

## **2.2 IT Audit of HT / LT Billing System of Himachal Pradesh State Electricity Board Limited**

### **Executive Summary**

The IT Package awarded (May 2006) under Accelerated Power Development Reform Programme (APDRP) with 90 *per cent* grant on turnkey basis was to be completed by April 2008, however, the same was still under implementation (March 2015). Meanwhile the APDRP was closed in March 2009 and before closure, the Company could spent only ` 3.22 crore and was deprived from availing GoI grant amounting to ` 4.71 crore. Further, for delay in completion the firm was liable to pay liquidated damages of ` 1.32 crore, but the Company recovered only ` 0.55 crore resulting in short-recovery of ` 0.77 crore.

*{Paragraphs 2.2.5 (i) and 2.2.5 (iv)}*

Master data of consumers was incorrectly fed in the billing software resulting in inadmissible allowance of Higher Voltage Supply Rebate (HVSR) amounting to ` 40.63 lakh in 45 cases.

*{Paragraph 2.2.5 (iii)}*

Deficiencies in mapping of business rules resulted in revenue loss of ` 5.26 crore due to non-recovery, short recovery and incorrect assessment of various energy charges from consumers.

*{Paragraphs 2.2.6 (i), 2.2.6 (iii) and 2.2.6 (iv)}*

The delay in implementation of application software in all the Electrical Sub-divisions also resulted in revenue loss of ` 2.48 crore on account of non-recovery / short recovery of Late Payment Surcharge, Low Voltage Supply Surcharge and Demand charges from consumers due to non-detection / calculation errors through manual process.

*{Paragraphs 2.2.10 (ii) (a to c)}*

### **2.2.1 Introduction**

For computerisation of High Tension (HT) / Low Tension (LT) consumers billing, the Himachal Pradesh State Electricity Board Limited (Company) spent ` 1.26 crore under Phase I and II of the "Computer Master Plan" completed prior to 2005. The Information Technology (IT) audit report of the system was included in C&AG's report for the year ended 31 March 2006 (refer Para 3.3). Subsequently, to ensure accurate assessment of energy bills and commercial losses, improve revenue realisation, to improve the customer relationship the Company decided to develop a new IT application to computerise activities like billing, cash collection, customer complaint handling, energy accounting, load flow and network analysis under the Accelerated Power Development Reform

Programme (APDRP). The Company awarded (May 2006) a new IT Package for ‘Computerisation of Billing and Management Information System (MIS)’ with complete system integration and Data Centre at Shimla for ` 23.22 crore to M/s HCL Info Systems Limited, Noida (HCL) on turnkey basis. The package was further revised (December 2009) to ` 30.51 crore due to changes in the scope of work. As *per* award the whole package was to be completed by April 2008, however, the same was still under implementation as on March 2015.

### **2.2.2 Salient features of the billing software**

The Billing Software was developed by HCL, on Oracle10g at backend and ELP soft as front end tool under multi user requirement. The data entry and printing of bills were being done by field units while the preparation of bills and online consumers' complaints were being handled by HCL at Data Centre of the Company at Shimla.

The system has been devised for preparation of monthly bills of consumers, besides accounting of revenue and issue of receipts to them. Data input is done manually by the designated staff of the concerned Electrical Sub-Division (ESD).

### **2.2.3 Scope of audit**

Audit of HT / LT billing software covers System Development, Implementation and Application Controls of the software and was conducted by examining the data / records pertaining to the period from April 2010 to March 2015 of 21 ESDs out of total 124 ESDs of the Company, three<sup>25</sup> Central Billing Cells out of 12 and IT Cell at corporate office selected randomly. The audit was carried out between May-June 2015.

### **2.2.4 Audit findings**

Audit scrutiny of implementation of IT package and working of billing software showed the following:

