

## **ITEM NO. 38 (I-03)**

1) **Name of the Subject/project:** Implementation of Electricity & Water Utility Software in Electric, Commercial & Power Department of NDMC.

2) **Name of the deptt./deptts. concerned:** Information Technology Department.

3) **Brief history of the subject/project:**

A detailed presentation of the Oracle utilities system was covered on 02/02/2009 as a sequel to presentation demonstration by them to all HODs in meeting dated 05/01/2009 in Council room under the chairmanship of Chairman, NDMC. The idea of the presentation was touch upon finer and detailed aspects of the requirement of different departments of NDMC viz. Commercial, Electrical, Finance, IT etc.

M/s Oracle has demonstrated/ discussed the following system features in details:-

- i) Managing Losses of electric network (Technical and Commercial)
- ii) Effective billing of Electricity and Water
- iii) Management of Business processes for Customer care and billing
- iv) Optimised Work and Asset management
- v) Streamline Field Service Operations
- vi) Effective Settlements and forecast
- vii) Improve Customer Responsiveness & Issue Resolution

The case was placed before the Council vide agenda item No. 11(I-01) dated 15th Apr.'09 & was deferred due to model code of conduct.

4) **Detailed proposal on the subject/project:**

To make great impact on municipal services in power distribution sector, the following operational systems are required for the Commercial, Power and Electric department of NDMC. It will enhance the efficiency of the public services and utilities managed by NDMC.

### **4.1. Billing and Customer Care-**

- i. Billing system should be upgradeable, so that system can be effectively used with technical upgrades over years to come.
- ii. Billing solutions should have flexible workflows and processes as per the needs of NDMC. Billing system must support most of the customer care processes of NDMC like new connection request, disconnection request, complaint management, legal etc.
- iii. The billing system must be robust, up gradable, scalable, browser based and have high availability. The new billing system should have the ability to interface with the already existent system like financial application (E-Finance developed by e-Governments Foundation) and Systems which NDMC already has or will have in future. All reporting must be carried out easily through the software.

- iv. The system should be able to define the existing business processes of the NDMC with ease without changing the process or the terminology used.
- v. The system must have a strong interface to record customer specific data. The data fields must not be limited and there should be the freedom to add on user specific fields and or attributes without system configuration. This feature was seen in depth as it allowed the users to change the way reports are generated without approaching the programmers and was intuitive and easy to do.
- vi. The system shall allow NDMC the choice to store the premise and customer data along with geographical identifiers that shall enable easy customer searches.
- vii. The GUI should be intuitive and user friendly. The system should have the ability to store multiple addresses for a single customer.
- viii. The system shall ensure that a customer is not added until proper customer identification has been carried out by the utility based on the customer identification data (like ration card, driver's license etc.) submitted by the customer.
- ix. Users of the system should be able to search for a certain customer record from any interface or by querying any data field that is specific to the customer.
- x. Multiple service billing (e.g Water and Electricity) should be possible through the system and it should have the ability to generate a single bill for a customer using multiple services.
- xi. The system shall have the ability to process bills according to the already defined billing cycles and in batches. Complete audit trail shall be maintained for all the billing processes. The preparation of the bill must be according to the prevailing regulatory rules. The billing engine should have the ability to accurately calculate the different components of a bill like fixed charges, slab based charges, electricity tax, arrears, time of use based charges, consumption deposits, etc.
- xii. All credit and collection activities can be processed automatically or manually, or any combination thereof, based on specific business practices or regulatory requirements. Bill cancellation must be supported by the system with full audit trail. The system must support adjustment of bills and the creation payment plans.
- xiii. The system should support the aggregation of meter readings and consumption estimation for unmetered or 'data not available' cases.
- xiv. The system should have a robust reporting tool that allows for the creation of both graphical and non-graphical reports. The running of reports should not impact the other system functionalities.
- xv. Work tasks and work flows need to be created by the system Specific users have to be alerted with cases that need analysis. Workflows should be supported by a robust escalation mechanism.
- xvi. Context specific help shall be available whenever required by the user.

#### **4.2. Meter Data Management-**

- i. NDMC needs standard functions to access, manipulate, validate, and aggregate meter data. These functions should be available as the basis for configured business rules to address custom business requirements for validations, revenue protection rules, or queries.
- ii. NDMC needs to validate meter data in one central repository and acts as a service to other applications, users and customers. The meter data repository must support open technologies to allow easy integration with various meter head-end systems.
- iii. The utility requires an automated, integrated, scalable, upgradable and web based Meter Data Management (MDM) software. The MDM must have a configurable user interface, context specific help and automated process for validating and correcting invalid data. The system must be able to take as input the meter data from a number of different meter manufacturers and be able to aggregate the data automatically whilst keeping the existing utility business processes in mind. The MDM software must be interfaced with the other systems already installed and being used by us. There should be a provision to add business rules for carrying out validations and preparation of meter data for various uses like billing. The MDM must be able to store the data of all the meters of the organization like meters installed at exchange points, time of day customer meters, consumption based customer meters, energy audit meters, grid meters, substation meters, old electromechanical meters etc. The system shall store the data from all the meters in the field into one single operational database.
- iv. It should be possible to track the meter over its entire life cycle from installation till scrap. It is necessary to track meter changes related to a premise. The system must both keep track of the new installed meter and maintain the status of the old meter as well.
- v. MDM should have very strong reporting capability and be able to generate both graphical and non-graphical reports.
- vi. It is required for the system to possess an integrated exception management engine that is able to analyse the meter data based upon our business processes and send the exceptional cases to the concerned people in our workforce. The exceptions that the system must be able to analyze are (but not limited to) slow meters, gap checks, negative value cases, zero value cases, data spike cases, high/low checks, energy sum checks etc. It is necessary for the system to automatically generate workflows based on our hierarchy rules.

