3.2 PROCUREMENT, PERFORMANCE AND REPAIR OF ENERGY METERS IN WEST BENGAL STATE ELECTRICITY BOARD

Highlights

As per section 26(1) of the Indian Electricity Act, 1910, West Bengal State Electricity Board (Board) is required to install and maintain correct energy meters at each point of supply of energy to consumers for measuring the energy actually sold. Of the total 43.85 lakh consumers, 2.59 lakh consumers were unmetered, besides there were 2.55 lakh defective meters pending replacement as on 31 March 2003.

(Paragraph 3.2.1)

Despite receipt of advance/ security deposit from prospective consumers as well as loans/ grants from Power Finance Corporation Limited and Government of India for complete metering to low and medium voltage consumers, the Board failed to provide meters even after three years which gave rise to hooking and tapping as well as sustained loss of potential revenue of Rs 1.77 crore in five out of ten test checked divisions.

(Paragraphs 3.2.6, 3.2.16 & 3.2.17)

The Board's assessment of requirement of energy meters was on *ad hoc* basis and actual requirement was lost sight of. Resultantly, the Board was unable to provide 7.57 lakh meters as of March 2003 due to their shortage. Further, had the Board repaired 3.85 lakh defective meters it could have saved Rs 23.24 crore on procurement of new meters.

(Paragraphs 3.2.7 & 3.2.29)

The Board incurred extra expenditure of Rs 4.40 crore due to procurement of meters at higher rates or extending price preference to state based parties.

(Paragraphs 3.2.10, 3.2.11 & 3.2.12)

Delay by suppliers in delivering 3.30 lakh meters, purchased on emergency basis at a higher price of Rs 3.59 crore, led to loss of potential revenue of Rs 4.93 crore. However, the Board did not recover liquidated damages of Rs 72 lakh.

(Paragraph 3.2.13)

Failure to carry out periodic post installation checks of meters, metering arrangement and connected load resulted in loss of revenue of Rs 2.05 crore.

(Paragraphs 3.2.23, 3.2.24, 3.2.25, 3.2.26 & 3.2.27)

The Board sustained loss of revenue of Rs 31.86 crore for unmetered supply and Rs 68.71 lakh due to delay in replacement of defective meters in eight test checked divisions.

(Paragraphs 3.2.28, 3.2.34 & 3.2.35)

Introduction

Metering is a pre-requisite for earning revenue.

3.2.1 Metering is vital for the conversion of energy flow into money flow. It identifies the quantum of energy supplied and losses at different points in the system and is, therefore, a pre-requisite for energy audit and loss reduction. To ensure proper accounting of the energy flow and to obtain more reliable data on the location and the extent of losses, it is imperative that a proper account of the energy flowing in the system is carried out through meters of appropriate specifications and types at various load centres.

Energy meters are either static or electromechanical equipment installed in the system network to measure the quantum of flow of energy at different points in the system so as to ascertain energy sold to each consumer. Energy meters are of five types viz. single phase, poly phase, low tension (current transformer operated), high tension (trivector) and feeder meters. The first four types of meters are installed at supply points for measuring energy supplied to consumers. Feeder meters are installed at sub-stations for recording the energy received through incoming feeders and energy supplied from outgoing feeders to consumers. These meters are also installed at generating stations and sub-stations for preparing energy account and determining system losses.

To measure the quantum of energy sold to each consumer, West Bengal State Electricity Board (Board) is required to install and maintain 'correct' energy meters at each point of supply as per Section 26 (2) of the Indian Electricity Act, 1910. At the end of March 2003, there were 41.26 lakh metered consumers (including 2.55 lakh defective meters) while unmetered consumers were 2.59 lakh. Details of consumers for past five years up to 31 March 2003 are given at Annexure-19.

Organisational structure

3.2.2 Meters are procured against indents received from the Distribution Wing through the Material Controller (of the rank of Chief Engineer) reporting to the Member (Operations). Bulk tariff meters are received and tested at five testing divisions of the Central Testing Department headed by a Deputy Chief Engineer reporting to Chief Engineer (CE), Distribution. Similarly, meters for low & medium voltage (L&MV) consumers are received and tested at 20 testing centres at five zones.

The tested meters are released to 41 divisions of the Board for installation or replacement departmentally. Meter reading is undertaken by the divisions which raise bills on L&MV and high voltage (HV) consumers whose demand for energy exceeds 50 KVA but does not exceed 500 KVA. The Chief Engineer (Commercial) at Headquarters raises bills on those HV consumers whose demand is 500 KVA and above. The inspection of meters is the responsibility of circles, divisions and the group electric supplies depending on the category of the consumers.

Scope of Audit

3.2.3 Mention was made in paragraphs 3A.5.1(c), 3A.5.3 and 3A.5.3.1 of the Report of the Comptroller and Auditor General of India (Commercial) for the year ended 31 March 2000, Government of West Bengal regarding defective energy meters and lack of periodical inspection of meters, included in the review on 'Tariff, billing and collection of revenue' which awaits discussion by the Committee on Public Undertakings (September 2003).

The present review, conducted from November 2002 to February 2003 and June 2003, covers the aspects of assessment of requirement, procurement, installation of meters and replacement of defective meters between 1998 and 2003. This review is the outcome of test check of records relating to 25[⊗] out of 66 units, selected on the basis of number of consumers and deficiencies observed in earlier audits. The audit findings were reported to the Government/ management in March 2003 with the request for attending the meeting of ARCPSE so that the view point of Government/ management was taken into consideration before finalising the review. The meeting of the ARCPSE was held on 11 April 2003 where Government was represented by the Principal Secretary, Power Department and the management was represented by the Chairman of West Bengal State Electricity Board. The review was finalised after considering the views of the Government and the management. These are set forth in the succeeding paragraphs.