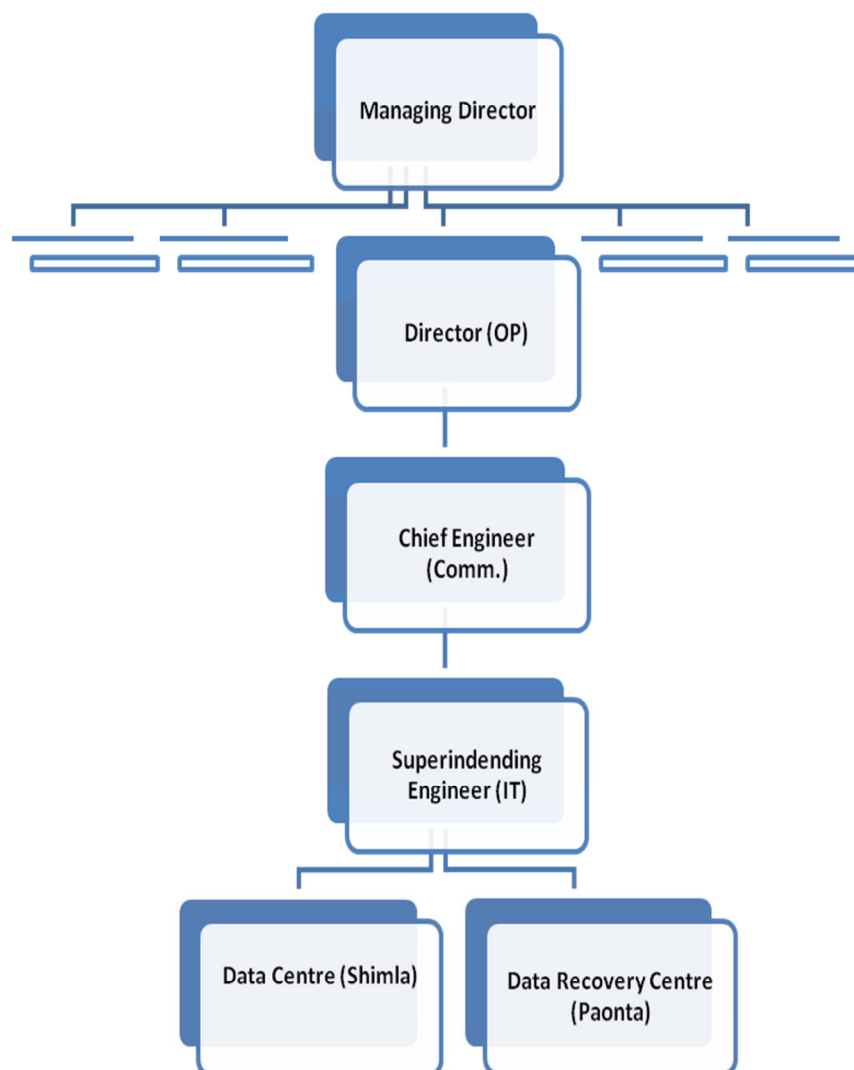
### **2.2.5 System acquisition and implementation**

As *per* award the computerisation programme was to be implemented in only urban divisions of all the circles.

The Superintending Engineer (IT) as head of the IT cell was responsible for implementing the computerisation. The hierarchy for decision making in this regard in the company was as shown below:

<sup>25</sup> Nahan, Solan and Kullu.

**Fig 2.2.1 Hierarchy for decision making**



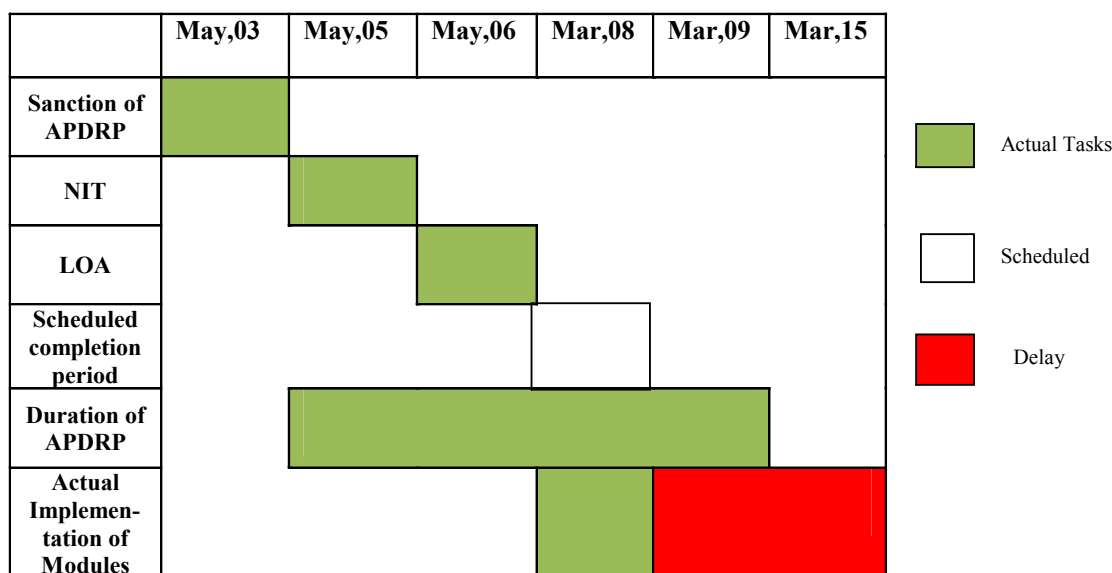
No dedicated project management team with involvement of various user groups was created for implementation of the new application.

