

Performance Audit on Centralised Information Technology Billing System Being Operated by State Power Utilities

Executive Summary

Introduction

State Power Distribution Utilities of Uttar Pradesh, commonly known as DISCOMs, use Centralised Information Technology Billing System being implemented by the Uttar Pradesh Power Corporation Limited (Company). The Company has two IT-based revenue billing systems viz. Energy Distribution and Service Management System (EDSMS) (commonly known as R-APDRP billing system) implemented (June 2015) under Re-structured Accelerated Power Development and Reforms Programme (R-APDRP) in 168 selected towns of Uttar Pradesh and mPower (commonly known as Non R-APDRP billing system) implemented (September 2017) in Non R-APDRP areas of the State. As on 31 March 2019, a total of 2.58 crore consumers were billed under EDSMS and mPower systems (0.67 crore under EDSMS and 1.91 crore under mPower), with an aggregate contracted load of 51,148.31 megawatt (EDSMS: 20,372.89 Megawatt & mPower: 30,775.42 megawatt) as on March 2019. Further, 1,35,102 consumers were billed manually as of March 2019.

The performance audit of IT-based revenue billing system was conducted for a period of five years *i.e.* from 2014-15 to 2018-19 to examine whether the process of development and acquisition of IT system was transparent, economic and competitive; whether business rules were properly mapped and all required functionalities were provided in the IT application; and whether the implementation of the IT system led to achievement of organisational objectives. Audit examined the records maintained by the Company and four DISCOMs (MVVNL, PuVVNL, PVVNL & DVVNL) Headquarters related to the IT billing systems being operated by it. The electronic billing data for the period April 2018 to March 2019 were collected from the Company and analysed through Computer Assisted Audit Techniques, Tableau and Microsoft Excel tools.

Audit noticed that even after lapse of seven years from the scheduled date of completion of Part-A of R-APDRP, the Company is still unable to generate AT&C losses and therefore calculates the AT&C loss manually. This has defeated the basic objective of elimination of human intervention in energy accounting and auditing in R-APDRP area. There was anomaly in mapping of pertinent and correct business rules in both the IT billing systems of the Company which adversely affected the interests of the stakeholders. The Company did not ensure validation checks for various data inputs. The Company did not have a Business Continuity and Disaster Recovery Plan. Important audit findings arising out of the performance audit are detailed below:

IT enabled energy accounting and auditing

Despite being commented in CAG's Performance Audit Report No. 06 of 2016 and even after lapse of seven years from the scheduled date of completion of Part-A of R-APDRP, the Company failed to complete/update the baseline data of consumers, electrical assets and automated metering in R-APDRP System. Hence, the Company could not utilise GIS-based

Consumer Indexing & Assets Mapping module, Assets Management module, Network Analysis module, Meter Data Acquisition System and Energy Audit module. As a result, the system-generated AT&C loss report was highly erratic defeating the primary objective of automated calculation of AT&C losses without human intervention. Further, in the Non R-APDRP billing system, there is no automated system of energy accounting, auditing and generation of AT&C loss report.

(Paragraphs 2.1 to 2.9)

General Controls

The Company did not formulate and adopt essential IT policies with respect to Human Resource responsible for managing IT activities, Document Retention, IT Security, Business Continuity and Disaster Recovery Plan. It also failed to ensure genuineness/reasonableness of the rates of Original Equipment Manufacturers charged by AMC/ATS vendor and did not carry out annual maintenance of IT assets in a prudent manner.

(Paragraphs 3.1 to 3.4)

Further, the Company neither analysed the possibility of extending the existing R-APDRP system in Non R-APDRP area nor undertook cost benefit analysis while awarding the contract of additional IT billing system. Confidentiality in the IT system was compromised as the Company failed to restrict the log on sessions and also to disable login IDs of deceased/transferred/retired employees on time.

