

CHAPTER II

AUDIT OBSERVATIONS ON KERALA STATE ELECTRICITY BOARD

2. AUDIT OBSERVATIONS ON KERALA STATE ELECTRICITY BOARD

Introduction

Kerala State Electricity Board (KSEB) was constituted on 31 March 1957 under section 5 of the Electricity Supply Act 1948. CAG is the sole auditor of KSEB. The paid up capital of KSEB stood at ₹ 1553 crore as on 31 March 2012. During the year 2011-12, we conducted audit of 48 units in addition to Performance audit on power transmission activities. This Chapter deals with important audit findings emerging from the audit. It comprises:

1. Performance Audit of Power Transmission Activities;
2. Thematic audits on 'Procurement of Pre-stressed Concrete (PSC) Poles' and 'Litigation Management'; and
3. Transaction audit observations.

2.1 Performance Audit on Power Transmission Activities

Executive Summary

Introduction

Transmission of electricity and Grid operations in Kerala are managed and controlled by Kerala State Electricity Board (KSEB). As on 31 March 2007, KSEB had a transmission network of 9652 Circuit Kilo Meters (CKM) and 270 Sub-Stations(SS) which rose to 10459 CKM and 350 SS with an installed capacity of 16326 MVA, by 31 March 2012. The quantity of energy transmitted increased from 15223.93 MUs in 2007-08 to 19086.93 MUs in 2011-12. The performance audit of KSEB for the period from 2007-08 to 2011-12 was conducted to assess the economy, efficiency and effectiveness of its transmission activities.

Transmission constraints

The transmission infrastructure within the state and inter-state transmission lines developed were inadequate in the Northern part of the State resulting in

transmission constraints and consequent shortage of power/supply of power with poor quality. There were delays in executing intra-state projects and lapses in pursuing inter-state projects. While the failure to increase transmission capacity in a major SS caused loss of ₹9.87 crore, the failure to develop an inter-state line from Puthur in Karnataka to Mylatty in Kerala is causing loss of ₹4.80 crore per annum.

Capacity Additions

The capacity creation of SS and lines did not meet the targets, as only 80 SS and 806 CKM of Extra High Tension (EHT) lines were constructed during the five year period against the target of 225 SS and 3900 CKM of EHT lines. The shortfall was due to time overrun. The planning activities for capacity creation/ enhancement were deficient on account of non-preparation of long term plan and

deficiencies in the five year and annual plans. KSEB has not been unbundled into separate utilities on a functional basis, as envisaged in the Electricity Act, 2003.

Project Management

KSEB could not complete its projects as per schedule. We noticed instances of time overrun ranging from three to 123 months and cost overrun of ₹24.64 crore during the period from 2007-2012. Many projects were delayed/interrupted after substantial progress due to disputes over land/ right of way (ROW) which were not ensured before commencing the projects.

Operation and Maintenance

The existing infrastructure for transmission was not managed properly as the maintenance and monitoring wings functioned with insufficient staff and lacked modern equipments. We noticed instances of failure of transformers and other SS equipment/power failure due to non-adherence to recommendations of the testing wings/deficiencies in maintenance. Out of seventeen 220 kV SSs, four did not have double buses resulting in lack of flexibility in operations. Bus Bar Protection Panel (BBPP) was not installed in eight 220 kV SSs. Deficiencies affecting safety were noticed in several SSs.

Grid management

We noticed, on a test check, instances of fall in the lower voltages below the minimum norms fixed at all the SSs. 35 per cent of the capacitors installed were non-working during the last three years, which resulted in loss of annual energy saving of 2.2 million units. The present Supervisory Control and Data Acquisition (SCADA) system for grid management has become outdated.

Financial management

We noticed avoidable payment of excess transmission charges of ₹0.41 crore and payment of

transmission charges on idly charged line and SS amounting to ₹6.10 crore.

Transmission losses

Transmission losses were not accurately measured but estimated based on simulation techniques. The annual transmission loss of five percent exceeded the CEA norm (four per cent) which resulted in an excess loss of ₹299.34 crore during the review period.

Monitoring and control

MIS implemented for monitoring the operations of SSs was incomplete. Internal audit in the Transmission wing was inadequate compared to the size and volume of operations.

Conclusions and Recommendations

KSEB had not prepared a long term plan and a State Electricity Plan. The transmission infrastructure developed in the State was insufficient to meet the power needs of northern part of the State. The inter-state connectivity with Karnataka was not adequately developed. Project execution was delayed in most cases as KSEB did not ensure possession of land/ROW for the entire area involved in projects. Maintenance activities were not given adequate priority. BBPP was not installed in eight out of seventeen 220 kV SSs. SCADA system used for grid management was outdated. The monitoring of field activities including internal audit was inadequate. The audit made eight recommendations which included streamlining of planning procedures, initiating urgent steps to improve transmission infrastructure in Northern Kerala and inter-state connectivity with Karnataka, installing BBPP in all 220 kV SSs, strengthening maintenance wings and monitoring activities including internal audit and expediting the process of unbundling KSEB.

Introduction

2.1.1 With a view to supply reliable and quality power to all by 2012, the Government of India (GoI) prepared the National Electricity Policy (NEP) in February 2005 which stated that the Transmission System required adequate investment besides efficient and co-ordinated action to develop a robust and integrated power system for the country. It also, *inter-alia*, recognised the need for development of National and State Grids with the co-ordination of Central/State Transmission Utilities. Transmission of electricity and Grid operations in Kerala State are managed and controlled by Kerala State Electricity Board (KSEB) which is mandated to provide an efficient, adequate and properly co-ordinated grid management and transmission of energy. KSEB started functioning on 31 March 1957.

2.1.2 The Management of KSEB is vested with a team of seven members appointed by the State Government. The day-to-day operations are carried out by the Chairman of KSEB with the assistance of Member (Finance), Member (Transmission & Generation Operations), Member (Generation Projects) and Member (Distribution). During 2007-08, 15223.93 MUs of energy was transmitted by KSEB which increased to 19086.93 MUs in 2011-12, i.e. an increase of 25.37 per cent during 2007-2012. As on 31 March 2012, KSEB had a transmission network of 10459 circuit kilometer (CKM) and 350 Sub-Stations (SSs) with an installed capacity of 16326 MVA, capable of annually transmitting 41470 MUs at 220 kV. The turnover of KSEB was ₹7978.05 crore in 2011-12, which was equal to 2.44 per cent of the State Gross Domestic Product (₹326693 crore). It employed 31113 employees as on 31 March 2012.

A Performance Audit Report on ‘Transmission System Improvements by KSEB’ for the period 2002-2007 was included in the Report of the Comptroller and Auditor General of India (Commercial), Government of Kerala for the year ended 31 March 2007. The Report is yet to be discussed by COPU (August 2012).

Scope of Audit

2.1.3 The present performance audit conducted from March 2012 to July 2012 covers performance of KSEB during 2007-08 to 2011-12. Audit examination involved scrutiny of records of different wings of KSEB at the Head Office, State Load Dispatch Centre (SLDC), two Transmission Regions headed by Chief Engineers and five out of twelve Circles headed by Deputy Chief Engineers.

KSEB constructed 80 SSs (capacity: 1561.9 MVA) and 94 lines (capacity: 806 CKM) and augmented existing transformation capacity by 1187.3 MVA during the review period. Fourteen SSs¹ (capacity 4640 MVA) were examined in audit. The selection was made ensuring geographical parity and other factors such as performance and execution of major works. The only 400 kV SS in the State,

¹ 400 KV Madakkathara, 220 KV at Pothencode, Brahmapuram, Kalamassery, Kaniyampetta, Kanjirode, Mylatty, Nallalam, Vadakara, 110 KV at Edapally, Pathanamthitta, Paruthipara and 66 KV at Trivandrum Power House and Sulthan Bathery.

eight out of seventeen 220 kV SSs, three out of one hundred thirty three 110 kV SSs and two out of seventy nine 66 kV SSs located in the selected Circles have been selected. The total transmission capacity (4640 MVA) of all the SSs selected constituted 28.42 *per cent* of the total capacity.

Audit Objectives

2.1.4 The objectives of the performance audit were to assess whether:

- Planning was in accordance with the guidelines of the National Electricity Policy/ Plan and State Electricity Regulatory Commission (SERC) and assessment of impact of failure to plan, if any;
- The transmission system was developed and commissioned in an economical, efficient and effective manner;
- Operation and maintenance of transmission system was carried out in an economical, efficient and effective manner;
- Disaster Management System was set up to safeguard operations against unforeseen disruptions;
- Effective failure analysis system was set up;
- Financial Management system was effective and efficient;
- Efficient and effective system of Procurement of material and inventory control mechanism existed;
- There was a monitoring system in place to review existing/ ongoing projects, take corrective measures to overcome deficiencies identified and respond adequately to Audit/ Internal audit observations.

Audit Criteria

2.1.5 The sources of audit criteria were the following:

- Provisions of National Electricity Policy/Plan;
- Plan Documents of KSEB;
- Standard procedures for award of contracts with reference to principles of economy, efficiency, effectiveness, equity and ethics;
- ARR filed with SERC for tariff fixation, Circulars, Manuals and MIS reports;
- Manual of Transmission Planning Criteria (MTPC);
- Code of Technical Interface/Grid Code consisting of planning, operation, connection codes;
- Directions from State Government/Ministry of Power (MoP);
- Norms/Guidelines issued/observed by SERC, Central Electricity Authority (CEA);
- “Best Practices in Transmission” identified by MoP/observed by Power Grid Corporation of India Limited (PGCIL);

- Report of the Task force constituted by MoP to analyse critical elements in transmission project implementation; and
- Reports of Southern Regional Power Committee (SRPC)/ Regional Load Dispatch Centre (RLDC).

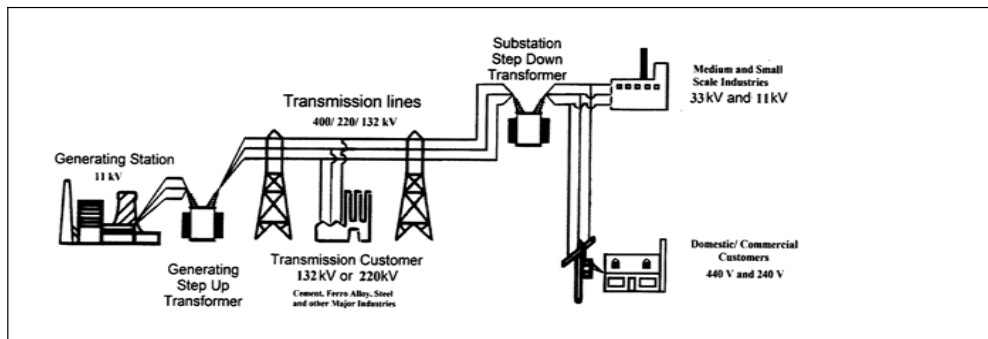
Audit Methodology

2.1.6 The methodology adopted for attaining audit objectives with reference to audit criteria consisted of explaining audit objectives to top management, scrutiny of records at Head Office and selected units, interaction with auditee personnel, analysis of data with reference to audit criteria, raising of audit queries, discussion of audit findings with the Management and issue of draft review to the Management/ Government for comments.

Brief description of transmission process

2.1.7 Transmission of electricity is defined as bulk transfer of power over long distances at high voltages, generally at 220/110/66 kV in the State. Some transmission takes place at 33 kV also. Electric power generated at relatively low voltages in power plants is stepped up to high voltage power before it is transmitted to reduce the loss in transmission and to increase efficiency in the Grid. Sub-stations are facilities within the high voltage electric system used for stepping up or stepping down voltages from one level to another, connecting electric systems and switching equipment in and out of the system.

Every transmission system requires a sophisticated system of control called Grid management to ensure balancing of power generation closely with demand. A pictorial representation of the transmission process is given below:



Audit Findings

2.1.8 We explained the audit objectives to the Management of KSEB during an Entry Conference (May 2012). Subsequently, audit findings were reported to KSEB and the State Government (August 2012) and discussed in an Exit Conference (September 2012). The Exit Conference was attended by representatives of KSEB/ State Government. KSEB and the Government replied (October 2012) to audit findings. The replies have been considered while finalising this Performance Audit Report. The audit findings are discussed in subsequent paragraphs.

Planning and Development

National Electricity Policy/Plan and planning by KSEB

2.1.9 The Central Transmission Utility (CTU) and State Transmission Utilities (STUs) have the key responsibility of network planning and development based on the National Electricity Plan in co-ordination with all concerned agencies. As the STU, KSEB was responsible for planning and development of the transmission system in the State.

KSEB's planning process consisted of five year and annual plans prepared by its Corporate Planning wing. From the year 2008-09, KSEB has been following a decentralised process for planning. The process involved identification of targets from proposals forwarded by various Circle Offices, which were discussed and finalised by an expert team. The views of the stakeholders were also incorporated after consultations with consumer groups and government departments. However, the planning process had the following deficiencies:

- Consequent to introduction of the decentralised process from 2008-09, the five year and annual plans did not complement each other as the works in the two types of plans were widely different. Moreover, the quantum of expenditure in the Annual plans (2008-09 to 2011-12) exceeded that in the five year plan by 277 *per cent*. Among the two plans, the projects in the annual plans were implemented. Thus, the five year plan lost relevance.
- As against the requirement of ₹2743.08 crore for five years, the budget allocation was only ₹1062.65 crore (shortage of 61 *per cent*).
- KSEB had not prepared a State Electricity Plan forecasting demand and planning generation, power purchase, transmission and distribution.
- A long term or perspective plan covering periods in excess of five years was not prepared though the SERC had issued directions (January 2006) for preparation of a perspective plan based on load and energy forecasts for the next ten years.
- During the review period, KSEB did not construct 135 out of 225 SSs originally planned. However, 70 out of these 135 numbers, representing 30 *per cent* of the works originally planned were not included in the ongoing works as on 31 March 2012 or in the works proposed in the Annual Plans 2011-12/2012-13.
- A test check revealed instances of inclusion of works in the Annual plans before obtaining administrative sanction/conducting load flow studies.

The above deficiencies resulted in planning of activities in an adhoc manner. Absence of proper planning affected capacity creation, both intra-state and inter-state resulting in time/cost overrun as discussed in **Paragraph 2.1.14**.

Government stated that the long term plan prepared (February 2010) upto the year 2022, after conducting Load Flow studies on the proposals up to 2017 was being revised in view of the changes in demand pattern and anticipated Generation additions.

Transmission network and its growth

2.1.10 A transmission network means Substations and Transmission lines. KSEB's transmission network at the beginning of 2007-08 consisted of 270 Extra High Tension (EHT) SS with a transmission capacity of 13576 MVA and 9652 CKM of EHT transmission lines. Details of capacity addition during the review period were as follows:

Particulars	SS New	SS upgraded	CKM	MVA
Target	184	41	3900	6988
Achievement	80	10	806	2749
Shortfall	104	31	3094	4239
Percentage of shortfall	57	76	79	61

The transmission network as on 31 March 2012 consisted of 350 EHT SS with a transmission capacity of 16326 MVA and 10459 CKM of EHT transmission lines. The actual capacity creation did not meet the targets. The particulars of capacity additions planned, actual additions, shortfall in capacity etc., during the review period are given in *Annexure 7*. The shortfall in capacity addition and slippages in achieving the target by KSEB was mainly due to time overrun. The deficiency in capacity addition created a shortage of transmission infrastructure and transmission constraints, which was more severe in Northern districts of Kerala.