**(i) Delay in implementation**

The Computer Master Plan under Accelerated Power Development Reforms Project (APDRP) was sanctioned by Government of India during 2002 and 2003 for all 12 operation circles in the State. In the sanctioned scheme there was provision of ` 8.45 crore with 90 *per cent* grant for computerised billing.

Audit noticed (May & June 2015) inadequacies in project management leading to delays in several segments of implementation, right from the stage of initiation of tenders as shown below:

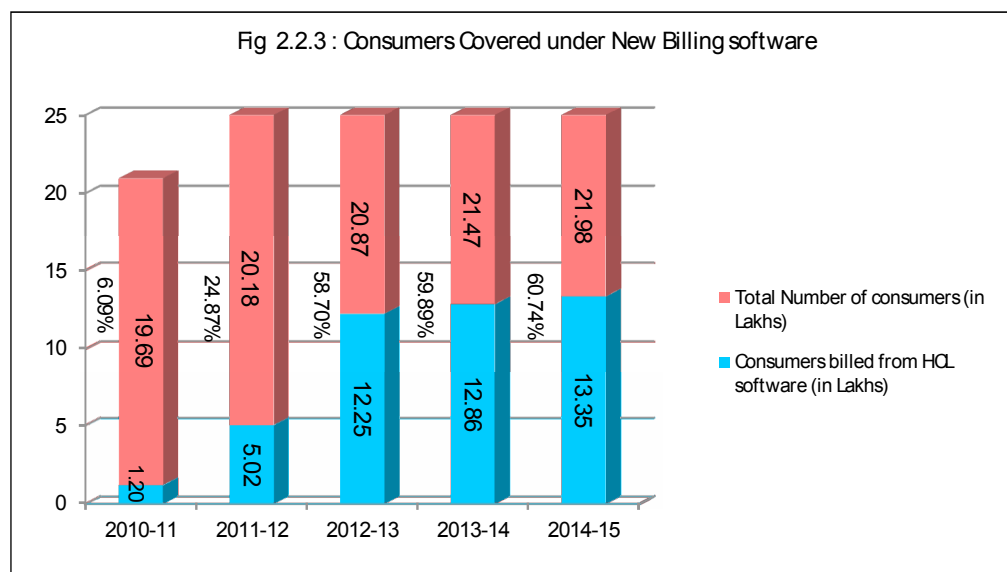
**Fig 2.2.2 Progress of IT Package Implementation**



The notice inviting tender (NIT) for IT package under the scheme was issued by the Company during May 2005 after a delay of 24 months from the date of sanction. The Letter of Award was issued during May 2006 to HCL for ` 23.22 crore after a delay of 12 months from opening of the bids. The APDRP scheme was closed in March 2009 and before closure, the Company could spend only ` 3.22 crore due to non-completion of work by HCL. As there was 90 per cent grant under APDRP and due to non-completion of works in time, the Company failed to avail the grant amounting to ` 4.71 crore and had to meet the remaining expenditure from its own resources.

The package was further revised (December 2009) to ` 30.51 crore due to changes in the scope of work. The whole package was to be completed in two parts as per contract award i.e. 1<sup>st</sup> part for Shimla Circle by 28 April 2007 and 2<sup>nd</sup> part for remaining 11 circles after 12 months of completion of Part-I. The new application was launched in August 2008 in 10 Electrical Sub-Divisions (ESDs) and gradually extended to 124 ESDs up to March 2015 against the total provision of 132 ESDs under the package. The project was still (March 2015) under implementation and electricity bills were being prepared partly on this software, partly on the old software and partly manually. At the time of award, the whole package was planned to be completed within the operation period of APDRP i.e. by April 2008. Audit noticed (May 2015) that HCL had completed Part-I (Shimla Circle) of the package in August 2009 after a delay of 28 months and part-II of the contract was to be completed by August 2010 (12 months after completion of Part-I) and the same was still incomplete (March 2015). So

far only 60 per cent of the consumers could be covered under the scheme as evident from the table below:



The main reasons for delay in implementation of the package were inadequate monitoring in the absence of any dedicated project management group, delay in supply of hardware and connectivity problem in few ESDs. During the period of delay bills of few categories of consumers were being prepared from the old software and of some categories were being prepared manually. Due to continuation of old software and manual preparation of bills, accuracy in preparation of bills and efficiency in collection of revenue suffered resulting in short recovery of revenue as discussed in paragraph 2.2.6 *infra*.