Planning

3.2.4 The state level re-organisation committee in the power sector recommended (July 1998) that the Board should take up energy audit in all segments and install meters in all sub stations for the purpose of recording energy flow. All 33 KV sub stations were to be covered in the first year followed by 11 KV system in the subsequent year, if necessary, with loan/ assistance from the Government/ financial institutions. The committee also recommended replacement of all defective meters in the premises of the consumers within two years. Non-metered supply/ average billing was also to be discontinued.

However, after a lapse of two years the Board prepared (August 2000) a project for energy audit and 100 per cent metering and decided to procure 0.90 lakh meters with accessories for sub stations as well as 2.22 lakh electronic and 9.24 lakh electro-magnetic meters for installation at consumers' premises at an estimated cost of Rs 718.11 crore with loan of Rs 574.49 crore

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[⊗] Four zones – Medinipore, Burdwan, Berhampore and Siliguri
Seven circles – Burdwan, Howrah, Midnapore, 24-Parganas (South), Nadia, Berhampore and Malda
Ten divisions – Malda, Krishnanagar, Naihati, Kharagpur, Tamluk, Baruipur, Katwa, Jalpaiguri, Darjeeling and Arambagh
Three Chief Engineers' Offices – Distribution, Computerisation and Communication and Commercial at Bidyut Bhaban,
Material Controller's office at Bidyut Bhaban, Kolkata

(80 *per cent*) from Power Finance Corporation Limited (PFC). Reasons for delay of two years were not on record.

Memorandum of understanding

3.2.5 A Memorandum of understanding (MOU), signed on 5 May 2001 between Government of India (GOI) and Government of West Bengal (GOWB), for implementation of reform programmes in the power sector, inter alia, envisaged (i) undertaking of energy audit by the Board to reduce transmission and distribution loss to 20 per cent by 2005; and (ii) 100 per cent metering of all consumers by December 2002. Fund would be disbursed by GOI under APDP®/ APDRP© scheme for these reforms.

Funding

3.2.6 The position of fund sanctioned, drawn and utilised for the purpose of metering is as tabulated below-

Despite availability of sanction, the Board failed to draw the money.

Sl. No.	Nature of finance/ Date of sanction	Sanctioned by whom	Purpose of sanction	Amount sanctioned	Amount drawn	Amount utilised
				(Rupees in crore)		
1	Advance from consumers	Collected from different categories of consumers	Advance towards cost of meter, to be refunded in instalments	-	76.25	76.25
2 (a)	Loan 9 January 2001	Power Finance Corporation Limited (PFC)	100% consumer metering	27.80	22.06	22.06
(b)	January 2001	Power Finance Corporation Limited (PFC)	100% metering of HV/ EHV sub-station	32.60	30.83	30.83
(c)	April 2002	Government of India through State Government	Installation of meters under APDRP	17.98	19.02	9.33
	Sub-Total			**78.38**	**71.91**	**62.22**
3	Grant February 2001	Government of India through State Government	Installation of meters under APDP/ APDRP	3.60	3.60	7.20
	TOTAL				**151.76**	**145.67**

Note : APDP/ APDRP in the three identified circles of Howrah, Bidhannagar & 24-Parganas (South)

It was observed in audit that –

- An amount of Rs 19.02 crore, received (April 2002) by GOWB as grant from GOI under APDRP scheme, was released (February 2003) as interest-bearing loan to the Board in contravention of the provisions of the scheme. This increased the interest burden of the Board by Rs 2.76 crore per *annum*.

- Hundred per cent metering of HV/ Extra High Voltage (EHV) sub stations was to be completed by December 2002 with loan assistance from PFC.

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However, due to slippage in achieving the target (refer paragraph 3.2.32) the Board failed to draw loan of Rs 1.77 crore (Rs 32.60 crore minus Rs 30.83 crore) from PFC within December 2002.

- The details of expenditure incurred from the grant of Rs 3.60 crore under APDRP were not maintained. Consequently, actual expenditure was not ascertainable.

Requirement of meters

Improper assessment of requirement by the Board led to shortage of 7.57 lakh meters.

3.2.7 The requirement of meters was to be assessed by the Distribution Wing and centrally procured by the Central Stores and Purchase Department (CS&PD). Government stated (April 2003) that requirement was assessed considering number of service connections pending, applications pending, defective meters, stock position, lead time, consumption pattern, targets fixed and time lag for procurement, but procurement being restricted to Board's ability to procure.

It was noticed in audit that the Board pegged its requirement of meters for 1998-2003 at 25.01 lakh single phase and 98,548 three-phase meters against which procurement was 24.06 lakh and 44,795 meters respectively. Yet, the Board was unable to provide 7.57 lakh meters towards new connections (2.43 lakh), replacement of defective meters (2.55 lakh) and unmetered connections (2.59 lakh) as of March 2003 due to shortage of meters. This indicated that the Board was assessing requirement without reference to actual need.

The Government attributed (April 2003) this to the spurt in applications since July 2002 arising from notification (April 2002) of The Indian Electricity (West Bengal Amendment) Act, 2001.