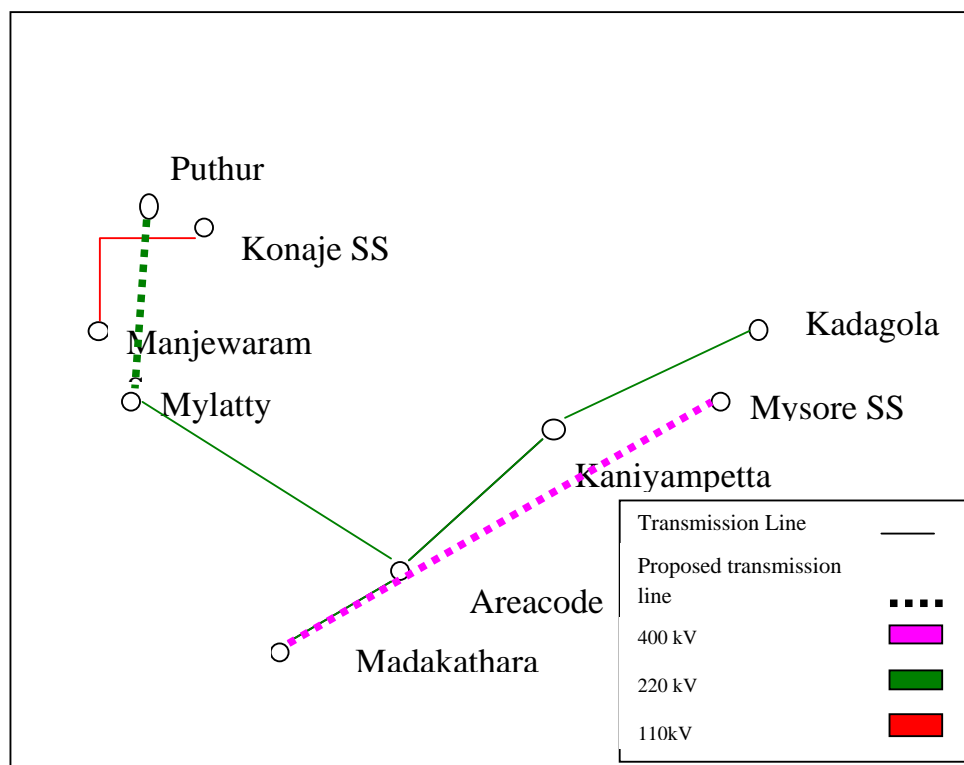
Transmission constraints in Northern Kerala

2.1.11 KSEB's internal notes and correspondence with SRPC revealed that the northern districts of Kasargod and Kannur faced a shortage of transmission infrastructure. This caused shortage of power, low voltages at various SS and frequent interruptions with lengthy restoration time in these districts. Compared to the rest of Kerala, this region had limited generation capacity². Therefore, the main power supply to this region was through two inter-state lines (one major³ and one minor⁴) and intra-state lines from 400 kV SS Madakkathara. The transmission network in Northern part of Kerala is shown below:

² Monsoon dependent 228.75MW -Kuttiyadi Hydro Station & two high cost thermal projects (128 MW Kozhikode Diesel Power Project and 22 MW Kasargode Power Corporation Limited).

³ 220kV Kadakola- Kaniyampetta (drawal of 120 MW).

⁴ 110kV SS Konaje-Manjeswaram (drawal of 15MW).



Concentration of transmission infrastructure in the southern part resulted in transmission constraints in northern Kerala

2.1.12 The major problems in these districts were lengthy feeding circuits, weak transmission network, poor inter-state connectivity, deficient intra-state transmission lines, shortage of transformation capacity for import of central sector power etc. The poor development of transmission network especially the poor inter-state connectivity reflected lopsided planning. The constraints could have been removed by creation of additional transmission capacity through inter-state and intra-state transmission lines either through its own projects or through projects⁵ of PGCIL. The action initiated, however, was belated resulting in worsening the situation as detailed below:

Constraints	Required remedial action	KSEB's lapse	Impact
Inadequate transformation capacity at 400 kV SS Madakkathara for import of Central sector power	Installation of 3 rd transformer bank of 315 MVA utilising spare available with PGCIL	Approved project of July 2007 was deferred (May 2008) considering the possibility of completion of an alternate project ⁶ . Deferred project resumed in August 2010.	Loss of savings for three years was ₹9.87crore at the annual estimated savings of ₹3.29 crore projected by KSEB

⁵ Projects involving system improvement of the grid as a whole/Central generating stations and inter-state projects.

⁶ 400 kV SS at Palakkad.

280 km long inter-state line from Kadagolai (Karnataka) to Kaniyampetta covering an additional 86 km feeding stations upto Mylatty (Kerala) caused additional transmission losses	Drawing of an alternative 40 km interstate line to Mylatty through non-forest plain terrain from Puthur (Karnataka) where sufficient power ⁷ was available.	Proposal was made only in August 2011 though Puthur station was commissioned in 2008.	Loss of savings by way of reduction in transmission losses @ ₹4.80 crore ⁸ p.a. (as estimated by KSEB).
Curtailment (March 2011) of drawal of power through Kadagolai-Kaniyampetta line by 60 MW by KPTCL due to sagging of line in Karnataka region	Insertion of towers in between in Karnataka region.	KSEB belatedly agreed (July 2012) to the solution of	Work yet to start. The annual power loss was 131.4 MUs ⁹ .
Drawal limitation in 110 kV Konaje-Manjeswaram-Vidyanagar SC feeder by 45 MW due to non-availability of double circuit.	Conversion of the single circuit into double circuit	bearing the cost of the work which was beneficial to Kerala predominantly.	Caused a potential annual power loss of 98.55 MUs ¹⁰ .
Absence of a 400 kV inter-state line from Udupi to Areacode with a 400 kV SS enroute for drawing power from a major project at Udupi.	Drawal of the line with a 400 kV SS enroute at Mylatty	KSEB belatedly proposed (October 2011) the work, after the commissioning of the project at Udupi.	The proposal is yet to be approved by SRPC/Karnataka. Resulted in power shortages and reduced flexibility in operations affecting quality of power supply.
Absence of 400 kV lines/SS in North Kerala	Construction of 400 kV SS Areacode and Mysore-Areacode 400 kV line (MAL) by PGCIL.	KSEB's role is limited. Projects held up due to severe ROW problems in Karnataka.	MAL has been delayed by five years. Resulted in power shortages.
Non-completion of evacuation lines for the Koodamkulam Nuclear project from Edamon to Pallikkara and from Madakkathara to Areacode.	Construction of the lines by PGCIL.	KSEB's role is limited. For the latter line, KSEB needs to solve a pending dispute ¹¹ with PGCIL urgently.	Both lines are delayed. Resulted in power shortages and reduced flexibility in operation affecting the quality of power supply.

⁷ Udupi STPS commissioned (August 2011) with 600 MW, with additional capacity of 600 MW under creation.

⁸ Computed for peak hour period of six hours.

⁹ 60x1000x6hrsx365days/10 lakh.

¹⁰ 45x1000x6hrsx365 days/10 lakh.

¹¹ PGCIL has demanded surrender of one of KSEB's three existing ROW at 220 KV for the route. KSEB has demanded retention of its ROW through creation of a multi-circuit route by PGCIL.

In reply to these observations, Government stated that:

- A number of intra-state and inter-state proposals are completed/in progress.
- The S1-S2 constraint¹² was worsened by non-completion of the MAL due to ROW problems and surrender of an intra-state line¹³ in January 2010.
- The work of 3rd transformer bank at Madakkathara was kept pending in view of sanction for a 400 kV SS (PGCIL) at Palakkad and the same was again taken up in 2010 due to increase in the demand for power.
- The Puthur-Mylatty line work was not proposed earlier anticipating completion of MAL. It was also stated that the availability of power at Puthur was known only after the commissioning of a Power Project at Udupi (August 2011).
- The under utilisation of Kadagola-Kaniyampetta line was taken seriously and several higher level meetings and a joint inspection of the line were conducted.
- Regarding the delay in construction of DC for Konaje-Manjeswaram line, KSEB could not bear the cost of construction in Karnataka, due to issues related to ownership and tariff.
- The proposal for Udupi-Areacode line was not made earlier anticipating completion of the MAL.

The replies were not acceptable as the deferment (May 2008) of the third bank at Madakkathara was a mistake as it was subsequently determined (April 2010) necessary despite the 400 kV Palakkad SS. Similarly, the line from Puthur was found necessary even with the commissioning of MAL. Further, the anticipated commissioning and scheduling of power from a grid connected power project is known/scheduled much before the actual commissioning. KSEB's stand that under utilisation of Kadagola-Kaniyampetta line was taken seriously was negated by the long delay in proposing the solution. Regarding the Konaje-Manjeswaram line, the issues related to ownership and tariff could be resolved bilaterally through consultations between the states. The reply was also contradictory to the stand taken by KSEB in SRPC meeting, where it had admitted willingness to bear the cost. Not proposing the line from Udupi considering probable commissioning of MAL was wrong as the line was later found necessary even with MAL.

Project Management of transmission system

2.1.13 A transmission project involves various activities from concept to commissioning. Major activities in a transmission project are (i) Project formulation, appraisal and approval phase and (ii) Project execution phase. For reduction in project implementation period, the MoP, Government of India constituted a Task Force on transmission projects (February 2005) with a view to suggest a model transmission project schedule of 24 months' duration. The

¹² Inter-state constraints between Karnataka and Kerala.

¹³ Idukki-Madakkathara (ID-MD) line .

task force suggested and recommended (July 2005) the following remedial actions to accelerate the completion of Transmission systems:

- Undertake various preparatory activities including surveys, design & testing, processing for forest and other statutory clearances, tendering activities etc. in advance/parallel to project appraisal and approval phase and go ahead with construction activities once Transmission Line Project sanction/approval is received;
- Break-down the transmission projects into clearly defined packages so that the packages can be procured and implemented with least co-ordination & interfacing and at same time attracting competition, facilitating cost effective procurement; and
- Standardise designs of tower fabrication so that 6 to 12 months can be saved in project execution.

Audit noticed instances where KSEB did not follow the recommendations of the task force. Various preparatory activities such as surveys, design and testing, land acquisition, right of way acquisition etc., were not undertaken in advance/parallel to project appraisal and approval phase as recommended by the Task Force Committee. Further, though transmission projects were broken down into packages, KSEB did not allot the packages to different contractors.

2.1.14 Despite the elaborate guidelines given by the Task Force Committee, KSEB did not execute several SSs and Lines within time during 2007-2012 as detailed below:

Poor planning and project formulation led to delay in completion of projects

Capacity in kV	Total No. of SSs & Lines constructed	No. of SSs & Lines test checked by Audit	Delay in construction (Numbers)	Time overrun (range in months)	Cost overrun (₹ in crore)
400	Nil	NA	NA	NA	NA
220/110	56	15	15	3-63	7.90
66/33	128	54	32	6-123	16.74
Total	184	69	47	3-123	24.64

2.1.15 The main reasons attributed for these delays were delay in acquisition of land and handing over of the site, right of way problems and delay by the contractors in executing the works as discussed below:

Failure to complete evacuation works for a major project due to transfer of own land to a private firm

2.1.16 For evacuation of the State's allotted share of power from the Koodankulam Nuclear power station, the construction of a multi-circuit 6.5 km 220 kV evacuation line from Pallikkara to Brahmapuram by KSEB was required to be completed simultaneously with the 400 kV SS being constructed by PGCIL at Pallikkara. We observed the following lapses on the part of KSEB in the planning and execution of the work.

- After the commencement of construction of PGCIL SS (March 2006) the State Government initiated consultations with KSEB for transfer of 100 acres of KSEB land lying adjacent to the SS to a private

entrepreneur (Smart city) to set up an IT park. KSEB gave its concurrence (June 2007) for the transfer. Accordingly, the State Government issued orders (November 2008) for transfer of 100 acres of KSEB land to Smart City. KSEB (08 January 2009) accepted the Government Order. The concurrence for the transfer of land and acceptance of Government Order was made before conducting the survey (February/September 2009) and determining the line route.

- KSEB consulted PGCIL only in January 2009 and determined the line route after conducting survey (February-September 2009) only when the construction of the 400kV SS by PGCIL was in advanced stage (December 2008).
- After a lapse of one year from the transfer of land, KSEB awarded (January 2010) the line construction work with a scheduled date of completion by 31 July 2010. Though the work was split into two parts for speedy execution, both the parts were awarded to the same contractor as two separate contracts defeating the purpose of bifurcating the work.
- The estimate for the work was originally prepared without proper assessment of the site conditions. This necessitated revision of the scope/estimate of the work after commencement which in turn delayed the execution of the work.
- On actual execution of the line work, it was found that the line passed through 1.8 acres of the surrendered land of 100 acres. Smart city objected the drawal of line through their land and the municipal authorities stopped the work on several occasions since December 2010. The work came to a standstill by August 2011.

Thus, failure of KSEB to put the permission to construct the line as a pre-condition for transfer of its land, delayed the work by 28 months based on KSEB's projected date of completion of work (November 2012). Government stated that the dispute with Smart City was settled by the end of July 2012. There is only one case now pending before the District Magistrate regarding stringing work between two other locations. Failure to complete the line work by the time of commissioning (January 2012) of the SS by PGCIL, resulted in payment of ₹6.10 crore towards transmission charges for the idle station to PGCIL during January to November 2012, worked out at the agreed rate of ₹55.42 lakh per month.

Idling of SS and line due to non-receipt of ROW

2.1.17 In several works, KSEB commenced construction of the SS/line without obtaining ROW for the entire line route resulting in idle investment on the completed SS/part of the line due to non-completion of the line/remaining part of line as detailed below:

Name of Work	Work pending completion	Idle investment on completed work (₹ in crore)	Period of idling	Loss of Interest @ 8 per cent ¹⁴ (₹ in crore)
Pathanamthitta-Koodal-Pathanapuram 110 kV line	Five per cent of Koodal-Pathanapuram line and entire Pathanamthitta-Koodal line	Koodal SS - 1.28	October 2010 – August 2012 (22months)	0.19
Mallapally-Kumbanad 33 kV line	Four km of the 10 km line	Kumbanad SS - 2.55	July 2011 – August 2012 (13 months)	0.22
Azhikode-Kannur 33 kV line	3.75 km out of 6.65km	Kannur Town SS - 4.03	January 2007 to July 2010 (36 months)	0.97
Kundara – Paripally 110 kV line	One tower at location 3	Expenditure incurred on balance work - 6.13	April 2010 – August 2012 (29 months)	1.19
Kakkayam-Vadakara 110 kV line	Pattanippara-Vadakara	Amount incurred on Kakkayam-Pattanippara portion - 2.33	April 2012- August 2012 (4 months)	0.06
220 kV SS Kattakada, Pothencode-Kattakada 220 kV line and related works at Pothencode.	60 per cent of Pothencode-Kattakada line	Amount incurred on SS works - 6.06 ¹⁵	April 2010 – August 2012	0.60
Total				3.23

Government, in reply to the above observations, stated that;

- Raising of objection by the property owners was beyond its control.
- In the case of the Kannur SS, it was presumed that permission for tree cutting already obtained was sufficient for laying the line as it did not cross railway track/yard. However, the line work was not permitted by Railways necessitating a deviation and consequent delays.
- For the Vadakara- Pattanippara work, the Court ordered deviation of the line route for which survey work was in progress.

The replies are not acceptable as KSEB went ahead with part of the work in all the cases without obtaining ROW for the complete route. In the case of Kannur SS, KSEB committed the lapse of not obtaining clearance of Railways before proceeding with the work. Further, in the case of upgradation works, delay in acquisition of ROW for lines could have been avoided by acquiring adequate

¹⁴ Lowest borrowing rate of KSEB.

¹⁵ ₹ 0.83crore during 2009-10, ₹3.31 crore during 2010-11, ₹1.92 crore during 2011-12.

ROW for higher capacity lines/adopting multi-voltage level or multi-circuit transmission lines during initial implementation as specified in MTPC 1994/Best practices in Transmission. As constant enhancement of capacity was a necessity in transmission, the failure to anticipate the same lacked justification.

Other lapses in project management

2.1.18 On scrutiny of other projects the following lapses were noticed in the execution:

Project	KSEB's lapse	Impact
Kattakada 220 kV SS	Alternately pursued two differing options ¹⁶ for land acquisition.	Delay of eight years from project sanction. Cost escalation ₹86.34 crore and loss of savings as per project report ₹22.72 crore.
Ranni-Perunad and Kumbanad 33 kV SSs along with the related line works contract.	Failed to encash/revalidate Bank guarantee (BG) for ₹57.12 lakh held as performance guarantee though contract was terminated at risk and cost. BG expired on 31 January 2008.	Loss of opportunity to realise a part of its losses on an unfinished project.
Peyad 33 kV SS	Failed to identify land available with the local Panchayat till the same was offered (January 2010). Delayed procurement of UG cable due to delay in finalisation of purchase proceedings.	Delay in land acquisition of nine years from project sanction caused loss of savings as per project report of ₹0.67 crore. Delay in procuring cable by one year caused loss of savings of ₹8.97 lakh ¹⁷ .
DC line from Vidyanagar SS to Mulleria	Delay in charging one out of the two completed circuits for ten years from 2001 to October 2011 due to non-installation of C&R panels and non-clearance of tree touchings.	Idling of ₹1.95 crore invested for drawing one circuit for a period of 10 years. Loss of interest of ₹1.56 crore (@ 8 per cent).
Re-conductoring of the 33 km Punnappa-Mavelikkara 66 kV DC line	KSEB accepted that it had failed to notice collusion of field office with contractor enabling retention of 17.935 MT of copper by contractor. Absence of monitoring of material return by higher offices.	Non-realisation of ₹71.11 lakh (value of copper illegally retained by the contractor ₹85.19 lakh less dues payable).
Enhancing capacity ¹⁸ to 110 kV Paruthipara SS by laying DC Under Ground (UG) cable from the 220 kV Pothencode SS.	Failed to determine existence of a better alternative ¹⁹ till capacity enhancement works were made at Paruthipara and Pothencode.	Abandonment of UG cable work (January 2012). ₹29.14 lakh incurred for erection of bays at Pothencode and ₹8.30 crore incurred for capacity enhancement at Paruthipara for power flow from UG cable was rendered waste.