**(ii) Poor documentation and internal control: Overpayment**

Part-I of the package (revised) was to be completed within ` 7.55 crore (including taxes and duties). Audit noticed (June 2015) that against this, HCL had submitted invoices for ` 8.84 crore and the Company released ` 8.43 crore resulting in excess payment of ` 0.88 crore. The excess payment was due to lack of internal control as neither the SE (IT) nor accounts wing of the Company had maintained proper bill register / ledger to keep control over the payments for the package.

**(iii) Inadequate control on master data entry: Loss of revenue**

As *per* chapter 1 (J) of schedule of tariff applicable from time to time, consumers availing electricity supply at a voltage higher than the ‘Standard Supply Voltage’ (SSV) as specified under the relevant category shall be given a ‘Higher Voltage Supply Rebate (HVSr)’ at the specified rates only on the billed amount of energy charges.

Correct implementation of this rule required correct feeding of master data relating to the consumers. In few cases master data of consumers was

incorrectly fed in the billing software leading to risk of revenue loss. Audit found 45 cases where this risk materialised in four<sup>26</sup> ESDs resulting in inadmissible allowance of HVSR amounting to ` 40.63 lakh for the period between August 2013 to June 2014 to those consumers who were availing supply at standard voltage of 11 KV for which no HVSR was applicable. Further, in five other cases under above three ESDs availing supply at 33 KV against the standard voltage of 11KV were allowed HVSR ranging between four to eight *per cent* against three *per cent* admissible which resulted in payment of extra rebate of ` 4.05 lakh. This resulted in non-recovery of ` 44.68 lakh from the consumers *ibid*.

**(iv) Recovery of Penalty from vendor**

As *per* terms of the award the vendor (M/s HCL) was also liable to pay liquidated damages (LD) for delay amounting to ` 37.75 lakh<sup>27</sup> at the rate of five *per cent* for part-I, but the Company had recovered only ` 33.21 lakh from HCL at the rate ranging between three *per cent* and five *per cent*. Similarly, LD amounting ` 21.36 lakh only was recovered from the bills of HCL in respect of part-II against the recoverable amount of ` 94.25 lakh<sup>28</sup>. Thus, there was short-recovery of LD of ` 77.43 lakh from HCL till March 2015.

**2.2.6 Deficient mapping of business rules**

As the billing system is the core application for revenue realisation for the Company, it is imperative that the business rules are mapped completely. Audit observed deficiencies in mapping of business rules leading to business risks as discussed in following paragraphs:

**(i) Fixed demand charges**

Clause 3.9 of Electricity Supply Code (May 2009) issued by the Himachal Pradesh Electricity Regulatory Commission stipulates that where the licensee has completed the work required for supply of electricity to the HT / Extra High Tension (EHT) applicant but the applicant is not ready or delays in receiving the supply or does not avail the full contract demand, the licensee shall, after a notice of 60 days, charge on *pro-rata* basis, fixed demand charges on the sanctioned contract demand as *per* the relevant tariff order. Rules in the billing software of the HCL were not mapped to link the completion of work for release of supply to that consumer so as to issue required 60 days' notice immediately after completion of work. In absence of mapping of rules in this regard in the application, compliance of this rule was being ensured through manual control by issuing notices to such consumers manually after reviewing

<sup>26</sup> ESDs :Baddi, Barotiwala, Manali-II and Paonta.

<sup>27</sup> At the rate of 5 *per cent* of the total value of the contract of ` 7.55 crore as *per* Special Conditions of the Contract (No.9.1 & 9.2).