#### **4.3. Load Forecast-**

- i. NDMC needs ability to forecast any duration, from one day to many years.
- ii. Top-down and bottom-up forecast processes to be assigned to a given entity to allow quick comparison to check for data inconsistencies.
- iii. The forecast should be run automatically and have the ability to add new forecast processes.
- iv. There should be automatic track of forecast accuracy and report results to drive towards continuous forecast improvement.
- v. The system should be able to compare one forecast with another and also the ability to compare forecasts to actuals. Both top-down and bottom-up forecast methodologies should be possible with strong interfacing capabilities with systems like Meter Data Management, SCADA, and DMS etc.

#### **4.4. Profile and settlement-**

- i. NDMC needs Profile and Settlement system that can automate entire load settlement process.
- ii. NDMC needs to accurately verify incoming generator invoices. using the same rules and logic that generate the original settlements. Verification should be run against actual data, not just billing data.
- iii. The profile and settlement system shall have an easy to understand graphical user interface with inbuilt security features and clear audit trails. The system shall allow the entire load settlement process to be automated.
- iv. Profile and settlement system should accurately verify incoming invoices. It should be possible to run Shadow settlements. It should be possible to run verifications against actual data, not just billing data. Profile and settlement system should aggregate usage data from multiple metering points and meter types, managing diverse information effortlessly. System should have multiple load profiling and estimation methods built in with support for industry settlement standards such as proxy Day, Templates, Dynamic Load profiling, Regression Modelling, and actual metered loads.
- v. The system shall be able to perform complex calculations efficiently and accurately on interval data, billing data and customer information with multiple load profiling methods (industry-standard methods) for settlement.
- vi. The system should have the ability to interface with other systems of our utility and be able to submit the calculations made for the purpose of review into another external system. The system should be capable to make automated workflows such that the required work is sent to the concerned person and or department in our organisation

#### **4.5. Distribution Management (DMS) and Outage Management (OMS)-**

- i. The system required should have an easy to use and understand graphical user interface. The system should have a high level of security and audit features built into it.
- ii. The system should time and date stamp all critical events and transactions.
- iii. The system shall be able to accept model changes imported from our GIS and remain operational with no downtime during these. The system should be able to incorporate multiple control centres spread over a large area and still provide us with the ability to change the operation philosophy from a centralised one to a decentralised one.
- iv. The system should have strong interfacing capabilities with other systems like SCADA, GIS, Work Management System, Meter Data Management, Load Forecasting, Customer Care and Billing, Workforce Management and Interactive Voice Response Systems etc. Even after all these interfaces, all the system modules and applications should operate in an integrated fashion.
- v. The system should allow the user to build and run a case in the study mode so that all the implications can be easily understood.

- vi. The switchover from the study mode to the real time mode should be seamless. Also, the user should be able to quickly navigate from a selected row in a tabulated list to the concerned graphical view and vice versa.
- vii. The system should be capable to display a real time graphical display (with zoom in and zoom out capabilities) that reflects the electrical model's current condition (without a manual refresh) like dispatched crew location, crew location from a mobile/AVL system, SCADA events and customer trouble calls etc.
- viii. The system shall allow the system administrator to implement security through the creation of role-based logins. The operators should only be able to view and execute those responsibilities that lie in their respective area of operations.
- ix. The system shall be able to store electrical information by electrical phase and colour code the customers, circuits and devices accordingly.
- x. The system must help users rapidly process trouble input, predict probable outage causes, and analyze history. The system should track and manage a variety of events like planned outages, emergency outages, meetings (or appointments) and momentary outages etc.
- xi. The system shall be fully up gradable and scalable to suit the needs of our utility for the next ten years

**(A) DMS:**

- i. Reduce losses through real-time optimization of distribution system
- ii. Save money on unnecessary network hardware, through a better understanding of the network's un-used capacity.
- iii. Exposing and addressing previously hidden overloads and voltage problems
- iv. Avoid problematic switching actions - Avoiding equipment damage
- v. Better balance feeder loading to better utilize existing facilities
- vi. Improve Quality Of Service by improving reliability (SAIDI, SAIFI)

**(B) OMS:**

- i. Identify location of the failure quickly
- ii. Reduced Outage Durations
- iii. Dispatch to the largest/most important Outages First
- iv. Reduced Control Centre Costs/ Consolidation of control centres, Restoration Costs
- v. Elimination of Maintenance Effort

#### **4.6. Mobile Workforce Management-**

- i. Schedule work for crews to minimize travel cost and contractor cost
- ii. Track work crews using automated vehicle location
- iii. Dispatch emergency work to the closest skilled crew, even if they are already doing other non-emergency work
- iv. Optimize work schedules to manage the numbers of crews required for coming weeks

#### **5) Financial implications of the proposed/subject:**

Yes, the estimated cost of the Project would be Rs. 25 Crores. The requisite budget will be raised in the RE of 2009-10. The expenditure will be charged to Head of account "E.2.1 - Payment for Computerization of Electricity & Water charges Bill".