Procurement

Purchase procedure

3.2.8 The Board procures meters centrally through the Material Controller (MC) based on the indents placed by Distribution Wing as well as the requirement of West Bengal Rural Energy Development Corporation Limited (WREDC) for its rural electrification programmes. MC places orders on firms based on open and limited tenders with the approval of the Board. According to the Board's policy, prior to December 2001, only 20 *per cent* of tendered quantity could be placed in favour of parties from outside the State which were the lowest tenderers and the balance 80 *per cent* was to be allocated among the state-based parties who agreed to supply at the lowest price of the tender. However, with effect from December 2001 this policy had been substituted by a new policy. As per the new policy, the price bid is prepared after taking into account the price preference (15 *per cent*) as available to the state based units under State Government orders and L1 unit, determined as above, whether state based or based outside the State, will be given orders up to their assessed capacity. Negotiation will be undertaken only with the lowest bidder irrespective of the supplier's domicile. However, in actual

practice all bidders with technically acceptable bids are called for price negotiation.

Vendor rating

3.2.9 Vendor rating refers to grading of each manufacturer/ supplier by in-depth analysis of meter performance considering the extent of failure during testing or within the guarantee period attributable to manufacturing defects. The Board did not maintain performance cards of meters and consequently was unable to rate the vendors on the basis of performance of meters.

It was observed that Bentec Electricals & Electronics (Private) Limited (Bentec), a state based SSI vendor supplied (March 2002) 5,000 static meters which were rejected (April 2002) on testing by the Board. Ignoring the vendor's performance, the Board again placed (January 2003) another order on Bentec for supply of 80,000 static meters after allowing a price preference of Rs 55.14 lakh over the lowest tender.

Placement of orders

During 1998-2003, the Board placed 70 purchase orders for 24,05,530 single-phase meters at Rs 161.58 crore and 37 purchase orders for 44,975 three-phase meters at Rs 31.53 crore. A test check of 95 purchase orders valued at Rs 168.90 crore revealed the following deficiencies in procurement:

Extra expenditure arising from application of price preference

3.2.10 The Board floated (March 2001) tender for purchase of six lakh electromechanical (EME) and 50,000 static meters, against which it received 14 offers for EME meters and four offers for static meters. Of these offers, 13 suppliers (including three state based) for EME meters and two suppliers (one state based) for static meters were found to be technically acceptable. Bharat Heavy Electricals Limited quoted the lowest rate of Rs 708.68 per EME meter, while Larsen & Toubro Limited offered the lowest rate of Rs 1,394.20 per static meter.

The Board incurred extra expenditure of Rs 2.17 crore on procurement of meters.

On negotiation, nine suppliers based outside the State accepted the lowest rate of Rs 708.68 per EME meter and the Board placed (September 2001) orders on them. Two state based parties, viz. Bentec and Dhoot Industrial and Investment Company Private Limited (Dhoot), an agent of Alstom Limited, reduced their rates to Rs 798.06 and Rs 779.54 per EME meter respectively. The Board allowed them price preference of 15 *per cent* and 10 *per cent* respectively according to Government orders and procured (July 2002) 1.30 lakh EME meters from these two parties at Rs 798.06/ Rs 779.54 each. The Board again placed (September 2002) repeat orders[Ω] for supply of one lakh EME meters on these two state based firms.

[Ω] Issuing of new orders on same firms on the basis of quotations received against earlier tender

Further, on negotiation, Bentec reduced its rate from Rs 1,573.19 to Rs 1,541.87 per static meter. The Board procured 10,000 static meters at Rs 1,541.87 each from Bentec.

This resulted in extra expenditure of Rs 2.17 crore on procurement of 2.30 lakh EME and 10,000 static meters at higher rates from state-based parties.

Extra expenditure due to improper assessment of requirement

3.2.11 West Bengal Rural Energy Development Corporation Limited (WBREDC) was set up (August 1998) to undertake rural electrification (RE) works. WBREDC has not been issued licence to energise and operate RE installation. The Board was entrusted with the development of energisation of RE schemes and responsible to procure materials for entire RE works. Hence, it was imperative that the Board should also consider the requirement of WBREDC before procurement of materials.

Procurement at higher rate led to extra expenditure of Rs 1.68 crore.

Audit observed that the Board invited (March 2001) the tender and placed (September 2001) orders on nine out side state based parties for supply of 4.10 lakh EME meters at the rate of Rs 708.68 per meter and 1.30 lakh EME meters on two state based parties at the rate of Rs 779.54 and Rs 798.06 per meter (after allowing price preference). The suppliers completed the supply of 5.40 lakh meters by July 2002. Meanwhile, WBREDC requested (29 July 2002) the Board to procure two lakh EME meters for RE works. The Board refused (21 August 2002) to procure two lakh EME meters on the plea that tender process had already been completed in August 2001 although the Board placed (September 2002) orders for purchase of another three lakh EME meters on the same 11 suppliers at the same rates on repeat order basis. Ultimately, without inviting tender, two lakh EME meters were purchased (December 2002)for WBREDC at the rate of Rs 798.06 and Rs 779.54 each from two state based parties. Had the Board assessed (March 2001) the requirement of WBREDC initially or procured (September 2002) the same from outside state based parties alongwith its repeat orders, it could have avoided extra expenditure of Rs 1.68 crore.

Extra expenditure due to procurement of EME meters instead of static meters

3.2.12 The Board invited tender in March 2001 for six lakh EME meters and had placed orders for 5.40 lakh meters in September 2001.

After installation of single-phase static meters, the Board realised (December 2001) that it was losing substantial revenue due to slow/ incorrect recording by EME meters and proposed (December 2001) to replace EME with static meters.