<sup>28</sup> At the rate of 5 *per cent* of the total value of the contract of ` 18.85 crore as *per* Special Conditions of the Contract (No.9.1 & 9.2).

the load sanctioned cases and progress of the related works. The manual control was found to be weak resulting in non-recovery of ` 26.53 lakh for the period from August 2010 to March 2014 in three such cases noticed (March 2014) during audit under two ESDs Baddi and Manali-II. The possibilities of non-recovery of demand charges in ESDs not covered in audit resulting in similar loss cannot be ruled out.

**(ii) *Treatment of Defective Energy Meters***

As *per* instruction No. 4.4.8 (ii) of the Supply Code, 2009, when the energy meter of the consumer becomes defective the same should be replaced immediately. Further, the consumers' account should be overhauled for the period during which the meter remained defective and be charged on the basis of average monthly consumption recorded through the correct energy meter installed.

Audit noticed that this business rule was not mapped correctly in the software and in case of defective meters the system calculates the average consumption by applying LDHF<sup>29</sup> formula instead of calculating the average on the basis of energy recorded during the period for which correct meter remained installed.

**(iii) *Application of wrong multiplying factor***

As *per* prevalent practice in case the Current Transformer / Potential Transformer and energy meter installed at the premises of the consumer are of different ratio, for arriving at correct energy consumption of the consumer, energy recorded through meter is multiplied by a certain Multiplying Factor (MF).

It was imperative that the new application was to be designed in a manner that the MF would be applied automatically on the basis of parameter recorded in MRI<sup>30</sup>. Audit noticed that such provision was not designed into the application and MFs were being worked out separately & entered in the master data. This carried the risk of errors & miscalculation of energy consumed. Audit found, in four<sup>31</sup> ESDs, multiplying factors for ten consumers were incorrectly worked out which resulted in short recovery of ` 3.04 crore. The short-recovery was due to non-provisions for automatic calculation of multiplying factor directly on the basis of parameter recorded in MRI.

**(iv) *Non assessment of enhanced energy charges***

The Company simplified (March 2012) the procedure for assessing the unauthorised use of power under Section 126 of the Electricity Act, 2003. The procedure prescribes for ignoring up to 20 *per cent* violation over and above the

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<sup>29</sup> Load, Days in a month, Hours *per* day & Demand factor.

<sup>30</sup> Meter Reading Instrument.

<sup>31</sup> ESDs: Kala Amb, Paonta, Baddi and Manali-II.

sanctioned load and thereafter the consumer was to be assessed under Section 126 of the Electricity Act, 2003.

Audit noticed (June 2015) that the billing software being used by the Company had no provision for automatic assessment of such defaulting consumers under Section 126 of the Act *ibid*. In absence of the provision in the application the assessment is to be done manually leaving the risk of errors and manual discretion. An illustration of the risk being substantiated is included in the text box below:

Illustration: A consumer having account no. BHT-61 (connected load of 459.25 KW) under ESD Baddi had availed load of 628.36 KW (683 KVA with average Power Factor of 0.92) during July 2013. Load availed by the consumer was in excess of 20 *per cent* of connected load. Thus, the consumer was required to be charged energy charges on double rates as *per* above provisions. However, due to non-provision for the same in the new application enhanced energy charges of ` 38.30 lakh could not be levied / recovered as the compensatory manual control was less stringent.

Similar errors were noticed in 20 cases resulting in non-assessment / recovery of ` 1.95 crore in ten<sup>32</sup> ESDs on account of enhanced energy charges from the defaulting consumers for the period from March 2011 to October 2014.

**(v) Clubbing of load**

As *per* sales circular No 5/2001 of the Company regarding clubbing of loads, in case of any industrial consumer running more than one connection in the same premises, the loads of all such connections should be clubbed against one account and the remaining accounts / meters should be permanently disconnected. This provision had not been mapped correctly in the billing software and in case of clubbing of consumers' connections, system generates Meter Change Order against the connection for which clubbing of load is registered and for remaining connections the system does not accept the PDCO<sup>33</sup> request which has to be registered manually. Therefore in absence of the provisions in the application, the officials were resorting to manual methods which makes the process time consuming and leaving the risk of manual discretion.

<sup>32</sup> ESDs :Kala Amb, Paonta, Barotiwala, Manali-II, Baddi, Mandi-II, Manali-I, Dulehar, Reckong Peo, and Sataun.

<sup>33</sup> Permanent Disconnection Order.



**(vi) Security deposit**

As *per* orders of the State Regulatory Commission security deposits of the consumers should be reviewed annually on the basis of average energy bills of the consumer and should be revised accordingly so as to safe guard the one month's energy bill of that consumer.