¹⁶ acquisition by invoking urgency clause/negotiation.

¹⁷ 253400 units x ₹ 3.54 (2010-11 average realisation).

¹⁸ The capacity of the existing feeders (110 kV DC lines from Pothencode to Paruthipara and Edamon-Paruthipara to Paruthipara) was insufficient to meet the future load.

¹⁹ Construction of a switching station at Pandalakkode where the existing feeders crossed each other would have transmitted more power to Paruthipara through existing feeders.

Government's replies to the above observations were as follows:

- The defaulting contractor for Ranni-Perinad and Kumbanad SS works had given (March 2007) an undertaking that BGs would be kept alive till the accounts relating to the contracts were settled. The matter has now been taken up to adjust the amount of the BG from other amounts due to the contractor.
- For the SS work at Peyad, the UG cable has been purchased and the laying work would be completed soon.
- The delay for the Vidyanagar-Mulleria line was due to diversion of material for more important works.
- The misappropriation of copper during the reconductoring of Punnappra-Mavelikara line occurred with the collusion of employees. There was delay in forwarding of bills for the work by the subordinate offices. Legal options were being pursued to realise the dues from the contractor.
- Regarding the work of enhancing feeder capacity to Paruthipara SS, the surplus bays at Pothencode could be used for future power allocation works. The enhancement of capacity at Paruthipara SS was to meet the increased load demand.

The replies are not acceptable. In respect of Ranni-Perinad/Kumbanad SS works, KSEB did not encash the available security deposit merely on the basis of an undertaking from a defaulting contractor. In case of cable laying at Peyad and commissioning of second circuit of Vidyanagar-Mulleria line, KSEB failed to synchronise the purchases with the other works resulting in delays and blocking up of investment. In the Punnappra-Mavelikara line reconductoring work, the supervising officers of KSEB failed to investigate the matter despite delay in forwarding of contractors' bills. It was also admitted that the field offices did not ensure prompt transfer of materials returned from site to store. KSEB's admittances bring out the inadequacy of monitoring and internal control. In respect of the work of enhancing feeder capacity to Paruthipara SS, KSEB admitted the idling of bays at Pothencode. The contention that additional capacity was already necessary at Paruthipara was contradictory to the report in the proposal for the capacity enhancement work, that it was required to transform the additional power received at Paruthipara through the UG cable.

Mismatch between Generation Capacity and Transmission facilities

2.1.19 National Electricity Policy envisaged augmenting transmission capacity taking into account the planning of new generation capacities, to avoid mismatch between generation capacity and transmission facilities. The execution of two²⁰ generation projects and the related transmission facilities were not proceeding in a synchronised manner. While civil works of the generation projects had been completed to the extent of 45 to 66 *per cent*, the transmission line works were only in the initial stages of planning/survey without a scheduled date of completion, resulting in scope for mismatch.

²⁰ Vilangad, Barapole.

In addition, construction of a 15 MW hydro project²¹ by an IPP was allowed to be commenced without ensuring ROW for the transmission works. As a result, while the generation project works were in an advanced stage with scheduled completion by December 2012, the transmission works were yet to be commenced (August 2012) resulting in scope for mismatch. The potential loss of annual generation amounted to 78.84 MU²².

Government stated that the Vilangad SHEP was scheduled to be commissioned in June 2013. The civil works of the projects were started earlier as it would take more time to complete. The transmission line works were in the tendering stage and would be completed along with the generation projects. The reply is not convincing, as the transmission works are generally more time consuming in KSEB due to delays related to ROW.

Performance of transmission system

2.1.20 The performance of a transmission utility mainly depends on efficient maintenance of its EHT transmission network for supply of quality power with minimum interruption. The performance of KSEB with regard to O&M of the system is discussed in succeeding paragraphs.

Transmission capacity

2.1.21 In order to evacuate power from the Generating Stations (GS) and to meet the load growth in different areas, lines and SSs are constructed at different EHT voltages. The voltage levels can be stepped up or down to obtain an increase or decrease of AC voltage with minimum loss in the process. The evacuation is normally done at 220 kV SSs. The transmission capacity²³ created vis-a-vis the transmitted capacity (peak demand met) at the end of each year by KSEB during the five years ending March 2012 were as follows:

Transmission capacity (in MVA)				
Year (1)	Installed capacity (IC) (2)	IC less 30 per cent towards margin (3)	Peak demand (4)	Excess/ shortage (3-4)
2007-08	4890	3423	3050	373
2008-09	4890	3423	3072	351
2009-10	5690	3983	3331	652
2010-11	5690	3983	3446	537
2011-12	5690	3983	3720	263

The table above indicates that the overall transmission capacity was marginally in excess of the requirement for every year. However, in reality the capacity was inadequate for the State as a whole, as there were transmission constraints in some parts of the State, as discussed in *Paragraphs 2.1.11 and 2.1.12*.

²¹ Karikkayam SHEP being developed by Ayyappa Hydro Power Limited.

²² 15MW x 60 per cent (load factor) x 24 hrs x 365 days.

²³ Initial capacity of transformers stepping down power from 400 to 220 KVA and 220 to 110 KVA only considered as the rest were sub-transmission which involved further stepping down process.

Adherence to standards in Sub-stations

2.1.22 We observed the following deviations/non adherences in the SSs from the standards prescribed/ best practices followed in transmission utilities.

Standards/Best Practices in Transmission	Lapses in adherence by KSEB and impact thereof
Permissible maximum capacity of 220 kV SS shall be 320 MVA {Manual of Planning Criteria (MTPC)}.	Maximum capacity exceeded 320 MVA in five ²⁴ out of 17 SSs. Negative impact on operation/control.
In the event of outage of any single transformer, the remaining transformer(s) should supply 80 per cent of the load (Transmission Planning and Security Standards).	Not adhered to in eight ²⁵ out of 14 SSs test checked. Reduced reliability of the station. The quality of power supply would be affected in the event of even a partial failure.
Alternate source of feeding to be available for SSs to maintain supply/avoid failure of the stations in case of failure of one source.	In thirty ²⁶ SSs there were no alternative sources. Reliability affected due to interruptions in the event of contingencies.
Voltages at SSs to range between 380-420 kV, 198-245 kV, 119-145 kV and 99-121 kV in 400 kV, 220 kV, 132 kV and 110 kV SSs respectively	Lowest voltages recorded were below the minimum in all 14 SSs test checked (October 2011- March 2012) out of 230 ²⁷ SSs. This resulted in corresponding lower voltages for the transformer output/poor quality of supply.
Capacitors to be operated to manage fall in voltage. KSEB had installed capacitor banks in 38 SSs with a capacity of 996 MVAR.	35 per cent (345 MVAR) of the capacitors installed were non-working during the last three years. Working capacitor banks were operated only when directed by SLDC. Resulted in annual loss of ₹4.4 crore ²⁸ .
Power shortages to be managed by load shedding/power cut to reduce consumption of electricity. Tap ²⁹ position of transformers to be raised and capacitors to be operated to increase voltages when there is fall in voltage.	SLDC issued directions not to raise tap position during peak hours despite fall in voltage (Taliparamba, Mundayad SSs.). Two SSs (Vadakara & Mylatty) did not raise tap position despite fall in voltage. Non-operation of capacitors was also noticed. Violated provisions of supply code as voltages fell below the prescribed minimum.
Utilities not maintaining specified voltages at import/export points have to pay VARh compensation for the increase in reactive energy (CERC regulations).	During the period from 2008-09 to April 2012, KSEB paid ₹1.21 crore to KPTCL as VARh compensation. About one-third of the capacitors installed were either not working/ not operated.

²⁴ Kalamassery, Pallom, Edappon, Kundara, Pothencode.

²⁵ Paruthipara, Pathanamthitta, GIS PH, Kaniyampetta, Kanhirode, Mylatty, Vadakara, Madakathara.

²⁶ Sultan Bathery, Kuthumunda, Sreekantapuram, Edakara, Nilambur, perumthalmanna, Nenmara, Chittoor, Walayar quarry, Kodungalloor, Mala, Njarakkal, Kochi GIS, Karunagapally, Triveni, Koodal, Ayoor and Vizhinjam (all 66 kv), Punnayurkulam, Irinjalakuda, Melathur, Iritty, Mulleria, Cherupuzha, Mannarcaud, Vadakkancherry, Kollemcode, Kozhinjampara, Mallapally, Ranni (all 110 kV).

²⁷ Of 400 kV, 220 kV, 110 kV, 66 kV voltages.

²⁸ As per the technical study conducted (August 2011) by KSEB, operation of these capacitors would reduce the transmission loss by 15 MW, saving 2.2 MU worth ₹4.4 crore p.a.

²⁹ A connection point along a transformer winding that allows a certain number of turns with equivalent voltage variation.

As per Grid norms and Best Practices in Transmission System, BBPP ³⁰ is to be kept in service for all 220 kV SSs to maintain system stability during Grid disturbances and to provide faster clearance of faults on 220 kV buses.	BBPP was not provided in three ³¹ out of four 220 kV SSs which did not have double bus. BBPP was also not provided in five ³² out of the remaining thirteen SSs where there was double bus. Absence of BBPP causes avoidable tripping of the bus affecting reliability and efficiency/life of related equipment.
BBPP to be installed considering future requirements and maintained properly.	The BBPP provided at Kundara was not in working condition. KSEB failed to install spare module for additional feeders while installing (2006) BBPP at Pothencode. The BBPP did not support the extended bus on commissioning (November 2011) of the new 200 MVA transformer bank. Required modifications costing ₹20.99 lakh were pending.
Fire Protection walls should be installed between transformers forming part of a bank erected in a line/erected adjacent to each other (MTPC).	In three 220 kV and one 110 kV SS ³³ out of the 14 SSs test checked, fire protection walls were not installed between transformers erected in a line. As a result the chances of spreading of fire cannot be ruled out.
The earthing should be adequate and commensurate with the fault level of the SS.	In five SSs ³⁴ the old earth plate system required replacement with earth mats as it was inadequate/ineffective for the present fault level of the stations. These stations remained vulnerable to earth leaks/accidents/disruption of supply affecting safety of people and equipments. Deficiencies in earthing caused failure of five 12.5 MVA transformers in Nallalam SS during the period from 2002 to August 2012.
The area, design and layout of a SS should be planned in such a way to include all necessary equipment and lines.	Installation of a Power Transformer (PT) at Pathanamthitta SS and Lightning Arrestors (LA) on the primary side of two transformers at Mankavu SS are not possible due to space constraints exposing the stations to the risk of collision of power ³⁵ and lightning strikes respectively.
The rupturing capacity of circuit breakers should not exceed 80 per cent of the fault level (MTPC).	The rupturing capacity of three ABCB ³⁶ and four MOCB ³⁷ at the Kalamassery and Paruthipara SSs respectively were below the fault level of the stations. This can cause the CBs to fail at fault levels lower than the maximum possible fault levels, leading to a dangerous situation where circuits may not break when needed.

³⁰ Bus bar is an application for interconnection of the incoming and outgoing lines and transformers at the SS. Bus Bar Protection Panel (BBPP) limits the impact of the bus bar faults and prevents unnecessary tripping by selectively tripping only those breakers necessary to clear the bus bar fault.

³¹ Nallalam, Poovanthuruth, Kaniambetta.

³² Kalamassery, Thaliparamba, Vadakara, Malaparamba, Shornur.

³³ Transformer banks at Nallalam, Kalamassery and Pothencode and at Edapally where transformers have been installed adjacent to each other.

³⁴ West Hill, Nallalam, Kalamassery, Pathanamthitta and Sultan Bathery.

³⁵ Necessary to ensure that the line is not live as there is scope for islanding of the connected Perinad SS evacuating power from Ranni-Perinad project in charged condition after power interruptions.

³⁶ Air based circuit breaker.

³⁷ Manually operated circuit breaker.

In reply to the above observations, Government stated that:

- Proposals were under consideration/approval for providing alternative source of feeding to ten³⁸ SSs.
- All efforts were being taken to make available the capacitor banks at local load centres.
- The absence of generation support and inter-state lines contributed to the uncontrolled reactive loading in North Kerala. Increasing the generation in North by fully operating the costly thermal stations was not feasible.
- Regarding BBPP, proposals have been initiated for installation of BBPP at Malaparamba, Kalamassery and Nallalam.
- Fire protection walls between 110/11kV transformers were not provided at any of the outdoor substations. Electrical Inspectorate had not stipulated such a practice.
- Proposals for providing earth mat system was pending sanction for Kalamassery SS and was in tendering stage for Pathanamthitta SS. Present earthing system in Sultan Bathery SS would be replaced on upgradation of the station which was under consideration.
- In Pathanamthitta, instructions were given to the operators regarding precautions in the absence of PT.

The replies are not justified. The proposals for providing alternate feeding arrangements and BBPP and better earthing facilities remain unimplemented. As against the statement that all efforts were taken to make available the capacitors, the fact remains that about one-third of the capacitors are not working. Regarding reactive compensation, the absence of inter-state lines in North Kerala indicated poor planning. The reasons attributed for non-provision of fire walls is not acceptable as this practice is stipulated in the Best Practices in transmission advocated by the MoP.

Maintenance

Performance of Transformers

2.1.23 As Power and Current transformers are the most important and cost-intensive components of electrical energy supply networks, it is necessary to prolong their life duration while reducing their maintenance expenditure.

Transformer Failures

2.1.24 Transformer failures in 127 out of 350 SSs were analysed during audit based on the data furnished by KSEB. The status of failure of transformers in these SSs during the years 2007-08 to 2011-12 are given in *Annexure 8*. As per the above data, the number of transformer failures and failures within guarantee period for 350 SSs during the year 2011-12 were 17 and three respectively.

³⁸ Melathur, Nilambur, Perinthalmanna, Mannarcaud, Vadakkancherry, Kollengode, Kozhimjampara, Panniyurkulam, Irinjalakkuda and Kodungallur.

Performance of maintenance wings

2.1.25 Maintenance functions on the transmission network including SS was carried out either through the maintenance wings attached to SSs or through external agencies. Usually only routine maintenance was done by the permanent maintenance staff. There are three maintenance wings in KSEB. Testing of equipments for determining/recommending maintenance requirements was conducted by a separate wing called Power Equipment Testing (PET) wing. Testing and maintenance of relays³⁹ was carried out by the Relay Testing wing. Maintenance and repairs of transmission lines including periodic ROW clearance works was carried out by the Line Maintenance Subdivisions (LMSD). The summary of the operation of the maintenance wings and the deficiencies therein were as follows:

Maintenance wings functioned without adequate staff and equipment

PET Wing	Relay Wing	Line Maintenance Wing
Operated six wings. Working potential was 1200 days against a minimum requirement of 1500 days.	Operated 11 Relay Sub Divisions (RSDs). Coverage of testing was limited due to shortage of testing equipments and manpower.	Operated eight LMSDs. Hot line techniques ⁴⁰ were not carried out by the Line Maintenance Subdivisions. Eight officials imparted (2011) training in hotline techniques at a cost of ₹8.40 lakh were deployed for regular duties for want of tools and equipment.
Essential instruments like Sweep Frequency Response analyser, online LA monitor etc., were not available in any of the wings.	Delay in replacing faulty relays ranged from one month to four years.	Kozhikode LMSDs had not carried out tree touchings clearance works for the last five years in seven out of 27 feeders. The ROW clearance work in jungle areas under Kannur LMSD was not carried out after 2009-10.
Shortage of tool kit/testing equipments resulting in limited testing ⁴¹ .	58 nos. of the relays were working with back up relays though the purpose of the backup relays was to support the main relays.	Two LM sections (Kannur and Kanhirode) shared basic equipments such as pulley, rope and vehicles between them resulting in only one section being active at a time. Three out of eight LMSDs test checked were not provided with fault locators ⁴² .
Trend analysis not carried out in three units.	Testing data was maintained manually and no software was used by the RSDs to make trend analysis and compilation of data.	On a test check by audit it was noticed that seven accidents occurred due to property owners/others cutting branches of trees or plucking fruits from trees within the ROW, resulting in electrocution of six persons and severe burns and loss of limb to one person.