#### **6) Implementation schedule with timeliness for each stage including internal processing:**

The expected time for awarding the work would be **six months** which would include publishing of NIT, submission of bids, evaluation of bids, finalization of contract, signing of contract and agreement.

The expected time for implementation of Electricity & Water Utility Software would be **one year**.

#### **7) Comments of the Finance deptt. on the subject :**

Vide diary no. 416/Finance dated 12/03/2009, Finance department has observed as under:-

- (i) The department has proposed to prepare a new applications software, but nothing has been mentioned about the existing software. Whether the existing software, if any, would be discarded and the existing contract would be closed need to be brought on record.
- (ii) The specific comments of the user department (Commercial Department) be brought on record. The RFP documents may also be shown to them in order to ascertain as to whether the same is as per their needs and requirements. Considered comments of Director (Commercial) are necessary in view of his note at P-1/N to 3/N.
- (iii) The department has not prepared a proper estimate for the work. The same may be prepared to ascertain the exact cost of the software.
- (iv) Further, the fund requirement on year- to- year basis be brought on record.
- (v) Specific advantages over and above the existing system may be brought on record.
- (vi) Comments of Jt. CAO-III, CE(E-I)/ CE(E-II) may also be obtained in the first instance as not only huge expenditure is involved; realization of revenue is also involved.

**8) Comments of the Deptt. on comments of Finance Deptt. :**

The comments of IT department on the comments of Finance department are given as under:-

- (i) The existing software would be discarded and the existing contract would be closed. The data available in the existing databases will be migrated to the new software database to make it fully functional in time bound manner.
- (ii) The RFP document has been forwarded to Commercial Department to make necessary amendment as per their requirement. The comments have been obtained from the department and the same will be incorporated in the RFP.
- (iii) The indicative cost of the project would be Rs. 25 Crores which will include Application Software License Fee, Implementation Cost, Training to users, Data Migration cost and three years technical support cost.
- (iv) 1<sup>st</sup> year cost after go live of the software, Application Software License Fee, Implementation Cost, Training to users, Data Migration cost would be Rs. 19 Crores.  
2<sup>nd</sup> year technical support cost would be Rs. 2 Crores.  
3<sup>rd</sup> year technical support cost would be Rs. 2 Crores.  
4<sup>th</sup> year technical support cost would be Rs. 2 Crores.
- (v) The Specific advantages of the proposed system on the existing system are given as under:-
  - a) Managing Losses of electric network (Technical and Commercial)
  - b) Effective billing of Electricity and Water
  - c) Management of Business processes for Customer care and billing
  - d) Optimised Work and Asset management
  - e) Streamline Field Service Operations
  - f) Effective Settlements and forecast
  - g) Improve Customer Responsiveness & Issue Resolution
- (vi) The RFP document was forwarded to Electric Department to make necessary amendment as per their requirement. The department examined the specifications of all applications and found in order.

In addition, a meeting was conveyed on 13/03/2009 where all concerned were present and their views have been taken on board.

**9) Legal implication of the subject/project:**

No.

**10) Comments of the Law deptt. on the subject :**

No Comments.

**11) Comments of the Deptt. on comments of Law Deptt. :**

No Comments.

**12) Certification by the department that All Central Vigilance Commission (CVC) guidelines have been followed while processing the case:-**

It is certified that CVC guidelines would be followed during tendering.

**13) Details of previous Council Resolutions, existing law of Parliament and Assembly on the subject :**

Nil

**14) Recommendation:** The department recommends for implementation of Electricity & Water Utility Software in Electric, Commercial & Power Department of NDMC. Accordingly, it is proposed to accord AA & ES for preliminary estimate of Rs. 25 Crores.

The department may initiate action in anticipation of confirmation of minutes.

**15) Draft Resolution:** It is resolved to accord Administrative Approval and Expenditure Sanction for preliminary estimate of Rs. 25 Crores for implementation of Electricity & Water Utility Software in Electric, Commercial & Power Department of NDMC.

It is further resolved that the Department may initiate action in anticipation of confirmation of the minutes by the Council.

**COUNCIL'S DECISION**

Resolved by the Council to accord Administrative Approval and Expenditure Sanction to the preliminary estimate amounting to Rs.25 Crores for implementation of Electricity & Water Utility Software in Electric, Commercial & Power Department of NDMC.

It was also resolved that further action in the matter be taken in anticipation of confirmation of the minutes by the Council.