(Paragraphs 3.7 to 3.10)

Application Controls

Mapping of pertinent and correct business rules to the processes/systems is of utmost importance. An analysis of the electronic billing data for the period April 2018 to March 2019 revealed that the IT systems failed in mapping of pertinent and correct business rules of the Company which adversely affected the interests of the stakeholders such as:

- the Government, with respect to non- charging of electricity duty involving ₹ 43.83 crore and non-deduction of tax at source against interest on security deposit involving ₹ 7.99 crore;
- the Company, with respect to mapping of due date, calculation of fixed charges in absence of maximum demand, short/non-deposit of security deposit/additional security deposit (₹ 2,623.56 crore), enhancement of contracted load and penalty for inaccessibility of meter (₹ 21.71 crore); and
- the consumers, with respect to interest on advance deposit and unadjusted balances of consumers (₹ 94.59 crore), rebate on solar water heating plant and rebate to rural consumers shifted from unmetered to metered category (₹ 61.16 crore).

Besides, manual intervention in cases of charging for protective load, preparation of estimate, bill revisions, preparation of penal billing and billing of consumers defeated the purpose of automated billing.

(Paragraphs 4.1 to 4.2.11)

Input Controls and Validation Checks

The Company did not ensure validation checks for various data inputs. This resulted in deficient consumers' database and duplicate entries against already existing consumers causing blocking of revenue due to non-traceability of consumers in cases where dues are to be recovered. Further, non-linking of consumers to their respective categories of Rate Schedule in both the IT billing systems caused loss of substantial revenue (₹ 18.02 crore) to the DISCOMs in 2018-19.

(Paragraphs 5.1 to 5.3)

Other Issues

The Company's internal controls leave much to be desired as evidenced by the failure of the Company to deploy IT billing systems in generation of meter-read plan for optimisation of billing, monitoring of realisation of arrears amounting to ₹ 54,400.13 crore and execution of permanent disconnection having arrears of ₹ 3,441.21 crore as of March 2019 and raising bills on actual consumption basis. The Company also failed to comply with the decision of the Board regarding installation of prepaid meters for Government consumers as out of 69,794 such consumers prepaid meters had been installed only for 39 consumers. The continued and increasing level of commercial losses of the Company/DISCOMs is a testimony of the inadequacy/failure in controls of the entities.

(Paragraphs 6.1 to 6.6)

Recommendations and Response of Government thereon:

Sl. No.	Recommendation	Response of Government
1.	The Company should complete and update the baseline data of consumers and electrical assets on priority basis in a strict time bound manner so that accurate AT&C loss report is generated automatically without human intervention.	Accepted
2.	Automated reading through Meter Data Acquisition System (MDAS) should be specifically improved from the abysmally low level of 19.71 per cent. Without automated metering, the objective of acquiring accurate, reliable data for baselining, measuring and billing electricity consumption and AT&C losses cannot be achieved.	Response awaited
3.	The Company should consider participation of top level management for effectively monitoring the management of IT related issues and should formulate and implement clear and comprehensive IT policies and periodically review them.	Accepted
4.	Necessary due diligence in maintenance of IT assets and undertaking cost benefit analysis before procurement of new systems through a transparent process of tendering should be scrupulously followed.	Accepted

Sl. No.	Recommendation	Response of Government
5.	The Company should monitor the user IDs of the employees and undertake the work of system management and database administration for maintaining data confidentiality and security.	Accepted
6.	The Company should ensure mapping of all relevant business rules in the IT billing systems to avoid manual intervention for safeguarding the interests of all stakeholders (<i>i.e.</i> the Government, the Company and the Consumers) and should periodically review and update them.	Accepted
7.	The Company should have robust in-built input controls to ensure completeness and correctness of data in order to ensure integrity of the database.	Accepted
8.	The Company should strengthen the internal control mechanism with respect to proper monitoring of the billing systems including proper issuance of bills and recovery of energy charges from defaulters/permanently disconnected consumers to safeguard the interest of the Company/DISCOMs.	Accepted