³⁹ Electrically operated switches which sense the system faults and safely switch off the system prior to occurrence of any exigencies.

⁴⁰ Envisages attending to maintenance works without switching off.

⁴¹ Three units (Kannur, Madakkathara and Edappon) tested only power transformers in SSs till 2009-10s.

⁴² Fault locators are used to detect the exact location of the fault in long distance feeders.

Adopted standards varying from 1 to 2 for PT/CT against accepted Tan Delta standards of 1/0.7.	Over flux (to arrest over voltage) and under voltage relays were not installed in the transmission system.	59 out of 118 towers in 110 kV KL-AR (Kalamassery-Aroor) feeder and all towers of 110 kV KL-CH (Kalamassery-Chalaky) feeders did not have earth wire connectivity.
Dew Point meter and Core moisture analysing kit were available at two SSs ⁴³ only.	12 out of 62 nos. of Autoreclosures installed at various feeders were disabled due to non availability of Carrier Aided Tripping facility and Protection Coupler.	134 towers under LMSD Kannur and 427 out of 1239 towers under LMSD Kozhikode constructed prior to 1947 needed replacement. The towers of the TVT (Trivandrum-Thackalay) feeders at Trivandrum and all the towers in the Manjeswaram-Thoudugoli 110 kV line were in deteriorated condition.

In response to the above observations, Government replied that:

- It was proposed to form two more sub-divisions to make good the shortfall of men and equipment in PET wing.
- Strict compliance on standards and recommendations may result in huge investments in a short span of time.
- The preparation of data bank of the test results/relays were in progress in PET/Relay wings.
- The mismatch in the target and achievement of testing works in Relay wing was due to lack of proper/efficient testing kits. Five numbers three phase relay test kits were recently purchased which would improve operations. All disabled autoreclosures would be put back in service on procurement of necessary protection couplers. Under voltage relays were not installed in view of the low voltage situation which if installed would result in denial of power.
- The functioning of hot line maintenance could not be started for want of required tools and trained personnel were deployed for cold line works. More than one clearing of tree touchings in ROW was carried out in a year. Accidents were caused by unauthorised cutting of trees without prior information to KSEB. The public were made aware of the dangers in cutting and removing touchings and the safety precautions for constructing buildings under/near EHT lines.

Despite KSEB's stand that steps were being taken to remove the deficiencies in the maintenance wings, the fact remains that the maintenance wings are functioning with deficiencies. Though accidents were caused by unauthorised removal of touchings by the victims, these were due to failure of KSEB to remove the touchings on the line route where it had ROW. Despite the comparatively high cost, the acquisition of modern equipments for maintenance wings requires priority.

The inadequacy of the PET/Relay wings reduces the quantum of testing and leaves the defects undetected. This would cause accidents, power failures and damage/breakdown of equipments/lines. Inadequacy of line maintenance would also result in snapping of lines, deterioration of towers, earth faults, accidents, and power failure.

⁴³ Dew point meter at GIS, Marine drive and Moisture measuring kit at Kalamassery.

Instances of poor maintenance including non-compliance with PET directions

Non-compliance with recommendations for replacement of defective equipment led to avoidable equipment failures

2.1.26 On a test check, we noticed instances of postponement of maintenance/overhauling of transformers for reasons such as absence of stand-by equipment, non-availability of materials, perceived need for avoiding power interruptions etc. We also noticed instances of such postponement of maintenance even after PET wing had insisted on the same resulting in equipment failures as stated below:

Name of SS	Lapse of KSEB	Impact
400 kV Madakkathara	Overhauling of Unit No.2 of transformer bank No.1 recommended by PET Wing (14 August 2010) was not carried out. According to KSEB this was on account of simultaneous poor condition of Unit No.4 and non-availability of another spare transformer unit.	Transformer bank No.1 tripped (7 August 2011) with fire and severe damage to Unit No.2. Resulted in repair at a cost of ₹2.44 crore and power restrictions for eight days.
110 kV Paruthipara	Replacement of R phase CT of 20 MVA 110/11 kV transformer No. II (26 January 2012) recommended by PET was not carried out.	CT caught fire (12 February 2012) resulting in tripping of all transformers and feeders causing power disruption.
220 kV Brahmapuram	The two transformer banks/tie lines were operated separately for intermittent periods on a risky basis with CTs which were tripping repeatedly. Spare CTs available were not of required ratio.	Emergency repair of available CTs to make ratios compatible caused operation of the station in a risky condition with risk to personnel and equipment.
220 kV Nallalam	The Bus coupler Circuit Breaker on 110 kV side of 12.5 MVA transformer failed to act upon detection of a fault on account of low SF6 gas pressure (26 July 2009). Low SF6 gas pressure was due to shortage of gas in the CB.	The transformer caught fire and blasted which caused power interruptions and avoidable repair cost and an emergency situation at the station.
66 kV GIS Power House, 110 kV Edapally	Poor maintenance caused entry of rats in the incomer side of indoor transformer (GIS Powerhouse) and inside control panel (Edapally).	This resulted in power interruptions in the stations.

In reply, while accepting the observations, Government stated that:

- The overhauling could not be done at Madakkathara SS despite recommendation as only one spare transformer was available at that time when more than one transformer was in poor condition.
- A new CT was not available for replacement at the time of PET recommendation at Paruthipara SS.
- When the existing CTs developed faults, the available spare CT at Brahmapuram which was not as per requirement (ratio difference which needed correction) was modified on a war footing and defective CTs were replaced.
- In GIS Power House the rat entered the incomer side by making a small hole which was earlier closed using packing materials. In Edapally, it was stated that the rat might have entered in switch gear panel during permit work.

The replies substantiated the fact of poor upkeep and maintenance of the critical and vital equipments in the transmission network.

Instances of delay in repairs

2.1.27 On a test check, we noticed the following instances of postponement of maintenance:

Name of SS	Delay in repair
400 kV Madakkathara	Of the 15 CBs (installed during 1992-1995) entrusted (March 2008) for overhauling, only nine CBs were overhauled (August 2012).
220 kV Mylatty	Urgent overhauling of 110/11 kV transformer repeatedly recommended (2010 & 2011) by PET Wing has not been carried out (August 2012).
220 kV Brahmapuram	CTs with high tan delta values recommended for replacement (July 2008/April -May 2010) by PET Wing were not replaced (August 2012).
-do-	Overhauling of one 10 MVA transformer which was non-functional from March 2012 due to low Insulation Resistance (IR) value could not be done (August 2012) as transformer available for replacement was also faulty.
-do-	Replacement of PT of Kandanad feeder recommended for replacement by PET Wing as it showed high loss in watts, was not done (August 2012) for want of a new PT.
220 kV Nallalam	Repair of a blasted (July 2009) 12.5 MVA transformer was not carried out (August 2012), though the core was found (September 2010) to be intact.
220 kV Kalamassery	Non-maintenance of removed transformer bank (3 X 40 MVA) for 11 years resulted in failure of one unit in offline condition.
Azhikode SS and Thalassery SS	Repairs of 12.5 MVA (Azhikode SS) and 10 MVA (Thalassery SS) transformers which failed in August 2004/November 2006 were awarded only in August 2009.

In respect of the above observations, Government replied that:

- The 15 CBs at Madakkathara could not be repaired at a time as it depended upon the availability of supplier's service engineers.
- The overhauling of the transformer at Mylatty would be done after the installation of the new transformer which has been received.
- The CTs with high tan delta value and PT of Kandanad feeder and the defective spare for the 10 MVA transformer at Brahmapuram would be replaced on obtaining new equipment. The failed 10 MVA transformer at Brahmapuram was not overhauled as it was minimally loaded.
- The repairs of the defective transformers (Nallalam) were delayed as KSEB explored several options for cost reduction.
- Salvage value could be realised for the transformer which failed in offline condition at Kalamassery.

The reasons adduced for delay in repair viz. non-availability of supplier's engineers, non-purchase of spares/replacements etc., lacked justification. A suitable clause for subsequent repair should have been included in the purchase order itself. The delay in procurement of new spares/replacements reflects lack of earnestness in the maintenance of vital and critical equipments. As delay in replacement of defective equipments causes accidents and disruption of power, the same cannot be continued on the plea of exploration of options for cost reduction.

Transmission losses

2.1.28 While energy is carried from the generating station to the consumers through the Transmission & Distribution (T&D) network, some energy is lost which is termed as T&D loss. Transmission loss is the difference between energy received from the generating station/Grid and energy sent for distribution.

KSEB had worked out and furnished combined T & D losses only to SERC in its tariff proposals. Consequent to the direction of SERC for identification of transmission losses separately, study was conducted (2010-11) based on the power flow simulations on the Transmission Network Model by the Corporate Planning wing. Based on this study, the average peak technical losses for the complete transmission system upto the 11 kV Bus in SSs were estimated at 3.64 *per cent* for morning peak and 4.17 *per cent* for evening peak, corresponding to an annual energy loss of 355.37 MU and 553.75 MU respectively. However, the transmission loss of each year was determined as five *per cent* in the ARR proposals submitted to the SERC before and after the simulation study. The reason for non-adoption of the data as per the simulation study was not explained by KSEB. The actual loss of five *per cent* exceeded the CEA norm of four *per cent* for transmission loss.

The details of transmission losses from 2007-08 to 2011-12 (taking into account the power received and assuming transmission loss of five *per cent*) are given below:

Particulars	Unit	2007-08	2008-09	2009-10	2010-11	2011-12
Power received for transmission	MUs	15223.93	15451.34	17094.76	17469.02	19086.93
Net power transmitted	MUs	14462.74	14678.77	16240.02	16595.57	18132.58
Actual transmission loss	MUs	761.19	772.57	854.74	873.45	954.35
	Percentage	5	5	5	5	5
Target transmission loss as per the CEA norm	Percentage	4	4	4	4	4
Target transmission loss as per SERC norms	Percentage	NA	NA	NA	NA	NA
Transmission loss in excess of CEA norm	MUs	152.24	154.51	170.95	174.69	190.87
	Rate per ⁴⁴ unit in ₹	3.51	3.80	3.38	3.54	3.54 ⁴⁵
	₹ in crore	53.44	58.71	57.78	61.84	67.57

The Report of the 17th Electric Power Survey Committee specified only T & D losses, instead of separately stating Transmission loss. The T &D loss target for the State for the year 2011-12 was 15 *per cent*. Similar target fixed by SERC was 16 *per cent*. As against these targets, the actual T & D loss (estimated by KSEB) at the end of the year 2011-12 was 15.56 *per cent*. Transmission losses

⁴⁴ Valued at average realisation per unit.

⁴⁵ 2010-11 rate.

result in loss of energy and reduction of the same could have reduced the power shortages and earned additional revenue.

Grid Management

2.1.29 Grid Management is the function of ensuring moment-to-moment power balance in the interconnected power system to take care of reliability, security, economy and efficiency. In the State, the State Load Despatch Centre (SLDC), a constituent of Southern Regional Load Despatch Centre (RLDC), Bangalore, ensures integrated operation of the grid. The main SLDC at Kalamassery is assisted by two Area Load Dispatch Centres (ALDCs) at Thiruvananthapuram and Kannur. The various aspects of grid management and the observance of the same by KSEB were as follows:

Technology used for grid management was obsolete / outdated

Parameter	Implementation in KSEB
SLDCs should operate as an independent wing, having own office and state of the art equipment (Electricity Act, 2003).	SLDCs in the State were functioning in the premises of KSEB, under its direct control and supervision.
SLDCs to be integrated facilitating smooth transfer of data.	SLDCs were not integrated as the data acquired at Sub SLDCs were transferred to main SLDC, which in turn transmitted the same to SRLDC.
SLDCs to have data storage/back up facilities.	SLDCs lacked data storage or back up facilities reducing them to observation centres.
State of Art Supervisory Control and Data Acquisition (SCADA) essential for all grid stations (SS/GS) for monitoring the efficiency of the transmission system and the loads (Grid norms).	The existing SCADA arrangement commissioned during the beginning of 2002 under Unified Load Dispatch and Communication (ULDC) scheme by PGCIL had become obsolete on account of deficiencies ⁴⁶
Adequate number of Remote Terminal Units (RTU) forming part of SCADA are essential for all grid stations (SS/GS) for monitoring the transmission system.	The total number of RTUs installed was 33 including those at sixteen out of seventeen 220 kV SS (94 per cent) and eight (62 per cent) out of thirteen generators with capacity above 25 MW. This was inadequate.
As per Grid Code, all the constituent members of the Grid are expected to maintain a system frequency between 49 and 50.5 Hertz (Hz) (49.2 and 50.3 Hz with effect from 1 April 2009). To enforce the grid discipline, the SLDC issues three types of violation messages for over-drawal at frequencies below 49.2 Hz (A ⁴⁷ , B ⁴⁸ , C ⁴⁹).	KSEB received 27 and eight type 'C' messages in the years 2008-09 and 2011-12 which indicated prevalence of frequency violations. Though no penalty was levied for violation of frequency norms, the overdrawals resulted in payment of a huge amount of ₹2.83 crore as additional UI charges during the period from 2009-10 to 2011-12.
Power procurement should be planned after determining the net additional requirement of power through a supply plan taking into account the planned generation capacity and contracted allocation from central sector and	Power shortage during peak hours was widely prevalent and occurred during most of the days in the years 2008-09 to 2011-12. On account of shortages, the demand was substantially met through Unscheduled Interchanges (UI) when the frequency was low, for which UI charges

⁴⁶ absence of back up for the data, absence of a metering interface, limited coverage, use of old transducers for transmitting data etc.

⁴⁷ over-drawl more than 50 MW or 10 per cent of schedule whichever is less.

⁴⁸ over-drawl between 50 and 200 MWs for more than ten minutes or 200 MW for more than five minutes.

⁴⁹ issued 15 minutes after the issue of message B when over drawl is more than 100 MW or ten per cent of the schedule whichever is less.

day-ahead plans for assessing its day to day power requirement.	amounting to ₹588.63 crore prescribed by SLDC were paid for the audit period indicating that the planning for power procurement was defective.
Power purchases from traders and power exchanges can be effected through Short Term Open Access (STOA) ⁵⁰ , Medium Term Open Access (MTOA) ⁵¹ and Long Term Access (LTA) ⁵² . STOA is more prone to cancellation compared to the other options in the event of system constraints. Test check of STOA transactions of KSEB for the period from December 2011 to February 2012 revealed curtailments of the load indented by KSEB/Traders by SRLDC due to non-availability of transmission corridor.	There was lack of timely action by KSEB in arranging/filing of application for transfer of power through MTOA. MTOA applications filed (April 2012) by two traders for transfer of power to KSEB for the period from September 2012 to May 2013 was turned down by PGCIL as the entire Available Transfer Capacity of 750 MW under MTOA was already allocated for the period till 15 June 2013. KSEB thus would have to purchase costly power through STOA/day ahead/UI purchases.

In reply to the above, Government stated that;

- Agreement for execution of the SCADA upgradation work had been signed between PGCIL and KSEB (June 2012) which was expected to be completed by December 2013. The new project envisaged a main SLDC (Kalamassery) and a back up SLDC (Thiruvananthapuram) with 21 additional RTU locations. The data to both main and back up LDC would be fed directly from the RTUs.
- Additional UI charges were caused by non-availability of transmission corridor for import of power from outside which was cheaper than operating naphtha based generators. Power demand of the State was growing rapidly compared to the availability of power, creating a widening gap between demand and availability. Many of the generation projects were not getting materialised owing to environmental and other objections. KSEB was importing power to the maximum import capability through all inter-state feeders. Major transmission projects were being held up at many places due to ROW issues.
- It lacked the huge financial resources to ensure dynamic stability of the system for developing sufficient generation capacity equipped with governor system and creating sufficient redundancy in transmission system. Further the hydel generators were constrained by the availability of water and the costly naphtha based projects could not provide immediate additional generation support, and under such a situation, dependency on UI support was inevitable.

Government's replies are not acceptable. As the new SCADA system would come into operation only by December 2013, KSEB would continue functioning with the current deficient system. Though the drawals causing UI charges were stated as inevitable, the fact remains that KSEB violated grid discipline by doing so. Further, modernisation of the system (equipping the system with governors) cannot be ignored on the plea of high cost.

⁵⁰ access up to one month at one time.