Audit noticed that the shortfall in security deposit of the consumers was being calculated manually as there were no provisions for the same in the software. Therefore there was scope of manual errors. The financial implication in three test checked ESDs<sup>34</sup> worked out to ` 1.13 crore.

**(vii) Non linking of master data**

For installation of energy meters in the premises of new consumer erection charges are recovered from the consumer at different rates based upon the category of the consumer. These rates for different categories of consumers appear in SDO modules. Audit noticed that access to this master data table had not been linked to the actual operational module (Junior Engineer module) that could have simplified the process for applying correct rates to different categories of consumers while preparing service estimates for new connections. This carried the risk of dependence on manual processes.

**2.2.7 Inadequacies in application functionality**

Audit noted the following design deficiencies in the application for supporting some business functional requirements:

**(i) Tariff data updation : short recovery of peak load demand charges**

Tariff master table should have been so designed in the billing application that whenever there is any change in the tariff rates the same may be made applicable from the date of its revision by updating the master data. Audit noticed that in case of Peak Load Demand Violation Charges (PLDVC) the issue was hard coded in the application design resulting in dependence on the developer for revision of rates, risk of delay in revision of rates and consequential revenue loss.

Audit noted that the rates of PLDVC were revised from ` 300 *per* KVA to ` 600 *per* KVA *per* month as *per* schedule applicable from 1<sup>st</sup> April 2013. However, it was found (February 2014) that the revision could not be done due to the fact that this variable was hard coded in the application design and the change could not be implemented appropriately. Thus, due to non-updation of the master data, PLDVC in respect of Large Supply Consumers was recovered at the old rates. This had resulted in short recovery of PLDVC amounting to

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<sup>34</sup> ESDs : Manali-1, Kangra and Mandi II.

` 2.61 crore from 442 consumers in five<sup>35</sup> ESDs during the period from April 2011 to August 2014.

**(ii) Revenue received from non-consumers**

Legal and Vigilance Modules of the application have provision for adjustment of assessed amount for theft of power by consumers only. In case of any recovery / adjustment for theft by non-consumer there was no provision for generation of receipt from the designed application.

Similarly in case of permanent disconnection for default in payment of dues and the payment received from a person after PDCO<sup>36</sup> no cash receipt can be generated and the receipt has to be issued manually, due to the fact that after PDCO system application does not recognise the person as consumer.

Therefore, due to above the revenue assessment does not tally with the monthly revenue receipt. Provision for issue of receipt even to the non-consumer should also have been made in the application.

**(iii)** In certain cases one domestic consumer is linked to multiple energy meters in his / her premises and in such cases when consumer makes payment of more than one bill through single cheque, pay-in-slip generated shows the same cheque number against all the bills thereby making it difficult for the bank as well as to the Company to tally the actual number of cheques and entries in the pay-in-slip. The pay-in-slip indicates the name of the bank against the column for depositors and there was space only to insert bank account number up to 14 digits, though certain banks have account numbers with more than 14 digits.

**(iv)** As per Instruction No. 7.1.2 of the Supply Code 2009, if the consumer fails to clear the amount of energy bill within 15 days after due date mentioned in the bill, connection of the consumer should be temporarily disconnected. Thereafter, if the default continues for another six months the connection may be disconnected permanently. Audit noticed that the procedure for issue of TDCO<sup>37</sup> and PDCO was very lengthy which requires seven steps and number of entries to be fed in the system before generating the required orders. Audit noted that the process could have been automated by linking the due date of energy bill and receipt of actual payment there against available in the other modules of the application.

## 2.2.8 IT Security

IT Audit scrutiny (May-June 2015) showed that the system installed in the 21 ESDs test checked was not secured properly and was vulnerable to

<sup>35</sup> ESDs :Paonta, Baddi, Barotiwala, Mandi-II and Sataun.

<sup>36</sup> Permanent Disconnection Order.