Procurement of EME meters instead of static meters led to extra expenditure of Rs 54.81 lakh.

It was noticed in audit that the Board invited (August 2002) tenders for 2.50 lakh single-phase static meters and received offer of Rs 690.41 per meter. The Board, however, placed repeat orders for three lakh EME meters in September 2002 at Rs 708.68 per meter. Though static meters were cheaper than EME meters, the Board procured three lakh EME meters and thereby

incurred an extra expenditure of Rs 54.81 lakh. Government claimed (April 2003) that single-phase static meters were a recent development and there might be wide variation in prices and qualities. The reply was not tenable since the static meters had also to fulfill the requirements of the Indian Standard Specification (ISS) : 13779 of 1993 and ensured accuracy in recording the energy consumption. Moreover, MSEB©, PSEB® and distribution Companies of Haryana and Rajasthan (erstwhile HSEBø, RSEBæ) were using single phase static meters since December 1998, October 1999, December 1999 and April 1998 respectively.

Non installation of meters

Loss of revenue due to delay in supply of meters

The Board sustained loss of revenue of Rs 4.93 crore due to delay in supply of meters.

3.2.13 Mention was made in paragraph 3.4.4.6 of the Audit Report (Commercial) 2000-01 – Government of West Bengal that the Board floated (June 2000) tender for procurement of 4.50 lakh meters on emergency basis and placed orders for procuring 4.30 lakh meters at higher prices, thereby incurring additional expenditure of Rs 3.59 crore. Further, there was a delay of seven months in supply of 3.30 lakh meters by the suppliers for new connections, thereby leading to loss of potential revenue of Rs 4.93 crore and electricity duty of Rs 19 lakh. The Board attributed (January/ April 2003) this to delay in delivery of meters by suppliers. The supply orders provided for levy of liquidated damages at 0.5 *per cent* per week of delay, subject to a maximum of 5 *per cent* of the price. However, the Board imposed liquidated damages of Rs 44.51 lakh only against recoverable amount of Rs 1.17 crore, thereby resulting in short recovery of Rs 72 lakh.

Infructuous expenditure on inappropriate technology

3.2.14 The Board conceived (February 1998) a scheme for remote metering through telephone lines to transfer data from energy meters located at premises of bulk consumers to the central computer system. Accordingly, the Board procured (June 1998/ January 1999) 36 single port modems along with remote metering software for Rs 9.51 lakh without assessing the suitability of the technology.

The system was installed (March 1999- November 2000) at the premises of bulk consumers in four[1] circles at an expenditure of Rs 6.14 lakh but it failed to function since inception owing to disturbances in the telephone lines and UPS systems. Accordingly, the Board proposed (February 2002) to switch over to a wireless communication system.

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[1] Hooghly, Howrah, 24-Parganas (North) & 24-Parganas (South)

Thus, failure of the Board to undertake a study before installation regarding the suitability of the technology led to an infructuous expenditure of Rs 15.65 lakh.

The Board stated (April 2003) that efforts were on to make the remote metering system functional.

Delays in effecting new connections and replacing defective meters

3.2.15 Electro-mechanical and electronic meters are required to comply with the latest Indian Standard Specification (ISS) : 13,010 of 1990 and 13,779 of 1993 respectively. All meters must conform to specifications and are either tested at manufacturer's factory or Board's laboratories before installation. While facilities for testing single and three- phase meters are available at testing unit of circles or zonal offices, facility for testing electronic meters (above 11 KV) meant for bulk consumers is available only at Central Testing Laboratory, Salt Lake.

Scrutiny in audit revealed the following delays in effecting new connections and replacing defective meters for want of meters :

The Board delayed in effecting new connections by one to eleven months and sustained loss of revenue of Rs 1.68 crore.

3.2.16 In January 2000, 1,88,276 new connections were pending for want of meters of which only 1,66,387 connections were effected till November 2000, leading to failure to effect 21,889 connections for 11 months causing loss of minimum potential revenue of Rs 96.31 lakh. Similarly, 1,78,877 new connections could not be effected between November-December 2002 leading to loss of potential revenue of Rs 71.55 lakh for a month.

3.2.17 At Sodepur under Barackpore division, 370 consumers had deposited service connection charges of Rs 1.11 lakh and entered into agreements with the Board in February-March 2002. However, for want of meters, the connections could not be effected. Vigilance wing of the Board reported (June 2001) to the division that these consumers resorted to hooking/ tapping, which resulted in transformer burnout and directed the division to liquidate pending connections.

Similarly, in Panskura and Bangaon group supplies under Tamluk and Habra divisions, 640 and 2,502 connections respectively could not be effected to prospective consumers for want of meters leading to loss of revenue of Rs 8.85 lakh per *annum*.

The Board was to effect new connections within two months. At Arambag and Katwa divisions, there were 4,700 and 3,753 clear pending connections as of 31 December 2002 of which only 3,299 and 2,340 connections were effected in the subsequent two months. Consequently, 1,401 and 1,413 connections respectively were not effected for want of meters.

3.2.18 Till September 2000, the Board had not laid down procedure to determine the number of defective meters in circuit. In 2000-01, 2001-02 and 2002-03 against 3.10 lakh, 2.92 lakh and 2.95 lakh defective meters in circuit, the Board replaced 1.85 lakh (60 *per cent*), 1.64 lakh (56 *per cent)* and

2.10 lakh (71 *per cent*) meters respectively. This indicated the slow pace of replacement.