⁵¹ access for 3 months to 3 years.

⁵² access for 12 years to 25 years.

Disaster Management

2.1.30 Disaster Management (DM) aims at mitigating the impact of a major break down on the system and restoring it in the shortest possible time. As per the Best Practices, DM should be set up by all power utilities for immediate restoration of transmission system in the event of a major failure. It is carried out by deploying Emergency Restoration System, DG sets, vehicles, fire fighting equipments and skilled/specialised manpower. Disaster Management Centre, NLDC, New Delhi will act as a central control room in case of disasters. As a part of DM programme, mock drill for starting up generating stations during black start⁵³ operations was being carried out by KSEB every six months.

Inadequate facilities for DM

2.1.31 Though, KSEB stated that it had developed plans and procedures for restoration of the system from blackout for 13 generating stations in four sub-systems, black start facilities were provided only at nine out of 24 major generating stations. Thus, the preparedness of KSEB to meet the occurrence of disasters, if any, was inadequate and gave rise to the risk of accidents and heavy damages in the event of disaster.

Energy Accounting and Audit

2.1.32 Energy accounting and audit is essential to assess and reduce the transmission losses. The transmission losses are calculated from the readings of the Meter Reading Instrument (MRI) at the metering points. These points are at the boundaries between Generation to Transmission (GT) and Transmission to Distribution (TD). To ensure the accuracy, the CEA had specified (June 2010) that the interface meters in the generation/transmission wing shall not be inferior to the accuracy class of 0.2 S. We, however, found that the meters were of inferior accuracy class leading to various problems in energy accounting as detailed below:

- Meters of 0.2 S class were installed at major interstate TD metering points by PGCIL. KSEB had not installed its set of check meters at these points.
- Only meters of 0.5 S class were installed at the substations of KSEB. KSEB had stated that 0.2 S class meters were not installed on account of the huge financial commitment involved. The replacement of meters would be effective only if the related meters of CT/PT were also replaced by those with 0.2 S accuracy class.
- On a test check of meter readings of 220 and 110 kV SSs of three circles⁵⁴ for the period from October 2011 to March 2012, it was noticed that the incoming meter readings were less than the outgoing meter readings in some months in respect of 20 out of 22 SSs showing that the meters were defective.

⁵³ procedure necessary to recover from partial or a total black out.

⁵⁴ Trivandrum, Kannur, Pathanamthitta.

- As per KSEB's studies, in case of 18 feeders, the energy received at the sending end (sending to one SS) of the feeders was more than the energy received at the receiving end (receipt from another SS) of the feeders.

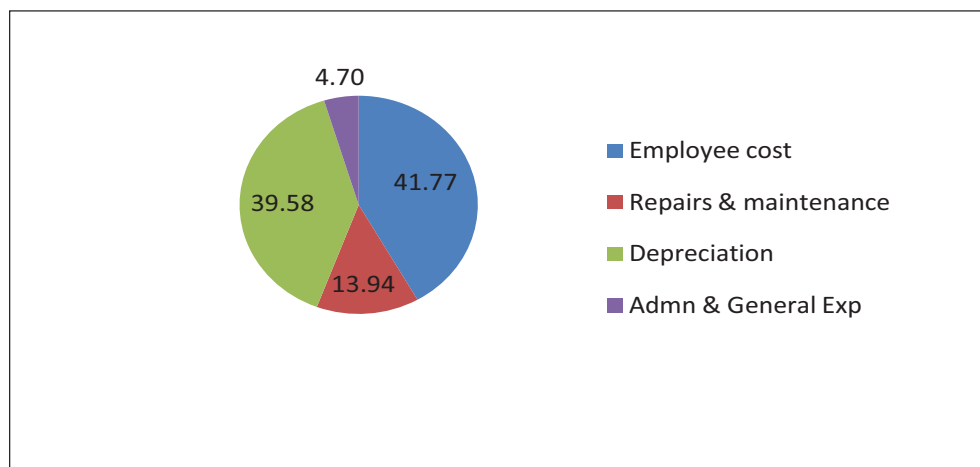
Government stated that the requirement for purchasing meters for interface boundary metering points and GT points was under consideration. It was also stated that the meters used in Thiruvananthapuram Circle were of the accuracy class of 1.0 which allowed a percentage error of up to 1.3 per cent. The errors were also due to defects in CTs and PTs. Non-compliance with the recommendations of the CEA rendered the metering ineffective/prone to errors. This can cause excess payment of transmission/power purchase charges.

Financial Management

2.1.33 National Electricity Policy 2005, envisaged financial turnaround and commercial viability in each area of Power Sector. Since KSEB functioned as a composite unit without being unbundled into separate profit centres, the details of revenue realisation, net surplus/loss and earnings could not be computed separately for transmission.

Elements of Cost

2.1.34 The details of expenditure of the Transmission wing and cost per unit of transmission are given in *Annexure 9*. Employee cost, Depreciation, and Repairs & Maintenance constituted the major elements of cost in 2011-12 which represented 41.77, 39.58 and 13.94 per cent respectively of the total cost (excluding finance and interest charges of ₹0.75 lakh).



The details of fixed cost, variable cost and total cost per unit for the period of five years were as follows:

Cost per unit (₹)	2007-08	2008-09	2009-10	2010-11	2011-12
Fixed cost	0.12	0.13	0.13	0.15	0.15
Variable cost	0.02	0.02	0.03	0.03	0.03
Total cost	0.14	0.15	0.16	0.18	0.18

It may be seen that the fixed and variable cost showed an increasing trend till the year 2010-11. There was no change in both fixed and variable cost in 2011-12 compared to previous year, as the units consumed increased substantially.

Avoidable expenditure and non-realisation of dues

2.1.35 We noticed deficiencies which led to KSEB paying ₹13.69 crore to PGCIL/SRPC as compensation towards unavailed power allocation and share in cost of capitalisation of idle infrastructure. At the same time KSEB failed to realise the amounts due to it promptly.

KSEB incurred avoidable expenditure towards transmission charges and capitalisation costs.

Facts	Observation
Compensation for unavailed power – ₹0.41 crore	
135 MW of NTPC's ER power allocated to Tamil Nadu Electricity Board (TNEB) for pooling with the costly RGCCPP ⁵⁵ power was rejected by TNEB along with RGCCPP power. On 14.9.2011, MoP allocated this quantity to Kerala for 6 days from 15.9.11 and thereafter to Andhra Pradesh. CE, SLDC intimated non-acceptance of the allocation by fax on the day of allocation and by letter on next day on the plea that Board's decision was pending. KSEB, however, had to pay ₹41.24 lakh as transmission/ POC charges for undrawn power to SRPC and PGCIL.	KSEB did not reject the allocation, but rejected the day ahead scheduling only. KSEB's plea for this was that a decision of its Board was required. KSEB should be able to make outright decisions in emergencies without waiting for a meeting of its Board. The failure to do so caused huge losses and lacked justification.
Share in capitilistion of idle infrastructure – ₹13.28 crore	
PGCIL notified commercial operation of a line and SS ⁵⁶ designed for transmission of power from the Koodamkulam project, w.e.f 01 January 2012, despite non-commissioning of the project. KSEB's evacuation lines from the SS were also pending. KSEB accepted (February 2012) its monthly share of transmission charges (cost of capitalisation incurred by PGCIL) of ₹55.42 lakh.	KSEB was liable to pay ₹6.10 crore ⁵⁷ for a project which had not been commissioned and from which power was not received. Government stated that PGCIL expected return on investment and may charge interest on deferred capital charges if the commercial operation of the completed infrastructure was not allowed. The reply indicates that KSEB is compelled to bear the cost of evacuation system, despite the non-completion of the related generation project, which is not correct.
KSEB assessed (September 2010) that the third transformer installed by PGCIL at their SS at Thiruvananthapuram would not be utilised effectively for a period of ten years. Transmission charges of ₹7.18 crore was paid (cost of capitalisation incurred by PGCIL) for the third transformer from July 2009 to June 2011. KSEB had not ascertained the amount of excess transmission charges from June 2011.	The matter regarding payment of transmission charges for idle/excess capacity was not taken up with PGCIL. Government replied that PGCIL had constructed these transformers after approval of the matter at various levels including SRPC. It was also stated that the actual demand growth may not tally with the assumption made at the time of planning. Thus, the huge idle expenditure was caused on account of the poor load forecasting by KSEB.

⁵⁵ Rajiv Gandhi Combined Cycle Power Project.

⁵⁶ Trichur - Cochin 400 kV DC transmission line and the 400 kV SS at Pallikara.

⁵⁷ For 11 months from January 2012 till November 2012 when commissioning of KSEB's evacuation lines is expected.

KSEB dues not collected	
66 kV SSs at the Air Port, Thiruvananthapuram and the Bharat Petroleum Corporation Limited (BPCL) refinery at Ambalamugal commissioned in May 2010 and May 2012 respectively were operated by KSEB. Maintenance charges were not collected from BPCL due to non-finalisation of agreement. Maintenance charges for the two years from May 2010 amounting to ₹2.18 crore was paid (July 2012) by Airport Authority of India (AAI) after a delay of two years.	KSEB had not demanded compensation from AAI for the interest loss on account of the delay in payment though as per the agreement, payment had to be made monthly. The agreement with BPCL remains to be executed. Government stated that the finalisation of the agreement with AAI took two years on account of administrative delays and claiming of interest would not be justifiable. Agreement can be executed with BPCL only after approval of MOU between both parties. The replies are not acceptable as KSEB had rendered maintenance services without compensation. Further administrative delay of two years for finalisation of agreement lacked justification.

Material Management

2.1.36 The key functions in material management are laying down inventory control policy, procurement of materials and disposal of obsolete inventory. We, however, found various deficiencies in the procurement procedure like delay in finalisation of purchases resulting in lapse of offer and consequent retendering, excess procurement resulting in idling of costly equipment etc.

Purchase of transformers in advance of requirement

2.1.37 Purchase of transformers is made by the Chief Engineer (SCM). Prudent purchase management demanded that purchase of transformers for substations should be synchronised with the progress in completion of other works to avoid idling of costly equipment and loss of guarantee period. We noticed the following instances where KSEB did not comply with these requirements:

- Even before acquiring (August 2005) land for 220 kV SS at Vadakara, CE (SC&M) placed orders (April 2005) and procured (March 2006) two 220/110 kV three phase 100 MVA transformers from TELK, Angamaly at a cost of ₹6.25 crore. The SS was commissioned only in June 2009 and the transformers were idling for about 3 years.
- Though orders were placed (May 2007) on TELK, Angamaly, for four 66.67 MVA 220/110 kV single phase transformers for enhancement of capacity of the 220 kV SS Kundara at a cost of ₹12.88 crore, the equipment was delivered/diverted (October 2007/February 2008) to 220 kV SS, Pothencode, on the ground that they were urgently needed at that station. The transformers, however, were commissioned (November 2010) at Pothencode after 33 months. One of the transformers which failed after being in service for six months was repaired at a cost of ₹20 lakh due to expiry of guarantee period. Three transformers subsequently procured (January 2009) against orders (June 2008) for Kundara SS at a cost of ₹8.87 crore remained idle for 12 months without commissioning (December 2009).

- Against orders placed (December 2006/April 2007) with Indotech Transformers, Chennai, two 5 MVA transformers were purchased (March 2007/August 2007) for the 33 kV SS at Venjaramood at a total cost of ₹54.59 lakh before technical sanction (November 2008) of the work. The transformers remained idle till the commissioning of the SS in March 2010.
- Against orders placed (May 2007) with Indotech Transformers, Chennai, four 12.5 MVA transformers procured (September/October 2007) at a cost of ₹2.51 crore remained idle for more than one year at three SSs (Ayathil (two nos), Kozhinjampara and Pathanapuram) on account of non-completion of related works.

Government replied that procurement in advance of actual requirement occurred due to the need to give time to the suppliers for the manufacture. The reply is not convincing as the maximum time required by leading manufacturers for supplying transformers was 10 months from the date of order. KSEB also pointed out that in these cases, the construction was delayed due to adverse climatic conditions and disputes.

We also found that the transformers supplied were guaranteed by the manufacturers for a period of 12 months from the date of commissioning or 18 months from the date of supply whichever was earlier. Thus, due to the delays, these transformers were installed/operated after the warranty period thereby depriving KSEB of the benefits of free replacement/repair within warranty period. Hence KSEB should ensure proper co-ordination between purchase and other wings.

Non finalisation of tender within the validity period

2.1.38 KSEB invited (January 2011) competitive tenders for procurement of 41km XLPE UG cable for its urgent common requirement. As per the General Conditions of tender, the bid was valid for four months from the date of opening of the price bid or six months from the date of opening of pre-qualification bid whichever was earlier. KSEB however, did not finalise the tender within the validity period of the bid. Subsequently 31 kms of cable were procured at higher rate obtained in fresh tenders resulting in avoidable extra expenditure of ₹30.01 lakh⁵⁸.

Failure to reform Purchase wing

2.1.39 KSEB assessed (May 2008) that the Supply Chain Management (SCM) was deficient in all areas including forecasting, indenting, procurement, storage and payment. Hence, KSEB awarded (January 2009) the assignment of optimising SCM to Deolite Touche Tohmastu India Pvt Ltd, the lowest bidder at a cost of ₹41.29 lakh. Though the consultant submitted final recommendations during February 2010, the software developed by them for the purpose which was the main item in the reformation of the purchase wing was yet (August 2012) to be implemented in Transmission wing even after the lapse of four years. The recommendations for standardisation, classification

⁵⁸ ₹ 1275943.24 (subsequent price quoted) – ₹ 1179135.90 (original price quoted by Cable Corporation of India, Chennai) x 31 km.

and coding of equipments and materials procured also have not been implemented.

Monitoring and Control

2.1.40 Monitoring by top management is conducted by the Technical Audit Wing (TAW) formed in February 2010 under CE (SO) and the System Study Wing (SSW) formed in July 2010 under CE (Corporate Planning). Technical audit of SSs is conducted by adhoc audit teams comprising a Chief Auditor (Deputy Chief Engineer rank) and two auditors (Executive Engineers). The system study group monitors the activities of SSs through data collected from Monthly Operation Review (MOR) reports/load flow studies/loss studies. We noticed the following deficiencies in the monitoring functions:

- The coverage of technical audit was not exhaustive and 151 out of 230 SSs were yet (August 2012) to be audited.
- The MORs sent by the SSs included routine data such as operating parameters of transformers and lines, equipment status, details of capacity addition/deletion etc. Details of performance of the equipments installed including SS batteries and relays, maintenance activities⁵⁹, OLTC⁶⁰ operations, cause-wise analysis of breakdowns etc., were not called for through the MOR. The year-wise cumulative performance of the SSs and lines were neither maintained nor consolidated for evaluation of annual performance of the SSs and lines. KSEB needs to develop a more comprehensive Management Information System.
- On a test check, we noticed lapses in compliance with recommendations of the system study/technical audit wings.
 - Replacement of weak and faulty LAs and installation of a capacitor bank on the 110 kV bus at the Chevayur SS (September 2011 TAW).
 - Replacement of old panels at the SS, Relays of Attingal-Paripally feeder and the Breather of 220/110 kV transformers at Pothencode SS (July 2011 TAW).
 - Overloading of seven⁶¹ SSs and underloading in 37 SSs and 59 transformers remained without rectification. The overloaded transformers comprised 16 nos. 110/66 kV transformers, 5 nos. 16 MVA transformers and 17 nos. 110/11 kV transformers (System study group).
 - The idle capacitor lying at the 110 kV Mundayad SS had not been installed at the 220 kV Kaniampetta SS (July 2011 SSW).

Government stated that the deficiencies relating to Pothencode SS and Attingal-Paripally feeder would be corrected soon. A proposal had been prepared for removing the capacitor from Mundayad SS. Thus, the defects remain without rectification. The deficiencies in monitoring affect the overall efficiency and may cause accidents and power disruptions.

⁵⁹ Maintenance activities carried out, urgent maintenance pending, programme of maintenance activities, due dates of major maintenance activities etc.

⁶⁰ On Load Tap Changer.

⁶¹ Vennakkara, Veli, Neyattinkara, Vizhinjam, Koilandy, Perinthalmanna and Paika.