<sup>37</sup> Temporary Disconnection Order.

unauthorised use due to inadequate access controls. Some instances are provided below:

- (i) The access to different user privileges was possible from any nodes and user authentication was not linked to assigned work terminals. Thus, new connections can be entered in the system through ID of the Assistant Executive Engineer (AEE) by passing all the required steps *i.e.* Junior Engineer and Commercial modules. Even sundry credits can be posted in the account of consumers by any employee through the access credentials of AEE. In one case under ESD-II, Nahan ` 3.70 lakh was embezzled by using the ID & password of AEE, which indicates the practice of sharing of credentials.
- (ii) Audit noticed that there is no procedure of review of user logs and sessions. Further, on transfer of employee, there is no procedure to block his / her ID allocated to him / her in the previous office so as to prevent him from accessing the data.
- (iii) MRI data downloaded from the meters has to be converted into text file at ESD / CBC before transmitting the same to Data Centre (DC), Shimla which includes operator's intervention. This process of manual intervention is not in compliance with the APDRP guidelines on use of MRI instruments and upload of data to the server of the billing application. The conversion of data into text file at the CBC / ESD carries the risk of data manipulation prior to generation of energy bills.

### **2.2.9 Business Continuity Planning**

The billing system is a critical system as it has a direct impact on the revenue realisation of the Company. In case of any untoward incident or disaster, the consumers' bills are not generated in time or done incorrectly, earnings of the Company may be substantially affected and also can cause lot of inconvenience to the consumers. It is, therefore, essential for the entity to have a well-documented disaster recovery and business continuity plan to be implemented such that information processing capability can be resumed at the earliest in case of any disaster.

It was noticed that the Company had established its Data Centre (DC) at Shimla and Data Recovery Centre (DRC) at Paonta. Both these centres are located in the same seismic zone (Zone IV) as *per* Global Seismic Hazard Assessment Programme map for Himachal Pradesh. Thus, by establishing both centres at the same seismic zone, the business risk of severe disruption is not appropriately mitigated, even after incurring an expenditure of ` 10.36 crore on establishment of the DRC.

In addition, it was also noticed that as *per* specifications / requirements supplied to the contractor, the software should maintain Recovery Point Objective

(RPO)<sup>38</sup> at less than 15 minutes for all application and data at primary site and Recovery Time Objective (RTO)<sup>39</sup> was between six and 36 hours for different applications such as metering, billing and collection, new connection, disconnection, meter data acquisition *etc.*

Audit noticed (April 2014) that as *per* inspection carried out (4 to 7 February 2014) by the inspection committee of the Company, RPO and RTO could not be verified as the contractor had not submitted the business continuity plan and drill in this regard had not been conducted till June 2015.

In reply the Company stated (May 2014) that the Power Finance Corporation had given consent (December 2009) for establishment of DC and DRC in the same seismic zone. The reply was not acceptable as the consent was applicable for states having only one seismic zone, whereas Himachal Pradesh falls under two seismic zones and the centres could have been established in separate zones.

### 2.2.10 Miscellaneous

#### (i) *Non recovery of demand charges*

In the billing software there was programming error due to which the demand charges were not computed correctly as *per* the tariff resulting in short recovery of demand charges amounting to ` 75.29 lakh up to April 2010 (Para 2.14.8 of the C&AG's Report for the year ended March 2011). Though this error in programming was subsequently corrected, the recoveries had not been made from the consumers so far (June 2015). Thus, non-recovery of demand charges of ` 75.29 lakh from the consumers had further resulted in interest loss of ` 38.90 lakh<sup>40</sup> up to June 2015.

#### (ii) *Consequences of delay in implementation*

The software was to be implemented to ensure accurate assessment of energy bills, to improve revenue realisation, but due to delay in implementation the company had to continue with the old system of preparing bills through deficient old billing software involving risk of loss of revenue. Test check of records relating to 7 ESDs showed that there was loss of revenue as discussed below:

#### (a) *Late Payment Surcharge*

If the consumer fails to clear his bill by due date as indicated on the energy bills, he was liable to pay surcharge at the rate of 2 *per cent per* month or part thereof, on the outstanding amount excluding electricity duty / taxes. Further, the payment through cheque was required to be made two days prior to the due date for payment by cash.

<sup>38</sup> Maximum amount of time lag between Primary and Secondary storages.

<sup>39</sup> Maximum elapsed time allowed to complete recovery of application processing at DR site.

<sup>40</sup> Calculated at the rate of 10 *per cent per annum* for the period from May 2010 to June 2015.

Audit noticed (June 2015) that in respect of industrial consumers who had deposited their energy bills through cheques after due date of payment by cheque, the late payment surcharge amounting to ` 58.62 lakh could not be recovered from 108 consumers for the period from April 2011 to December 2013 in three <sup>41</sup> ESDs through manual process due to delay in implementation of application software in these ESDs.

