

14. Copyright

WZPDCL shall be entitled to all proprietary rights including but not limited to patents, copyrights and trademarks, regard to many Vendors. 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 application 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 WZPDCL 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 WZPDCL.

The vendor should properly deliver all the entire approved source codes and other deliverables to the WZPDCL. 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 WZPDCL 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 WZPDCL.

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

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.

16. Conclusion

WZPDCL 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. WZPDCL expect that the vendor will complete this project in time and help to serve the nation.

6.1.4 The major scopes: Major Scopes are described below:

Sl. No.	Description of Items	Unit of Measurement	Quantity
Part-A: Upgradation of Existing Smart Metering System & Development of Web based Post-paid Billing Software			
1	MDMS development	Lot	01
2	Data Migration	Lot	01
3	Support Service as per specification	Lot	01
4	Development of Web based Post-paid Billing Software	Lot	01
Part-B: Passive Infrastructure Solution			