In Bankura (O&M) division, the Board failed to replace defective meters of 15 industrial consumers who had deposited (September 1995 to June 1998) Rs 16,500 towards cost of defective meters. Similarly, at Coochbehar 'D' division, 11 consumers who had deposited (May 1998-April 2000) the advance (Rs 0.96 lakh) were not provided meters till December 2002.

Due to these delays in providing connections, the Board lost potential revenue of Rs 1.77 crore.

Performance of meters

3.2.19 The Central Government notified (March 1994) that the life of energy meters is 15 years and the cost of the meter is to be recovered within eight years. In other states e.g. UP as per the Manual of Orders of Uttar Pradesh Power Corporation Limited, the Corporation is required to maintain a history card of each meter. However, the Board has no system to track the history of each meter. Thus, the Board was not aware of procurement dates as well as the periods for which the meters were in service. Resultantly, it could not be ascertained in audit whether the meters had achieved their normal life of 15 years and age-wise incidence of failure. The Board claimed (April 2003) that records of meters installed were maintained in blue cards and master cards at computer centres and in meter movement register which was, however, contradicted when the Board stated (April 2003) that the details of meters and their premature failure were not available.

Failure of meters within guarantee period

3.2.20 Performance of meters is guaranteed for 18 months from the date of supply or 12 months from the date of installation, whichever is earlier. In absence of detailed records at Group Electric Supplies, total meters failed within guarantee period could not be determined. The Board stated (April 2003) that all new meters procured after July 2001 are given a unique computer number for identification of meters.

The Board sustained loss of Rs 59.71 lakh on prematurely failed meters.

The Board engaged (November 2001) West Bengal Consultancy Organisation Limited (WEBCON) to prepare the details of meters failed within guarantee period at a cost of Rs 2.06 lakh. Between February and May 2002, WEBCON had identified 9,648 EME meters (Rs 68.37 lakh) in 17 circles from 11 suppliers that had failed within their guarantee period. However, the Board stated (August 2003) that only 1,222 meters (Rs 8.66 lakh) were either repaired or replaced, resulting in loss of Rs 59.71 lakh on prematurely failed meters.

Records of the following five circles, five divisions and two zones indicated that 3,797 meters valuing Rs 26.91 lakh failed within guarantee period without recording the period of service, as detailed below :

Name of the Unit	Period of detection of defective meters	No.
Baharampur Testing Centre	March-June 2002	320
24 Parganas (South) 'D' Circle	December 2001	264
Darjeeling G-C-D Dvn.	May-August 2002	45
Midnapore 'D' Circle	October 2002	205
Malda 'D' Circle	February-September 2002	266
Tamluk 'D' Dvn. (Kolaghat Electric Supply)	December 2001 - August 2002	46
Krishnanagar 'D' Dvn	February - September 2002	234
Naihati 'D' Dvn.	July 2002	475
Kharagpur 'D' Dvn.	October 2002	20
Jalpaiguri 'D' Circle	February 2002	426
Burdwan 'D' Zone	April-December 2002	503
Birbhum 'D' Circle	March 2003	993
		3,797

The Divisional Engineers and Superintending Engineers of the respective divisions/ circles did not, however, take action to get these meters replaced or repaired by the suppliers, reasons for which were not recorded. Consequently, the Board failed to effect new connections to 3,797 consumers and thereby the Board lost a potential revenue of Rs 36.45 lakh.

Ineffective post installation checks

The Board failed to undertake regular post installation checks leading to loss of Rs 2.05 crore.

3.2.21 In terms of Rules 57 (4) and 57 (5) of the Indian Electricity Rules 1956, the Board was responsible for periodic examination, testing and regulation of all meters installed at consumers' premises at periodic intervals to be specified by the State Government and to maintain a register to record these details. The permissible variation in readings should be limited to (±) three *per cent*. It was observed in audit that neither the State Government nor the Board had specified any periodicity for examination. In this connection the following points were noticed in audit-

3.2.22 The Medinipore Circle of the Board had been supplying power to Shri Madhab Edible Products Limited (MEPL) (contract demand : 250 KVA) for running its edible oil refinery plant since March 1994 and raising bills based on consumption recorded in the EME meter installed. The Board installed (September 1999) a Time of Day (TOD) electronic meter in tandem and detected that the maximum demand shown in the TOD meter was 458 KVA against 245 KVA shown by the EME meter. The Board found (May 2000) the connected load was 801 KVA against the contract demand of 250 KVA.

MEPL then applied (July 2000) for enhancement of load from 250 KVA to 1000 KVA due to extension of plant for producing 'Vanaspati' and installation of hydrogen gas plant since September 1997. The Board enhanced the contract demand in December 2001.

After lapse of 22 – 25 months, the Board raised (July-October 2001) supplementary bills for Rs 11.25 lakh (July – September 1999) and Rs 82.67 lakh (September 1997 – June 1999) based on consumption recorded by the

electronic meter. MEPL deposited rupees five lakh in September 2001 and opted for adjudication.

The Government stated (March 2003) that since there was no sharp increase/ decrease in consumption recorded in the EME meter, it was not felt necessary to go for physical inspection of the connected load. The contention is not acceptable as the failure to undertake post installation checks led to loss of Rs 88.92 lakh.