**(b) *Non / short- recovery of Low Voltage Supply Surcharge***

As *per* chapter 1 (I) of schedule of tariff applicable from time to time, consumers availing electricity supply at a voltage lower than the ‘Standard Supply Voltage’ as specified under the relevant category shall, in addition to other charges be also charged a Lower Voltage Supply Surcharge (LVSS) at the prescribed rates.

During audit (June 2015), it was noticed that in 30 cases (under seven <sup>42</sup> ESDs) of large supply consumers (availing supply on voltages lower than the standard supply voltage) LVSS was not charged or short charged due to calculation error as the same was being calculated manually on the old software. This had resulted in non / short recovery of ` 1.39 crore.

**(c) *Short recovery of demand charges***

As *per* two part tariff (July 2005), the consumers having connected load in excess of 20 KW shall be billed for demand charges in addition to energy charges at the rate specified. The bills of the Large Industrial Supply consumers were being prepared by the concerned Central Billing Cells (CBC) through old software which could not generate the bills directly by downloading data from meter reading instruments (MRI). The bills were being prepared in excel sheets by feeding data manually by taking readings from MRI data due to delay in implementation of new software.

Audit noticed (June 2015) that in 65 cases (test checked) demand charges of ` 50.56 lakh were short levied due to calculation mistakes during the period from April 2009 to March 2015 in seven ESDs <sup>43</sup>.

**(d) *Short recovery of average charges***

As *per* instruction No. 4.4.8 (ii) of the Supply Code, 2009, when the energy meter of the consumer becomes defective the same should be replaced immediately. Further, the consumers’ account should be overhauled for the period during which the meter remained defective and be charged on the basis of average monthly consumption recorded through the correct energy meter installed.

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<sup>41</sup> ESDs: Baddi, Barotiwala and Manali-II.

<sup>42</sup> ESDs: Baddi, Barotiwala, Kala Amb, Manali-II, Paonta, Mandi-II & Sataun.

<sup>43</sup> ESDs: Kala Amb, Paonta, Manali-II, Baddi, Kangra-I, Sataun, and Reckong Peo.

Test check of records during audit (June 2015) showed that after replacing defective meters of ten consumers (Five<sup>44</sup> ESDs) with new meters, their accounts were not overhauled due to non-existence of such provision in the old billing software. In absence of which energy charges amounting to ` 52.68 lakh were short recovered during the period from September 2011 to August 2014.

**(e) Short-recovery due to Non-levy of revised tariff**

Energy bills of small industrial consumers having connected load of less than 20 KW (single part tariff) were being generated by the ESD, Baddi through old billing software.

Audit noticed (March 2014) that after revision of tariff in April 2012, the billing software could not be modified due to some technical reasons. Consequently, the consumers of this category continued to be billed at old rates up to July 2013. It was only after switching over (July 2013) to new billing software provided by the HCL the deficiency was removed but no recoveries on account of difference in rates were made for the period prior to July 2013.

Thus, due to technical problem in the software, an amount of ` 20.65 lakh was short recovered from 295 consumers during the period from April 2012 to July 2013.

**Conclusions and Recommendations**

The Computer Master Plan under APDRP sanctioned by GoI during 2002 and 2003 and awarded in May 2006 was still under implementation. Consequently the Company had to prepare the energy bills manually which resulted in non / short-recovery of revenue on account of Late Payment Surcharge, Low Voltage Supply Surcharge, application of incorrect rates of High Voltage Supply Rebate and Demand Charges *etc.*

***The Company should expand coverage of the new application to other ESDs for its complete implementation to eliminate manual preparation of bills.***

The software which was made operational in 124 sub divisions out of total awarded 132 was also deficient in mapping of business rules which resulted in revenue loss due to non / short-recovery of Fixed Demand Charges, application of wrong multiplying factor and non assessment of enhanced energy charges *etc.* Besides, the Data Centre and Data Recovery Centre established in connection with this IT package had been established in the same seismic zone which defeated the very purpose of establishing the Data Recovery Centre.

<sup>44</sup> ESDs: Kala Amb, Barotiwala, Baddi, Kangra-I and Reckong Peo.

***The Company should initiate action to rectify deficiencies in mapping of business rules as pointed in audit so as to avoid recurring loss of revenue. Access controls and data security controls may be strengthened to mitigate risk of data manipulation.***

The above points were reported to the Government / Company in August 2015; their reply was awaited (December 2015).