Duty timings at SSs

2.1.41 The approved timings of KSEB for duty at its SSs comprise three shifts (07 00 to 13 00 hrs, 13 00 to 21 00 hrs and 21 00 to 07 00 hrs). The duration of the third shift was thus for 10 hours. However, in most SSs, the duty was performed in two shifts (09 00 to 17 00 hrs and 17 00 to 09 00 hrs). Shift duty in three shifts was observed only in two out of fourteen SSs visited by us. The execution of the second shift for 16 hours continuously would have a negative impact on the quality of performance and monitoring and violates labour laws. KSEB needs to enforce the approved duty timings strictly or formulate shift duty of eight hours duration. Though Government stated that approved shift timings were in practice in almost all stations, the actual shift timings as recorded in the Operators' Diaries maintained at the substations did not support the Board's contention.

Comparison with best practices adopted by PGCIL

2.1.42 Best practice is the method or technique that has consistently shown results superior to those achieved with other means, and that is used as a benchmark. The State of the Art practices for operation, maintenance and monitoring purposes followed by PGCIL, the CTU, as compared with those of KSEB revealed the following shortcomings in KSEB:

Practice followed by PGCIL	Implementation in KSEB
Stations were automated/planned for automation.	Automation was not planned for any of the SS of KSEB.
One and half breaker system ⁶² was adopted for better reliability at SSs.	Spare breaker system was generally not adopted in KSEB. One and half breaker was adopted in case of one 400 kV SS only (Madakkathara).
Double/transfer bus facility at SS.	Most 110 kV SSs and four 220 kV SSs had single bus facility only. Transfer bus facility was available at one SS only (Brahmapuram).
Only SF6 CBs at EHV SS.	CBs at Kalamassery and Paruthipara SSs included MOCB/ABCB.
Operations of isolators and other yard equipments to be remotely controlled at all EHT SSs.	Test check revealed that facility for remote operation was not provided at four 220 kV ⁶³ SSs.
GPS based time synchronising equipment and Air conditioning system to be provided in SSs.	GPS based time synchronising equipment and Air conditioning system not provided in most SS.
Advanced relays such as Numerical relays to be used.	Relays used in most of the SSs are mainly electro mechanical. Numerical relays installed are minimal.
Use of State of the Art firefighting equipment.	State of the Art firefighting equipment such as emulsifiers/detection lines and spray lines were not used in any of the SSs.
History registers to be maintained in the form of a log book for each item of equipment.	Only common equipment registers were maintained for all equipment in most SSs and the entries in these registers did not include a detailed record of all activities relating to operation and repair in the form of a log book.
Tests such as tan delta were done at the SS itself.	None of the SSs had facilities for testing of vital parameters such as Tan Delta and these were done only during the visits of the PET Wing.

⁶² which provides a spare breaker and related bay equipment for sharing among the buses.

⁶³ Kalamassery, Brahmapuram, Nallalam, Pothencode (facility available at 220 kV side only at Pothencode).

Government stated that the incorporation of most of these practices involved huge financial investment. It was also replied that some of the facilities such as one and a half breaker system, numerical relays, transfer bus, auto-reclosures, event logging etc., were available in major substations. However, these facilities were available in a few 220 kV stations only. The Board needs to modernise/improve its level of functioning by adopting the modern techniques/practices of PGCIL to a wider extent.

Failure to unbundle KSEB

2.1.43 Though, as per Electricity Act 2003, KSEB was to be unbundled into separate profit centres for the three functional areas of generation, transmission and distribution, this remains to be achieved. KSEB functioned as a composite unit executing the functions of generation, transmission and distribution. A company viz., Kerala State Electricity Board Limited (KSEB Ltd) was incorporated (January 2011) under the Companies Act, 1956 for taking over the functions of KSEB. However, the assets and liabilities of KSEB have not been transferred to KSEB Ltd till August 2012. The restructuring and creation of separate utilities with separate profit centres would have enhanced the efficiency/performance of KSEB. This caused non-preparation of separate accounts for each of the three wings. On account of non-implementation of unbundling of KSEB, there was no separate tariff for the transmission wing. Only a composite tariff was followed for all the three functional wings. The delay in filing the composite tariff delays the recovery of cost of operations of all the three wings of KSEB including the Transmission wing.

Internal Controls and Internal Audit

2.1.44 Internal control is a process designed for providing reasonable assurance of efficiency of operations, reliability of financial reporting and compliance with applicable laws and statutes. Internal audit relating to the offices under the Transmission wing was confined to financial transactions. Pre-check of contractors' bills was commenced only in April 2012. Other aspects were not audited. Various other matters relating to technical issues were not reviewed in audit. Instances of presentation of the internal audit reports in the meetings of the Board of KSEB were very few on account of the relatively minor level of objections. Thus, the audit was inadequate when compared to the size and volume of operations. KSEB needs to take steps to strengthen its audit wing.

Conclusions

- **KSEB had not prepared a long term plan and a State Electricity Plan. The five year plans when translated into annual plans had wide variations.**
- **The Transmission infrastructure developed over the years did not cover the whole State in a uniform manner resulting in severe shortages in the northern districts of Kannur and Kasargod. Inadequacy of inter-state connectivity with Karnataka aggravated the transmission constraints in Northern Kerala.**

- There were inordinate delays in executing the projects. Several planned projects were not implemented at all.
- KSEB did not ensure availability/possession of land/ROW for the entire project. Thus prolonged disputes over land acquisition/ROW for drawing lines were a major cause of delay.
- KSEB failed to adhere to standard practices in the operation of SSs. Maintenance activities were not given adequate priority. These wings functioned without adequate staff and modern equipments hampering their efficiency. The recommendations of the testing wings were not carried out in several cases. BBPP had not been installed in eight out of seventeen 220 kV SSs.
- SCADA system for grid management had become outdated. The number of RTUs installed was insufficient. SLDC in the State was not independent. KSEB was yet to implement CEA norms for installation of meters of 0.2 S class.
- KSEB made avoidable payments for unavailed power allocation and capitalisation cost of idle infrastructure to PGCIL/SRPC.
- Failure to plan purchases resulted in idling of transformers for long periods with lapse of guarantee period. The reformation of procurement activities in KSEB commenced over four years ago remains without implementation.
- The monitoring of field operations was not adequate. The MIS implemented by KSEB for monitoring was not adequate. The internal audit needs strengthening as it was not commensurate with the size and nature of activities of the transmission wing.
- KSEB is still functioning as a single utility, violating the provisions of the Electricity Act, 2003 for unbundling.

Recommendations

- Planning procedures should be streamlined with a long term perspective/State Electricity Plan.
- Urgent steps may be taken to implement the projects planned and those in pipeline to improve the power situation in Northern Kerala and S1-S2 connectivity.
- Steps should be taken to adhere to accepted practices for operation of SSs. Maintenance activities should be strengthened by providing adequate staff and modern equipments to Testing (PET, Relay) and Line Maintenance wings.
- BBPP needs to be installed in all 220 kV SSs.
- The modernisation of SCADA system through PGCIL and replacement of meters as per the specifications of CEA may be expedited.

- **Implementation of procedures for reforming the Purchase wing should be expedited to enhance the efficiency of the purchases.**
- **Monitoring of activities of the substations and field offices needs to be improved by enhancing the scope of the MIS and strengthening internal audit.**
- **Urgent steps may be taken to expedite the process of unbundling of KSEB.**

2.2 THEMATIC AUDIT

2.2.1 Procurement of Pre-Stressed Concrete poles

Introduction

Kerala State Electricity Board (KSEB) uses Pre-Stressed Concrete (PSC) Poles of various sizes (7m, 8m & 9m) for laying distribution lines.

Up to 2004, KSEB was awarding centralised short term (3 months to 3 years) contracts for the procurement of PSC poles in small quantities. With a view to attract new firms, KSEB decided (November 2004) to award centralised long term contracts for five years. Accordingly, the CE (TC&M)⁶⁴ assessed (November 2004/March/May 2005) the requirement (36.93 lakh) of PSC poles for the next five years. Three tenders⁶⁵ were invited (November/December 2004, April & May 2005) for 20 Electrical Circles (ECs) under the two bid system involving Pre-qualification (PQ) and Price bids. The Pre-qualification Committee (PQC) evaluated (January/June 2005) the PQ bids and qualified the bidders. The Purchase Committee (PC) opened (January/June/August 2005) the Price bids of the qualified bidders and submitted the proposal to the Board of Members (Board) for placing the order with the lowest bidder of each EC. Though 22 firms participated in the tender, contracts, as approved by the Board, were awarded⁶⁶ to 17 firms for supply of 41 lakh poles, to be delivered during 2005-2013⁶⁷. Since the procurement of poles through long term contracts was a major policy decision, we scrutinised the system of procurement under the long term contract and our findings are discussed below:

Improper assessment of requirement

Assessment of actual requirement of poles considering the ongoing works, poles held with KSEB and the new works to be taken up in future is the primary step in the procurement process. CE (TC&M) assessed the requirement of poles for five years on an adhoc basis as five times the requirement for one year. This assessment was unrealistic and unscientific as we noticed that one EC⁶⁸, out of 12 ECs test checked for which allocation of 2085 number of 9m poles per month was made, intimated (June 2007) that such huge quantity of poles was not required and in another EC⁶⁹, allocation of poles was not given citing sufficient stock of poles. KSEB subsequently reduced the monthly target of those contractors⁷⁰.

Further, we noticed that in respect of eight ECs, as against the assessed quantity of 11.80 lakh, the ordered quantity was 17.16 lakh and the quantity delivered was only 8.72 lakh poles. This resulted in diversion of poles from other Circles

⁶⁴ Chief Engineer (Technical, Contracts and Materials).

⁶⁵ Tender no 47/2004-05 dt 30/11/04 was issued for 12 ECs, tender no 11/2005-06 dated 19/4/2005 was issued for 7 ECs and tender no 37/2005-06 dt. 02.06.2005 for 1 EC.

⁶⁶ In April 2005, August 2005, December 2005 & October 2006.

⁶⁷ Including the time period allotted for the delivery vide additional orders at 25/30 per cent.

⁶⁸ Pathanamthitta EC.

⁶⁹ Thodupuzha EC.

⁷⁰ 433 nos of 8m and 867 nos of 9m poles for Pooja Industries and 1290 nos of 9m poles for Vellackamattathil.

by paying additional transportation charges and procurement of poles at higher rates through subsequent tenders incurring extra expenditure as discussed subsequently.

Undue favour to few firms

Though, KSEB followed the General Conditions in tendering process, we noticed that KSEB favoured a few firms in awarding the contract as detailed below:

- The PQC disqualified (January 2005) one⁷¹ firm during the scrutiny of the Prequalification bids due to poor past performance. Subsequently, the firm was qualified (April 2005), violating the tender condition, based on representation to the then Chairman of the Board.
- Similarly, another firm⁷² was disqualified (02 June 2005) for not satisfying the PQ conditions. Subsequently, the firm was qualified (16 June 2005) stating that they were existing suppliers to a Karnataka State PSU, though this was not a PQ condition.
- Even though these two firms were awarded contract for the supply of 3.92 lakh poles in three ECs, the firms failed to supply poles as per schedule and the contract had to be terminated.
- Contracts were awarded (April 2005 to August 2005) to four⁷³ firms for the supply of 10.17 lakh poles in four ECs. These were new firms promoted by a previously defaulted supplier⁷⁴. Contracts with three of these firms were terminated for non supply and the termination order initially issued (September 2010) in respect of the fourth firm⁷⁵ was subsequently (December 2010) kept in abeyance.
- Even after initiating (November 2009) procedures for termination of the contracts at the risk and cost of the above mentioned firms, KSEB purchased (from May 2010) 11187 poles from three⁷⁶ of the above mentioned firms at updated prices for ₹1.24 crore and released payments, though ₹1.99 crore was recoverable from these firms towards penalty for belated supplies.
- The tenders did not prescribe the maximum number of ECs for which a bidder can submit its bids. As such all the bidders submitted their quotation for many ECs and became lowest in more than one EC. We noticed that the manufacturing capacity of the bidders were not considered by the PQC as a criterion and hence the bidders were prequalified for up to seven ECs though, their manufacturing capacity was not sufficient to cater to the requirement of more than one or two ECs. As such, KSEB negotiated with other bidders and placed orders. Thus orders were placed even with fourth lowest bidder⁷⁷ as was noticed

⁷¹ West Coast Concrete Products got order for Ernakulam (0.83 lakh) and Perumbavoor ECs (0.70 lakh)

⁷² Suman Concrete Product got order for Kannur EC (2.39 lakh)

⁷³ Suman Concrete Products (Kannur EC), Suma Concrete Products (Kasaragod EC), Roopa Engineering Corporation (Kalpetta & Manjeri ECs), Roopa Construction Company (Kozhikode EC)

⁷⁴ Sri Naveen Chandra D Suvarna

⁷⁵ Suma Concrete Products (Kasaragod EC)

⁷⁶ Suman Concrete Products, Suma Concrete Products, Roopa Engineering Corporation.

⁷⁷ Raphael & Company

in Irinjalakkuda EC. Thus it was evident that the quoted price was not relevant for getting orders. This defeated the underlying principle of inviting competitive tenders.

KSEB stated (September 2012) that by placing orders with the above firms, they could save ₹19.30 lakh as their rates were the lowest. Further, on placing orders with the fourth lowest bidder, the underlying principle of inviting competitive tenders was also not defeated as the bidder accepted the lowest rates. The reply was not acceptable as the two firms⁷⁸ supplied only eight to twenty two *per cent* of the ordered quantity only and the risk and cost amount involved on termination of the contract was ₹5.02 crore. Further, the tenders lacked competitiveness as the bidders got a chance to get orders on accepting the lowest rates, irrespective of their quoted rate.

Non-compliance with contract conditions

The contract provided for the terms and conditions relating to delivery of poles, imposition of penalty, release of payment, etc. to be complied with strictly during the performance of the contract. KSEB, however, favoured the contractors by not invoking these provisions as discussed in succeeding paragraphs:

Payment of additional transportation charges due to non adherence to delivery schedule

As per Purchase Order (PO), the contractors had to complete the supply of poles on a monthly basis by delivering at least the quantity fixed as the monthly target. The contract stipulated (clause 12) that the monthly target should not be refixed on any account. KSEB, however, reduced the monthly target in five⁷⁹ ECs as requested by the contractors. To meet the shortage of poles due to above reduction, KSEB diverted poles from other circles incurring additional expenditure of ₹44.85 lakh (*Annexure 10*) towards transportation charges.

The contracts for Kottayam and Pala ECs were awarded to the same contractor. Though KSEB reduced (June 2008) the monthly scheduled quantity and though there was heavy backlog in supply by the contractor in both the circles, instead of restoring the reduced target/ insisting the contractor to supply the backlog, KSEB asked the contractor to divert poles from Kottayam to Pala EC by paying additional transportation charges to the same contractor⁸⁰. The extra expenditure on these worked out to ₹2.39 lakh (*Annexure 11*).

KSEB stated that the monthly targets were reduced only in genuine cases. It was further stated that agreement authority/Board had not taken any decision regarding payment of additional transportation charges to Pooja Industries. The reply is not acceptable as the contract did not permit reduction of monthly target on any account and on verification we found that KSEB had paid additional transportation charges to Pooja Industries for diversion of poles to Pala EC from Kottayam EC.

⁷⁸ West Coast Concrete Products & Suman Concrete Products.

⁷⁹ Pooja Industries in Kottayam, Pala and Thodupuzha circles, Venad Structurals in Alapuzha Circle and Imperial trading company in Trivandrum Circle.

⁸⁰ Pooja Industries.

Advance payment contrary to terms of contract

The contract provided (clause 4) for payment of 95 *per cent* of the invoice value within 45 days of presentation of bills along with way bills duly signed by the Engineer concerned for having received the materials in good condition at the designated location. KSEB, however, favoured one contractor⁸¹ by releasing ₹4.21 crore being 50 *per cent* of the invoice value (excluding the taxes and duties) immediately after testing the poles. The contractor supplied the poles only after periods ranging from one month to four months from the date of payment.

KSEB stated that advance payment was made on the request of the contractor and as per the orders of the Hon'ble Minister to consider the request. It was also stipulated that the poles be delivered within 15 days. The fact remains that advance payment was contrary to the terms of contract and also the stipulation regarding delivery of poles within 15 days was also not adhered to.

Failure to collect security deposit as per contract

As per the Purchase Order (clause 5), the contractor had to furnish security deposit for an amount equal to five *per cent* of the total value of the contract by way of cash/DD/bank guarantee. This was the security available with KSEB towards satisfactory performance of the contract and would be released only after expiry of the period of guarantee of all poles supplied and after fixing liability, if any, of the contractor. In the 12 ECs test checked all contractors furnished the security deposit equal to only one *per cent* of the contract value. Instead of recouping the shortfall from subsequent payments to the contractors, KSEB reduced the security deposit to one *per cent*. As such there was no sufficient amount with KSEB to recover the risk and cost amount from the defaulted suppliers. This made the operation of risk purchase clause ineffective. As a result, the liability of ₹1.26 crore (*Annexure 12*)⁸² assessed in respect of three contracts⁸³ terminated due to non-performance became irrecoverable.