3.2.23 At Birbhum 'D' Circle, the Board replaced the existing defective meter of Vidya Rice Mill in August 1997 after verifying the seal thereon. Subsequently, no further inspection was undertaken for more than three years till January 2001, when inspection revealed that the seal/ meter was tampered with. The line was disconnected forthwith and supplementary claim of Rs 46.02 lakh was raised in February 2001. However, the Hon'ble High Court, Kolkata passed (February 2001) an order to restore supply on payment of Rs 0.63 lakh in two instalments. The consumer paid (February-March 2001) the amount and connection was restored by the Board. No payment was received against the supplementary claim of Rs 46.02 lakh and the Board did not pursue the claim. No action was also taken against delinquent inspecting officials (July 2003).

3.2.24 The Board effected (May 1992) bulk power connection to Medinipore Central Jail which was checked only in July 2000 and found defective. The Board replaced the defective meter with a TOD meter and observed a jump of 109 *per cent* (i.e 10.90 lakh units) for the period from May 1992 to June 2000 and preferred (March 2001) an inadmissible supplementary bill of Rs 32.81 lakh for period in excess of six months.

3.2.25 The Board installed (October 1988) a six digit display meter with initial reading of '001910' at Shree Cinema under Haldia (O&M) Division. However, the initial reading was erroneously recorded in the meter reading card as '00191' and the consumer was billed on a five-digit reading excluding the last digit. Only in March 1999, the Board awoke to the need for rectifying the disorder of point, casting doubt on the integrity of the Board's staff. After further delay of 14 months, in June 2000, the reading was rectified to '7,33,892' and the supplementary bill of Rs 20.28 lakh (6,59,510 units) for the period October 1988 to May 2000 raised in May 2002 after two years. No payment has been received (July 2003). The Board, however, did not take any action against the delinquent officials (July 2003).

3.2.26 Recorded consumption of Mecheda Railway Station, a bulk consumer declined sharply from 704 units per day till September 1995 to 488-553 units between October 1995 – June 1999. While billing continued on recorded consumption till September 1997, the Board revised provisional bills from October 1997 to June 1999. On replacement (July 1999) of the existing meter with a Time of Day (TOD) static meter, the recorded consumption was on an average 820 units per day. The Board raised (December 2001) a supplementary bill for Rs 11.02 lakh from October 1995 to June 1999, despite being aware that supplementary bill for period in excess of six months cannot be raised and thereby possibility of recovery was remote. This indicated that

the Board did not exercise post installation checks even on meters installed at premises of bulk consumers.

3.2.27 In respect of 10 test-checked divisions consisting of 11.49 lakh consumers, only Baruipur (Mahinagar) and Malda divisions undertook (September 2001 - March 2003) inspection and that too for 25 and 110 meters out of 2.79 lakh and 1.39 lakh meters thereby indicating gross negligence on the part of Divisional Engineers to carry out the inspection. Further, inspection of 25 meters at Mahinagar testing center showed that with reference to permissible range (±) three *per cent*, 15 cases showed under recording of power consumption by 3.91 to 65.62 *per cent* while two cases showed over recording by 3.06 and 5.94 *per cent* and the remaining meters were within the permissible limit. Similarly, at Malda division test of 20 meters showed under recording by four and 79 *per cent*. This resulted in loss of potential revenue of Rs 6.26 lakh per *annum*.

Thus, the Board's failure to undertake regular post installation checks led to loss of Rs 2.05 crore.

Non replacement of defective meters and delay in repair

3.2.28 The Board installed its own meters at the premises of different categories of consumers and recovered monthly rental at rates varying from rupees nine to Rs 1,200. In terms of Section 26 (2) of the Electricity Act, 1910, it is obligatory on the Board to keep the meters correct. In case of defective meters, bills can be raised on an estimate based on past consumption for a period not exceeding six months. For periods in excess of six months, the Board can raise bills at minimum amount only. To obviate the possibility of loss of revenue to the Board, it is imperative to replace defective meters promptly.

The year-wise position of defective meters during 2000-03 is as under-

Year	Total number of metered connection	Opening balance of defective meter	Addition during the year	Defective meters replaced during the year	Closing balance of defective meters	Percentage of defective meters to total metered connections	Average time for replacement (in months)
	(Numbers in Lakh)						
2000-01	34.42	3.10	1.67	1.85	2.92	8.47	31
2001-02	38.41	2.92	1.67	1.64	2.95	7.68	34
2002-03	42.28	2.95	1.70	2.10	2.55	6.03	27

During 2000-03, the average time to replace defective meters marginally improved to 27 months in 2003 from 31 and 34 months in 2001 and 2002 respectively. The loss of revenue in a few instances is given below :

- In five divisions[℘], the Board delayed in replacing 120 defective meters for more than three months and up to four years and thereby the Board

[℘] Darjeeling, Kharagpur, Naihati, Tamluk, Krishnanagar

lost revenue of Rs 37.35 lakh between March 1999 and September 2002.

- According to the Board's guideline (July 1999), instances where meters of industrial consumers were defective, assessed consumption of energy would depend on nature of industry. However, verification of records of five supply stations revealed that 90 industrial consumers with defective meters were billed for 1.40 MU on the average of past consumption, instead of 2.38 MU on the basis of connected load. The Board's failure to replace these defective meters in time resulted in loss of revenue of Rs 31.36 lakh with loss to exchequer of Rs 0.98 lakh.

The Board stated (April/ July 2003) that approximately 5.59 lakh meters were replaced between April 2000 and March 2003. However, 2.55 lakh defective meters continued to remain in circuit (March 2003).

The Board also stated (April 2003) that whereas installation and metering equipment at premises of bulk consumers were tested annually, annual testing of L&MV consumers was not feasible due to their large numbers. However, the number of meters so tested was not maintained and facts mentioned above belied the contention of the Board.

Non repair of defective meters led to avoidable procurement of meters

3.2.29 Between 2000-03, the Board replaced 5.59 lakh defective meters and also identified (August 2000 and March 2002) 1.51 lakh meters (188 group supplies under 32 divisions) to be disposed of as scrap, indicating that 4.08 lakh meters were repairable. Of these, only 23,468 were repaired and 3.85 lakh meters remained unrepaired.

The Board failed to repair 3.85 lakh meters leading to avoidable procurement at Rs 23.24 crore.

The Board executes the repair of meters through outside agencies based on the rate contract finalised by Material Controller. In 1996-97, the rates for repair of single-phase and three- phase meters were Rs 53.50 and Rs 121.50 each, which were enhanced to Rs 105 and Rs 225 per meter during 2001-02. If the Board had repaired these 3.85 lakh defective meters, it could have saved at least Rs 23.24 crore on procurement of new meters.

3.2.30 Audit also observed that the Board maintained stock of defective meters at only one out of 33 Group Electric Supplies and one of the 10 divisions covered in audit. The Board also did not segregate between repairable and irreparable meters. At Darjeeling Gr. E/ S and Siliguri Divisional stores there were 3,000 (December 2002) and 1,054 defective meters (February– December 2002). However, in absence of maintenance of stock, actual number of meters repaired and balance in stock could not be verified. Moreover, at nine divisions under Siliguri 'D' zone, only 446 meters were repaired during the last five years. Further, only 23,022 meters were repaired in the last five years through Central Testing Division. The Board was unable to furnish the number of defective meters in stock.

Electronic meters

3.2.31 The accuracy of induction disc type (electromagnetic/ electromechanical) energy meter reduces with efflux` of time due to mechanical wear and tear. Installation of electronic meters (also known as static meters) solves the problem since their accuracy remains steady over time. Moreover, the information relating to load and tampering can be recovered from the memory unit by way of MRI (Meter Reading Instrument).

Electronic meters had been used by the Board in respect of bulk consumers' since February 1995. The Board approved (September 1997) to install electronic meters at the industrial consumers' premises under L&MV sector. These meters were installed where connected load exceeded 30 horse power, further reduced to 20 horse power and 10 horse power with effect from November 2000 and March 2002 respectively.

Loss of Rs 79.26 lakh was sustained due to recording lower consumption in EME meters

In the absence of details of target and achievement in regard to installation of electronic meters, the performance of this programme could not be verified in audit. However, in twelve test checked divisions it was found that the Board installed electronic meters and on installation electronic meters showed recording of increased energy consumption from two to 1,370 *per cent*. Before installation of electronic meters the Board had raised bills for the lower recorded consumption and thereby the Board sustained loss of revenue of Rs 79.26 lakh, as detailed below :

Name of division	Category of consumers	No. of consumers	Percentage of increase in consumption	No. of months involved	Loss of revenue (Rupees in lakh)
Jalpaiguri 'D'	Industrial	67	15 – 20	12	7.29
Baruipur (M&LV)	Industrial	51	53 – 514	22	18.46
Arambag 'D'	Industrial	10	100 – 502	5	5.71
Katwa 'D'	Industrial	17	169 – 537	13	9.96
Kharagpur (O&M)	Industrial	9	16 – 104	12	1.59
Naihati 'D'	Industrial	12	6 – 1370	28	1.23
Krishnanagar (O&M)	Industrial	4	13 – 272	3	1.03
Tamluk 'D'	Industrial	32	6 – 583	15	4.33
Suri 'D'	Industrial	108	3 – 1243	12	11.16
Burdwan 'D'	Industrial	32	2 – 560	7 – 12	4.50
Malda 'D'	Industrial	419	30 - 1279	12	6.32
Habra 'D'	Industrial	30	82 – 892	3 – 25	7.68
Total		**791**			**79.26**

While accepting the fact, the Board stated (April 2003) that all meters of industrial/ commercial consumers would be replaced by static meters.

Energy audit

3.2.32 Energy audit is essential for identifying sources of line losses arising from commercial and non-technical factors that are controllable. This would aid in reducing losses by determining the quantum of energy entering a distribution network for comparison with the quantum of energy billed for.

Despite availability of the fund implementation of energy audit was lagging behind the target date.

MOU envisaged that the Board should complete 100 *per cent* metering at all EHV and HV sub stations upto 11 KV feeders by September 2001 and undertake energy audit at 11 KV level by December 2001 to reduce the system losses. The work was to be funded out of loan from PFC.

The Board, after expiry of target date, placed the order on Secure Meters Limited (SML) in March 2002 for procurement, installation and commissioning of 4,047 meters by January 2003 and preparation of energy audit report within a period of two years from the date of installation at a cost of Rs 49.81 crore. Due to delay in placement of the order the target dates were revised (April 2002) to September and December 2002 respectively. However, 96 *per cent* of work relating to only installation and commissioning of meters were completed by SML within 31 March 2003 which ultimately delayed the commencement of energy audit. The delay in completion of work was attributable to absence of drawings showing meter location, non installation of potential transformers by SML, absence of clear cut policy for installation of meters etc. Consequently, the Board failed to identify the feeder-wise non technical losses.

Transmission and distribution losses

Failure to reduce T&D losses as per WBERC's norm resulted in loss of energy valuing Rs 689.20 crore.