KSEB stated that the Security Deposit was reduced based on the request of the contractors.

Non levy of penalty for belated supplies as per the terms of contract

The contract fixed (clause 6) monthly schedule which was the minimum quantity of poles to be supplied by the contractor. If the contractor fails to achieve the quarterly target as per the above schedule, penalty (clause 12) was to be imposed quarterly at the rate of five *per cent* of the value (including transportation charges) of the poles short supplied. The penalty once levied would not be refunded on any account. KSEB, however, invoked the penalty clause so as to cause minimum loss to the contractor as below:

- KSEB, considered belated supplies of the previous quarter as supplies against the target for the current quarter while computing the penalty. This resulted in short recovery of penalty.

⁸¹ Pinarayi Industrial Co-operative Society at Kannur EC and Vadakara EC.

⁸² Since the liability in respect of other contractors is not yet determined.

⁸³ Suman Concrete Products in Kannur Circle, Roopa Construction Company at Kozhikode EC and West Coast Concrete Products at Ernakulam and Perumbavoor ECs.

- While computing the penalty instead of reckoning the escalated price (including escalated transportation charges) as the value of poles, KSEB reckoned only the basic rate.
- KSEB waived ₹14.65 lakh being the penalty to be recovered from one contractor⁸⁴ in violation of the contract clauses.
- Imposition of penalty on one contractor⁸⁵ for three ECs was deferred till the completion of supplies. Though the contractor supplied only 29, 33 and 74 *per cent* of the ordered quantity respectively in these three ECs, the penalty of ₹47.05 lakh worked out by KSEB was not recovered.
- The short recovery of penalty due to the above and consequent undue favour to the contractors worked out to ₹8.90 crore in fourteen ECs.

KSEB stated that as per the agreement, the contractor was not supposed to make up the shortfall in a quarter and if poles were supplied in excess of the quarterly target, it was not to be adjusted against the previous quarter. As such, the penalty should be calculated only for the short supplies in the quarter and not for the accumulated short supplies. It was further stated that at the time of recovery of penalty, the escalated price was not known and hence penalty was calculated only on basic price. The reply was not acceptable as the contractor was bound to supply the ordered quantity in accordance with the monthly schedule fixed. Recovery of penalty did not relieve the contractor from supply of the ordered quantity by adjusting belated supplies, which was an adjustment of the quantity supplied in a month against the shortfall in previous month. As regards the calculation of penalty, it was to be calculated on the value of poles.

Refund of penalty in violation of terms of contract

Though there was express provision (clause 12) in the contract for non refund of penalty once levied, KSEB favoured five contractors by refunding penalty of ₹62.74 lakh recovered in six ECs.

KSEB stated that the provision of penalty was to deter the contractors from making shortfall and to ensure adequate supply of poles. The fact, however, remains that the ordered quantity was not supplied by the contractors in full and KSEB had to resort to procurement at higher rate, besides violating the provisions of clause 12.

Non initiation of action under risk purchase clause

The contract provided (clause G-20) that in case of failure of the contractor to supply and deliver materials or in case of breach of any of the covenants, stipulations, etc by the contractor, the contract would be terminated and the non delivered materials would be procured from elsewhere at the risk and cost of the contractor. Though six contracts were terminated due to non delivery of poles as per the contract, KSEB did not initiate action to recover the extra expenditure of ₹20.61 crore incurred for procurement of poles from other sources. Further, the contract with one supplier⁸⁶ was not terminated and even though the contractor had stopped supply in 2007, the Purchase Committee decided (March 2010) to defer the matter.

⁸⁴ Suman Concrete Products in Kannur EC.

⁸⁵ Mr. D Ajaya Kumar, Pooja industries, for Kottayam, Pala and Thodupuzha ECs.

⁸⁶ Vallikkat Construction.

KSEB stated that necessary steps including RR action would be initiated after assessing the liability of the firms. The fact, however, remains that no action had been taken even after five years of termination of contracts (March 2012).

Post contract modification of the terms and conditions

Post contract modification of the terms and conditions to the advantage of the contractor is against the spirit of competitive bidding and should be avoided. After award of the contract, KSEB authorised amendments/modifications to the terms and conditions having financial implications giving undue financial advantage to the contractors as follows:

Dilution of Price Variation Clause

The Contract clause (clause 14) regarding price variation stipulated that the benefit of price increase would be given only for the poles supplied as per delivery schedule, i.e. the benefit of price increase would not be given for poles that were supplied late. Subsequently, based on the request of one of the contractors⁸⁷, the Purchase Committee decided (January 2009) to give the benefit of price escalation for belated supplies also. This resulted in undue financial advantage to the contractors to the extent of ₹16.89 crore (*Annexure 13*) in 12 ECs (March 2012).

KSEB replied that poles delivered late means that the poles were supplied beyond the contract period. This interpretation of KSEB, however, did not go in line with the spirit of clause 14 of the contract. Further, KSEB's subsequent communications had also reiterated that the benefit of price escalation would be allowed only for poles supplied as per delivery schedule under clause 14.

Amendment of Price variation formula in favour of the contractors

- The Price Variation clause (clause 14) and the formula thereunder stipulated that the prices would be re-fixed in case of variation in the average cost of cement, steel etc., in excess of 10 *per cent* from their value on the due date of tender. KSEB, however, removed the 10 *per cent* ceiling amending (September 2008) the formula to the advantage of the contractors by allowing the benefit of full price variation once the increase in the cost exceeded 10 *per cent*. It was interpreted that the 10 *per cent* ceiling was to ensure that small changes in the input prices would not lead to constant revision in the cost of output. This resulted in extension of unintended benefit of ₹1.59 crore to the contractors in four ECs.
- Contrary to clause 14(i) KSEB amended (September 2008) the formula to the advantage of the contractors by including the changes in the price of sand and coarse aggregate also, thereby extending benefit to the contractors to the extent of ₹68.31 lakh in three ECs.

KSEB stated that the PSC pole manufacturers represented to the Chairman requesting to allow some concessions as the contract allowed price escalation only on cement, HTS wire and labour charges. Accordingly, the Board decided to remove the 10 *per cent* ceiling in the formula and to allow escalation on river sand and coarse aggregate also. The fact, however, remained that these

⁸⁷ Pooja Industries.

amendments resulted in financial advantage to the contractors not contemplated in the tender/contract.

Payment of transportation charges in violation of the terms of contract

As per the terms of the contract (clause 1) transportation charges would be paid at lump sum rates for delivery of poles anywhere within the EC concerned. In case of necessity the contractor was bound to supply poles to other Circles also for which transportation charges would be paid at separate rates (per pole per kilometer basis).

KSEB, however, paid transportation charges at the lump sum rates applicable for supply within the Circle in addition to the transportation charges at separate rates for poles supplied outside the Circle. This resulted in extension of unintended benefit to the extent of ₹63.56 lakh to two contractors⁸⁸ only.

KSEB stated that no decision was taken by the competent authority to allow transportation charges at inside circle rate plus per km rate for delivery outside circle boundary. We, however, observed that KSEB decided (January 2011) and paid transportation charges at rates within the Circle in addition to per pole/km rate for delivery of poles outside the Circle. Similarly, we also noticed unauthorised payment of excess transportation charges to Pooja Industries in respect of poles delivered outside Kottayam EC.

Role of Chief Engineer (TC & M)

CE (TC &M) was submitting proposals relating to procurement of poles to the PC as well as the Board. All decisions regarding post contract modifications to the advantage of the contractors were taken by the PC/Board on the basis of the detailed note/proposals submitted by CE (TC&M). Instead of exercising due diligence, the CE (TC&M) forwarded the request of the contractors with a favourable note to the Board/PC without analysing the financial implication. On the strength of the recommendation of the CE (TC&M), PC/Board authorised amendments/ modifications to the terms and conditions of the contract which ultimately resulted in undue financial benefit to the contractors.

KSEB stated that recommendations on the request of the contractors were given only in very genuine cases and decision in violation of agreement conditions were taken only to ensure the continuance of the contract. As the contractors were bound to supply the poles at the agreed rate and as per the terms of the contract, the relaxation/concessions allowed through post contract modifications lacked justification.

Storage and Accounting

Poles are delivered at the Electrical Sections (ESs) and Goods Received Notes (GRNs) are prepared at Sub Regional Stores.

We observed that the present system of accounting of poles was defective as the stores ledger kept at Sub Regional Stores always showed a nil balance. This resulted from the system of accounting where the poles received were

⁸⁸ Pooja Industries and Vellackamattathil Industries.

immediately shown as issued. Hence we were not in a position to assess the total quantity supplied, balance to be supplied, poles utilised, poles held as stock, etc.

The actual utilisation and stock position of the poles were monitored only through Material At Site Account (MASA) maintained in ES concerned. The poles supplied at ES were stacked on the way side at different locations and many poles got damaged and even got buried under soil while widening the road.



Poles stacked on way side and buried under soil and bitumen at Thodupuzha EC.

On physical verification of the stock of poles at the instance of audit in two Electrical Section offices (Thodupuzha I & II), shortage of 168 nos (7m and 8m) poles worth ₹1.96 lakh (calculated @ ₹1091.81 for 7 m and ₹1302.31 for 8 m poles) and unaccounted 73 nos poles (9m) worth ₹1.51 lakh (calculated @ ₹2069.14 per pole) were detected.

The payments are made at the ECs. We, however, found that different ECs book the expenditure on procurement of all types of poles (Iron poles, 'A' poles, PSC poles) under the same head (22-226). Hence, we could not assess the total payment made, payment outstanding, price escalation paid, penalty recovered, price escalation payable etc., in respect of PSC poles procured. Further, no consolidated data was available with KSEB too.

KSEB, while admitting the observation stated that report from the Dy.CE called for was awaited.

Award of contract before expiry of the existing contract

During the currency of the long term contract, Board decided (October 2009) to decentralise pole purchase and delegated the power to the three CE (Ds). Accordingly, the CE (Ds) invited (January 2010) tenders and placed orders for

13.44 lakh poles (7m, 8m and 9m) with 10 firms, of which nine firms were existing suppliers under long term contract. The rates obtained were higher than that of the current long term contract. Consequent upon receipt of new orders at higher rates, nine contractors stopped supply of the balance quantity of 821811 poles (7m/8m/9m) against previous contracts. KSEB failed to insist supply of the backlog as well as balance quantity. Calling for tenders before expiry of the current contract was unwarranted. This gave a chance to the contractors to escape responsibility of supplying the balance quantity against previous contract. As a result, 500205 poles had to be procured from the same contractors at higher rates obtained in the new tenders. The liability towards extra expenditure on account of this worked out to ₹15.12 crore.

KSEB stated that as the contract was for five years, delivery of poles was for five years and the contracts were to be short closed with the supplied quantity on the specified date of completion. Therefore no condition in the agreement could be invoked to insist on supply of balance quantity. The reply was not true to facts as the contractor was bound to perform the contract in full and in case of non supply, the contract provided for termination and procurement of the non supplied material at the risk and cost of the defaulted contractor. Further, KSEB in addition to the original quantity ordered, placed additional orders as per the contract extending the period of contract beyond the stipulated period of five years, which the contractors were bound to supply. This contradicts the reply of KSEB.

The matter was reported to Government in July 2012; their reply was awaited (November 2012).

2.2.2 Litigation Management

Introduction

The Kerala State Electricity Board (KSEB), Thiruvananthapuram in the course of carrying out its objects, operation and maintenance activities, confronts with large number of litigations under various categories of issues like, land acquisition, line drawing (tree cutting and diminution in land value), contracts, billing and tariff disputes, theft of energy, revenue recovery, tax matters, employee benefits, etc.

KSEB has a Legal Cell at the Corporate office headed by Legal Advisor and Disciplinary Enquiry Officer (LA&DEO) to conduct the cases through its standing counsels. The LA&DEO is the prime advisor of KSEB in all legal matters and his functions include *inter alia* vetting of tender documents and agreements executed between KSEB and contractors. KSEB also settles cases through Adalats conducted at various courts. We conducted an audit to assess the efficiency and effectiveness in handling of legal cases by KSEB.

Present position

As on 31 March 2012, KSEB had 22741 cases and 1326 appeals pending in various courts (**Annexure 14**). The position of legal cases dealt with for the last four years was as shown below:

Particulars	2008-09	2009-10	2010-11	2011-12
Number of cases at the beginning of the year	19101	19218	21516	23058
New cases	5286	6079	5619	5520
Total	24387	25297	27135	28578
Number of cases disposed during the year	5169	3781	4077	5837
Number of cases pending at the end of the year	19218	21516	23058	22741

We selected 517 case files (169 lower Court and 348 High Court cases) for scrutiny based on random selection. These included pending cases, new cases filed and disposed of during the years 2008-09 to 2011-12. Out of the 409 disposed cases test checked, there were 53 favourable, 82 partially favourable and 274 unfavourable cases. We noticed deficiencies/shortcomings in management of litigation as discussed below:

Avoidable Litigation

KSEB, as a public sector statutory body, should be a model in following rules and regulations in the conduct of its business. We, however, found that KSEB violated the provisions of its own manual/ Supply Code⁸⁹/ other rules etc. leading to a spate of avoidable litigations. Sometimes Government interference also led to litigation.

Out of the 517 case files test checked, 257 cases were filed against KSEB due to avoidable reasons. These aspects have been discussed below:

Sl. No.	Type of case	No. of cases	Reason for litigation	Impact
1.	Tree cutting compensation	193	Payment of lower compensation than prescribed in the manual of KSEB.	Constituted 23 per cent of the total cases.
2.	Contract Matters	1	Irregular cancellation of work order by Government of Kerala (GoK)	Delay of 19 months
3.	Arrears of electricity charges	7	(a) Violation of Clause 12 of the Supply Code.	Unnecessary litigation which was finally decided against KSEB.
		2	(b) Violation of Clause 23 of the Supply Code.	
		3	(c) Violation of Clause 34 (d) of the Conditions of Supply of Electrical Energy, 1990.	
4.	Employee benefits	51	Non-deposit/payment of gratuity	Led to huge financial commitment of ₹250 crore (approx).
	Total	257		

⁸⁹ Kerala State Electricity Supply Code 2005.

Tree cutting compensation

KSEB paid to the claimants only half of the tree cutting compensation that was prescribed in the Manual on the ground to avoid huge payments. We found that this reduction did not lead to any saving as the Court allowed compensation in full, at the rate prescribed in the Manual (in 123 out 193 cases test checked).

Government stated (October 2012) that though five *per cent* annuity was mentioned in the Manual, finding it excessive, KSEB contested the rate in the Court. KSEB also stated that it can move against the provisions in the Manual of Instructions if it feels detrimental or impractical as it has no statutory force. The fact remains that non-compliance with the provisions of the Manual led to avoidable litigation and KSEB had to pay compensation at five *per cent* in 123 cases. Further, KSEB is bound to follow the Manual as it is a prevailing Board order to be followed with regard to land acquisition and tree cutting compensation.

Contract Matters

Korean Electric Power Data Networking Company (KDN) was awarded (September 2010) the work of implementation of the Information Technology system under Part A of the Restructured Accelerated Power Development and Reforms Programme Scheme for ₹239.97 crore. Subsequently, GoK directed (December 2010) KSEB to cancel the contract based on their reservation over tender process. KDN challenged (December 2010) the cancellation of the work order in the High Court of Kerala. The Hon'ble Court, in its judgement held (May 2012), that the Government had no authority to interfere in the matter and quashed the Government Order. Later KSEB issued (September 2012) Letter of Award to KDN. The project was delayed for more than 20 months⁹⁰ due to Government interference. Cost escalation due to time overrun cannot be ruled out. Besides, this delay has postponed the social benefit of loss reduction in the transmission and distribution of electricity.

Government stated that the Hon'ble High Court has since directed the Government of India/Power Finance Corporation to enlarge the time frame for implementation of the project. The reply was, however, silent about the postponement of social benefits due to delay in implementation. Further cost escalation due to time overrun cannot be ruled out as KDN is yet to accept the re-awarded work as per the original terms and conditions.