3.2.33 The transmission and distribution (T&D) losses was 37.9 *per cent* in 2000-01. West Bengal Electricity Regularity Commission (WBERC), however, allowed 30 *per cent* T&D losses in its tariff order for 2000-01 and directed the Board to reduce such losses by 2.5 *per cent* by 31 March 2002 and to bring down these losses to the level of 20 *per cent* by the end of 2004-05. However, the Board failed to reduce T&D losses at the desired level which stood at 36.1 and 34 *per cent* during 2001-02 and 2002-03 respectively. Loss of energy in excess of 27.5 and 25 *per cent* worked out to 1,276.45 MUs and 1,292.22 MUs valued at Rs 321.83 crore and Rs 367.37 crore respectively.

Supply to unmetered consumers

MOU requires the Board to complete 100 *per cent* metering to consumers by December 2002. As of March 2003 the Board still had 2.59 lakh unmetered consumers. In this connection the following points were noticed in audit :-

Loss due to supply at flat rate to unmetered agriculture consumers

3.2.34 The Board had 1.02 lakh unmetered agriculture consumers as of 31 March 2003 and continued supply to these consumers at flat rates.

WBERC's tariff orders for 2001-03 specified periodical[ð] flat rates of Rs 150 to Rs 993 per month per connection for motors with capacity 3 to 5 H.P.

Loss of revenue of Rs 29.77 crore was sustained due to supply to unmetered agriculture consumers.

Audit observed that based on the minimum connected load of 3 HP per tube well and operating for four and nine hours during October to January and February to May respectively, the minimum energy consumption per tube well worked out to 10,527 units valuing Rs 16,542 for 2000-03. However, under the flat rates, the Board could realise Rs 13,366 per connection and thereby sustained a loss of revenue of Rs 29.77 crore during 2000-03.

Further, out of 10 test checked divisions, only Howrah and Habra divisions installed meters for measuring actual consumption. In Howrah division, the Board installed (March 2000-March 2002) 45 meters in three different Gr. Electric Supplies (Munsirhat, Amta – I and Udaynarayanpur) under Howrah 'D' Circle. The consumption recorded ranged from 212 to 79,205 Kwh. Similarly, in Habra (O&M) division after installation (February 2002) of meter to a connected load of 17.5 HP, the consumption observed was 5,723 and 5,067 units for March and April 2002 respectively against energy of 2,625 units billed prior to installation of meter. Thus, there was 93 *per cent* rise in consumption.

The Board stated (April 2003) that installation of meters in respect of agricultural consumers was under active consideration of the Board.

Loss due to supply to unmetered consumers under Lokdeep/ Kutirjyoti scheme

3.2.35 Under the Lokdeep/ Kutirjyoti scheme, the Board provided connections for two points to households living below poverty line (BPL) at a flat rate of rupees six per month per connection since November 1996. The charge was enhanced (January 1999/ April 2001) to Rs 10 and Rs 20 respectively.

WBERC, however, directed (December 2001) that the rate of Rs 20 per connection was admissible with effect from April 2002, only if the quarterly energy consumption was below 50 KWH.

The Board had no system of specifying the requirement for installing meters under Lokdeep/ Kutirjyoti scheme till November 2002 when the Board assessed a requirement of 1.30 lakh meters. The Board did not maintain any consolidated records in regard to the meters installed under this scheme. The exact position of connections converted to normal domestic rate was also not available.

Loss of revenue of Rs 2.09 crore was sustained due to failure to install meters.

Scrutiny in audit revealed that against total 22,606 connections in 10 test checked divisions, only 795 meters (3.52 *per cent*) were installed in three divisions. Of these, readings were taken in respect of only 193 meters and 86 *per cent* (166 meters) thereof showed that consumers' consumption was in

[ð] February-May, June-September and October-January

excess of 50 KWH, resulting in under charge of revenue of Rs 1.52 lakh per *annum* as shown in the table below :

Name of division	Total no. of connections	Total meters for which readings taken	Total meters where consumption exceeded 50 KWH per quarter	Actual consumption recorded (in KWH)	Loss of revenue per year (Rupees)
Berhampur division II	4,600	49	47	59 – 435	68,760
Jalpaiguri division	3,350	90	67	54 – 402	44,072
Malda D division	7,400	54	52	59 – 450	39,052
	15,350	**193**	**166**		**1,51,884**

Based on this trend of minimum actual consumption of 54 units per quarter, the Board was sustaining significant loss of revenue of Rs 2.09 crore per *annum* due to its failure to instal meters.

The Board stated (April 2003) that installation of meters had commenced.

Conclusion

Though metering is the sole means to ascertain the flow of electricity in the system and also to assess as well as to control technical and commercial losses, the Board has failed to address these aspects. The Board was unable to assess the requirement of meters and achieve economies of purchases. Despite awareness that revenue was being siphoned off due to delay in effecting new connections, replacement of defective meters, introduction of static meters and conversion of unmetered supply under Lokedeep/ Kutirjyoti as well as to agriculture sector to metered supply, the bottlenecks in testing and procurement persisted.

Despite obtaining loan from Power Finance Corporation Limited for implementation of energy audit, metering at all sub stations remained incomplete (March 2003). The Board was also unable to achieve 100 *per cent* metering within December 2002 and the pace of progress does not indicate early completion.

There is an urgent need to speed up the process of metering including new connections, replacement of defective meters, elimination of unmetered connections as well as to ensure uninterrupted supply of meters and also to strengthen post installation checks, especially with regard to condition of the meters, metering arrangement and actual connected load.