Arrears of electricity charges

(a) According to Clause 12 of the Supply Code 'If a purchaser of a premise requires to have a new connection, as the earlier connection has already dismantled after disconnection, the arrear, if any, shall be realised from the previous owner/occupier of the premises and not from the purchaser'. KSEB denied electric connection to the petitioners on the ground of pending dues from previous owners of the property. The Court directed KSEB to give electricity connection upon the petitioner complying with the requirements for the grant of a new connection other than payment of energy charges due from the former occupier.

⁹⁰ Delay from date of cancellation of work order (December 2010) to date of re-awarding the work (September 2012).

Government stated that the Kerala State Electricity Regulatory Commission has amended (30 May 2012) clause 12 by inclusion of sub clause (2) as 'Notwithstanding anything contained in sub-clause (1), the purchaser referred to therein shall deposit an amount equivalent to such arrears excluding interest with the licensee, which shall be reimbursed as and when realised from the previous owner/occupier'. The cases pointed out arose in the absence of such empowering clause earlier.

(b) According to Clause 23 of the Supply Code 'In case of belated payments penal interest at twice the bank rate⁹¹ based on actual number of days of delay from due date may be charged by the Licensee'. KSEB charged interest at the rate of 24 *per cent* per annum for the defaulted payments from consumers, while the bank rate was 6 *per cent* (from April 2003 to February 2012.) The Hon'ble Court directed KSEB to rework the liability of the consumers as per the provisions of Supply Code, 2005.

While accepting the facts, KSEB stated that strict instructions have been given for applying clause 23 of the Supply Code 2005.

(c) Conditions of Supply of Electrical Energy, 1990 (Clause 34 (d)) provides that 'No service shall remain disconnected continuously for a period exceeding six months for non-payment of amount due to the Board. If the dues are not paid within the six months period of disconnection, the service shall be dismantled and the amount due to the Board shall be realised through revenue recovery action'. KSEB did not dismantle the connections even after 6 months from the date of disconnection and later demanded current charges for the period beyond 6 months. The Hon'ble Court observed that KSEB was bound to dismantle an electric connection within 6 months of disconnection, if dues are not paid and directed KSEB to refund the current charges collected beyond the period of 6 months.

Government stated that it has included (27 July 2012) a clause in One Time Settlement Scheme to limit the minimum charge payable to a period of six months after disconnection if the connection is dismantled. The reply does not explain the above case of levying minimum charges beyond six months where the connection is not dismantled.

Employee Benefits

The District Labour Officer (DLO), based on petition filed by the retired employees, directed KSEB to pay or deposit the gratuity and interest thereon under Payment of Gratuity Act, 1972. KSEB, however, did not comply with the direction whereby, the retired employees approached the Court. The Court disposed of all writ petitions with a direction to KSEB to deposit gratuity along with interest, up to the dates of deposit, at the applicable rate.

All the above cases could have been avoided had KSEB formulated its orders/procedures in conformity with the Acts, rules and regulations applicable to it.

⁹¹ Bank Rate means the rate at which the Reserve Bank of India is prepared to buy or rediscount bills of exchange or other commercial paper eligible for purchase under the RBI Act, 1934 (Section 1 (f) of the Supply Code 2005).

Government stated that the Board took a policy decision to implement the Payment of Gratuity Act 1972 on 24 May 2011 only and this caused filing of umpteen WPs. The reply does not explain the reason for non-deposit of the gratuity amount as directed by the Controlling Authority which led to litigation.

Defective handling of cases

KSEB should efficiently handle the cases during investigation/presentation so as to get favourable orders to the maximum extent. We observed that the failure of KSEB to efficiently handle the cases helped the petitioners in winning the cases as discussed below:

Sl. No.	Type of case	No. of cases	Name of the petitioner/respondent and date of decision.	Reason for losing the case.	Loss of revenue (₹ in lakh)
1.	Theft of energy	2	(a) Shri K Nandakumar (April 2011)	<ul style="list-style-type: none"> Failure in raising timely demand Defective presentation Failure to establish theft of energy. 	8.13
			(b) Shri AR Narayanan (August 2009)		5.44
2.	Tree cutting compensation	29	Various claimants	Delay in filing the case	-
Total		31			13.57

Theft of energy

(a) The APTS on inspection (15 December 2003) detected unauthorised use of electricity and raised (December 2003) demand for ₹8.13 lakh towards penalty. This was challenged by the consumer. Kerala State Consumer Dispute Redressal Commission, in its judgement set aside the bill citing that KSEB did not adduce evidence in support of the site mahazer.

(b) The APTS on inspection (5 January 2005) detected theft of energy and raised (January 2005) demand for ₹5.44 lakh. KSEB initiated action against the consumer but the Court acquitted the consumer of the charges finding that there was no proof for theft of energy.

Government while admitting the defective handling of the above cases stated that necessary in-service training would be imparted to the field officers for successful conduct of cases.

Tree cutting Compensation

There was delay in filing Civil Revision Petitions (CRP) by KSEB at the Hon'ble High Court against the compensation allowed by lower courts and as a result the court dismissed these petitions. We found that out of 175 CRP cases reviewed, 29 were dismissed due to delay upto 1315 days in filing.

Government while admitting the delay stated that it has ordered action against the delinquents and more attention would be given in avoiding such instances in future.

Lack of follow up action

Once a case is decided in favour of KSEB, it has to take suitable action to implement the decision. We observed that KSEB did not initiate timely/effective follow up action on cases decided in its favour which resulted in blocking up of revenue and limited the scope of recovery as discussed below:

Sl. No	Type of case	No. of cases	Name of the petitioner/respondent	Remarks	Amount involved (₹ in lakh)
1.	Revenue Recovery	1	Hitech Electrothermic and Hydro Power Ltd, Palakkad	Delay of more than two years in resuming Revenue Recovery action	8687.56
2.	Billing and Tariff Dispute	2	(a) Grammax Paper & Boards (P) Ltd	Settling of arrear claims for a meagre amount, despite favourable judgement	65.32
			(b) Hotel Indraprastha, Palakkad	More than two years delay in forwarding the copy of judgement to the field office and consequent delay in raising of bills on the consumer	90.35
3.	Land encroachment	1	Smt.Kochikkan Lakshmi, Edamon	Delay in eviction, though favourable Court orders were obtained	--
Total					8843.23

Revenue Recovery

Though the case filed by the consumer against the Revenue Recovery (RR) initiated by the Special Officer (Revenue) of KSEB (SOR) was disposed of in November 2005, the SOR resumed RR action only in March 2008 after two years. Meanwhile, the movable assets of the consumer were sold (March 2007) by another creditor for ₹4.60 crore. Thus the delay of more than two years in resuming the revenue recovery action limited the scope of recovery by KSEB. No responsibility was fixed on the SOR for the delay in initiating RR action.

Government stated that as per the judgement, it had to consider the claims of the petitioner and to pass orders after hearing. Even though KSEB invited (April & May 2006) the consumer, he never turned up for hearing and the matter was disposed of (March 2008) without hearing. The reply is not acceptable in view of the fact that KSEB took almost two years to dispose of the matter and resume RR action.

Billing and Tariff Dispute

(a) The Court held that the consumer (Grammax Paper & Boards (P) Ltd) was entitled to get the benefit of Pre-92 tariff concession for the allocated power of 700 KVA, instead of 1000 KVA demanded by the consumer. The Hon'ble Supreme Court upheld (November 2008) the judgement of the Hon'ble High Court. The amount payable by the consumer including surcharge for the belated payment worked out to ₹95.16 lakh. The SOR, however, unwarrantedly settled

(December 2010) the claim under One Time Settlement Scheme for ₹29.85 lakh forgoing revenue to the tune of ₹65.32 lakh.

Government stated that huge arrears were pending from the consumer on account of disputes over pre-92 tariff and KSEB had included the case under One Time Settlement Package (OTS) evolved for realising long pending arrears from all kinds of consumers. The reply is not acceptable as there was no dispute in the instant case for collecting arrear amount up to a demand of 700KVA as per the order of the Hon'ble Supreme Court. Further, KSEB did not protect its financial interest by including the case under OTS.

(b) As per the Hon'ble Supreme Court's judgement the consumer, Hotel Indraprastha, Palakkad was to be billed under commercial tariff (LT VII A) from 26 September 2000 to October 2003 instead of industrial tariff (LT IV). The copy of Hon'ble Supreme Court's judgement (May 2008) was forwarded to field office only in October 2011 after a delay of more than two years. The demand for the differential amount of ₹66.23 lakh was yet (May 2012) to be raised, resulting in loss of interest of ₹24.12 lakh (@ 9.50 per cent) from July 2008 to May 2012.

Government while admitting the delay explained that the present system was inadequate for the proper and efficient conduct of cases.

Land encroachment

The Court authorised (September 2003) KSEB to take over the land. Though the appeal for stay was denied (December 2009) by the Hon'ble High Court the eviction did not materialise so far. The encroached land admeasuring 24 cents was attached to the 220 kV Substation, Edamon where the Intelligence Bureau of Government of India had warned for securing the Substation premises by building security fencing.

Government stated that eviction and acquisition were sovereign functions of the State and KSEB as a requisitioning authority had acted in time. The reply indicates the need for urgent intervention of the State Government in the matter.

In addition to the deficiencies mentioned above; we also noticed lack of qualified personnel in legal wing and absence of special wings at field offices (SOR, Circles etc.) for attending to legal cases resulting in poor performance of the wing.

Government assured to take steps to make the system effective.

It is recommended that KSEB should analyse the reasons for mounting number of cases and take appropriate remedial measures to save time and money. The reasons for losing the cases may also be analysed and lacunae noticed be circulated to field offices to avoid their recurrence in future. KSEB should develop a suitable mechanism to monitor the cases decided in its favour for its effective implementation and strengthen the Legal Wing.

2.3 TRANSACTION AUDIT OBSERVATIONS

2.3.1 Loss of revenue

Non-charging of separate rates in case of non segregation of light/power loads and unauthorised use of electricity in respect of HT/ EHT consumers led to loss of revenue amounting to ₹7.52 crore.

As per Kerala State Electricity Board Terms and Conditions of Supply, 2005 (TCS), an agreement has to be entered into between Kerala State Electricity Board (KSEB) and the consumer. Terms of the agreement with High Tension (HT)/ Extra High Tension (EHT) consumers *inter alia* provided for charging of separate rates in case of non-segregation of light and power load, unauthorised use of electricity etc. Invoking these provisions had the benefit of additional revenue accruing to KSEB. KSEB, however, did not carry out inspection of the consumers' premises to identify such unauthorised use/non-segregation of load which led to loss of revenue as detailed below:

a) As per tariff notifications for HT and EHT consumers issued by KSEB from time to time and as incorporated in the agreement for supply of energy, when the connected lighting load of the factory is more than five *per cent* of the connected load for power, the whole lighting load is to be segregated and metered by a sub-meter and lighting consumption in excess over 10 *per cent* of the bulk supply consumption for power is to be charged at 7 paise extra per kWh for EHT and 25 paise extra per kWh for HT consumers. If segregation and sub-metering was not made as specified above, the bill amount of the consumers is to be increased for demand and energy charges by 10 *per cent* and 20 *per cent* for EHT and HT consumers respectively.

We observed (May 2012) that out of the total 1304 HT consumers, information pertaining to light and power loads was available only in respect of 400 consumers. Of these 400 consumers, 56 consumers had not installed separate sub-meters despite their light load exceeding five *per cent* of the total load. KSEB, however, did not charge rates applicable for non- installation of separate meter @ 20 *per cent* of the bill amount on demand and energy charges. The loss of revenue to KSEB for the limited period of September 2010 to March 2012 alone worked out to ₹4.78 crore. In the absence of information in respect of the balance 904 consumers, the shortfall, if any, in revenue collection could not be assessed by audit.

The matter was reported (August 2012) to Government/Management; their replies were awaited (November 2012).

b) As per the agreement for supply of HT/ EHT energy, the consumer shall not make any alteration, without prior approval of KSEB so as to increase the obligation of KSEB to supply electrical energy in excess of agreed Contract Demand (CD)/Connected Load (CL). If the consumer fails to obtain prior approval from KSEB to increase the CD, KSEB shall charge penalty as per TCS, after giving notice (clause 14(a) / (b) of the agreement). The consumer as per clause 15 of the agreement shall be liable to pay excess demand charges at 50 *per cent* of demand charges as per tariff notification, if agreement for revised

CD is not executed but prior approval is obtained. As per clause 50 (1) / (2) of TCS, if a consumer is found to be indulging in unauthorised use of electricity, the electricity charges payable on such usage shall be charged as per Section 126 of the Electricity Act, 2003, i.e at twice the rate applicable for relevant category of services for the entire period during which such unauthorised use of electricity has taken place, after giving notice.

We observed (July 2012) that the Recorded Maximum Demand (RMD) in respect of 78 consumers⁹² was in excess of CD for a period ranging from six to eighteen consecutive months indicating misuse/theft of energy. In such cases, the Assessing Officer⁹³ (AO) of the sections along with Anti Power Theft Squad (APTS) of the region was to conduct inspection of premises of these consumers with a view to ascertain the unauthorised use of energy and to provisionally bill for misuse of energy. AO/APTS, however, did not carry out such an inspection. Further, Executive Engineers / Deputy Chief Engineers concerned also did not monitor the consumption by the consumer and direct AO / APTS squads to conduct inspection of premises. As such, only 150 *per cent* (normal demand charges 100 *per cent* plus excess demand charges 50 *per cent*) was charged for such RMD in excess of CD.

KSEB while explaining (October 2012) the reasons for lapses assured to take steps to review the tariff order and that direction would be given to field offices to inspect the premises of such consumers.

Failure to conduct inspection of premises resulted in non billing of penal charges for the misuse of energy at twice the rate of demand charges as provided in the TCS and consequent loss of revenue of ₹2.74 crore (reckoned at 200 *per cent* of tariff rates less already billed 150 *per cent*) to KSEB in respect of 78 consumers during September 2010 to February 2012.

The matter was reported (August 2012) to Government; their reply was awaited (November 2012).

2.3.2 Irregular Payment

Irregular payment of Isolated Area Allowance resulted in an extra expenditure of ₹0.44 crore

As per the Pay revision orders of Kerala State Electricity Board (KSEB) for the period from July 2003 to June 2008, as approved (September 2007) by the Government of Kerala, Isolated Area Allowance (IAA) @ 10 *per cent* of the Basic Pay, subject to a maximum of ₹1300 per month was payable to those officers of the Board who were physically present at the notified isolated areas⁹⁴. It further stipulated that IAA would not be payable to officers drawing Hydel Allowance (HA)/Investigation Allowance (IA).

Subsequently, based on a request from the Association of Officers in KSEB and recommendation of the Chief Engineer (Generation), KSEB withdrew the

⁹²One EHT II category consumer and seventy seven HT category consumers.

⁹³Officer not below the rank of Assistant Engineer of Electrical sections in case of HT consumers and Transmission Sections in case of EHT consumers assigned with the duty of monthly meter reading.

⁹⁴ Isolated areas as notified by the Board as on 31.3.2007 were Sholayar, Poringalkuthu, Moozhiyar, Kochupampa, Edamalayar, Kakkayam and Thriveni-Pampa.

restriction imposed on claiming IAA and HA together and ordered (May 2008) that the officers working in the notified isolated area would be entitled to IAA @ ₹1300 per month in addition to HA w.e.f June 2008. The Committee of Public Undertakings (COPU), quoting the Government Order of 1979, had directed (July 2008) KSEB that all decisions regarding pay revision were to be taken only after prior approval of Government. The concurrent payment of IAA and HA during the period from June 2008 to March 2011 lacked Government approval and hence was ultra vires.

We noticed that an amount of ₹43.80 lakh was paid as IAA to 291 officers stationed in the five isolated areas during the period from June 2008 to February 2011 as detailed below:

Sl.No	Account Rendering Unit (ARU)	Isolated Area	No of cases of payment of IAA, along with HA	Amount (₹ in lakh)
1.	Generation Circle, Thrissur	Poringalkuthu	77	17.42
2.	Investigation Circle, Thrissur	Kakkayam	16	0.26
3.	Generation, Civil Circles, Kothamangalam	Edamalayar Meencut	40	9.43
4.	Generation Circle, Moozhiyar	Moozhiyar	153	15.75
5.	Transmission Circle, Pathanamthitta	Kochupampa	05	0.94
Total				43.80

KSEB while admitting our observation stated (November 2012) that the matter has since been taken up with the Government for ratification. The fact, however, remained that payment of Isolated Area Allowance was without approval of the Government and resulted in extra expenditure of ₹43.80 lakh.

The matter was reported to Government (July 2012); their reply was awaited (November 2012).