



CENTRAL ELECTRICITY BOARD

LET THERE BE  
**LIGHT**

ANNUAL REPORT 2013

## OUR VISION

A world-class commercial electricity utility enabling the social and economic development of the region

## OUR MISSION

We meet the expectations of our customers and stakeholders by:

- Delivering prompt and efficient customer services
- Developing our employees and providing them with incentives
- Providing an affordable, safe, and reliable electricity supply
- Undertaking our business in an environmentally responsible manner
- Being the preferred employer in the region

## OUR CORPORATE VALUES

- Respect, Honesty and Loyalty
- Pride and Ownership
- Courteous, Excellent Service
- Superior Performance
- Team Culture



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# Electricity

(from Power Station to Customer\*)

## Power Stations

Fuel oil

Coal

Bagasse

Hydro

Landfill Gas

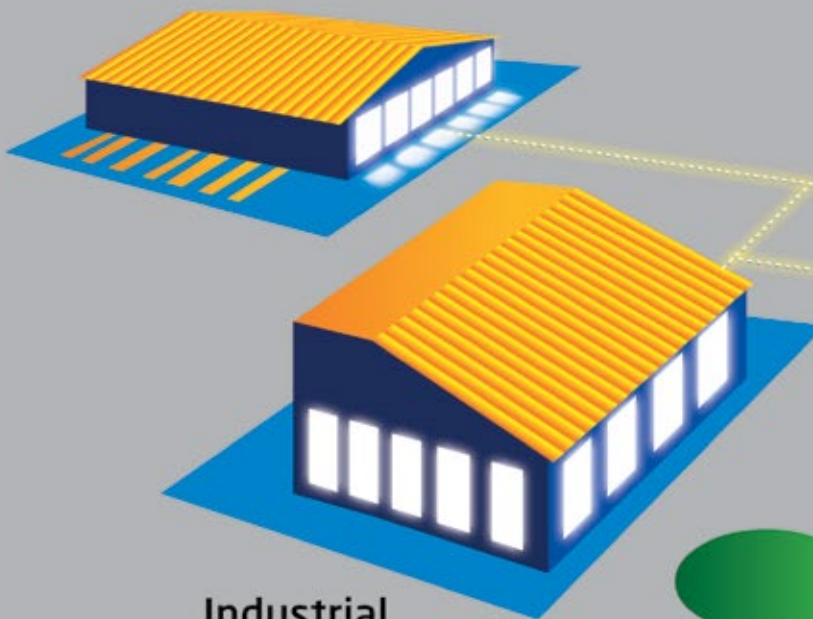
Solar PV

Generation 2013:

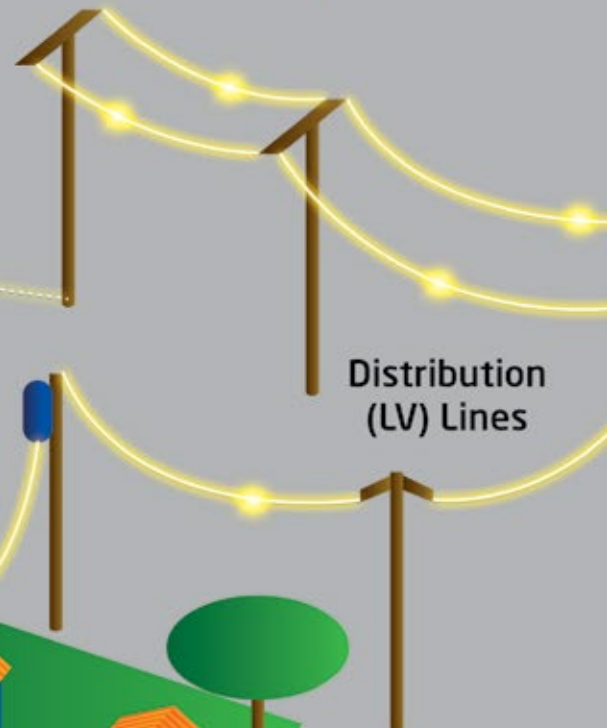
2,577 GWh



## Commercial



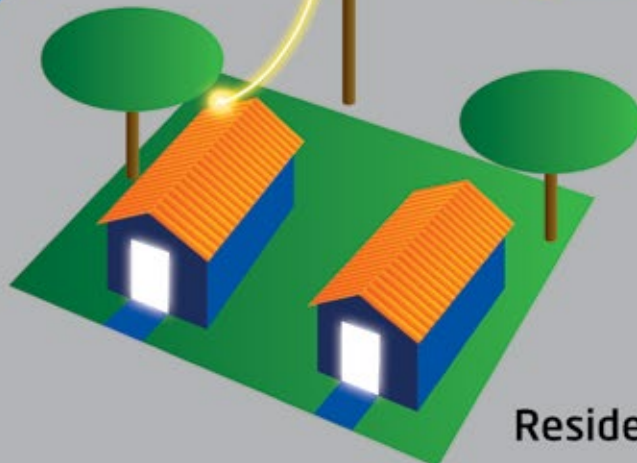
## Industrial



## Customers

Customers 2013: 422,149

Sales 2013: 2,355 GWh



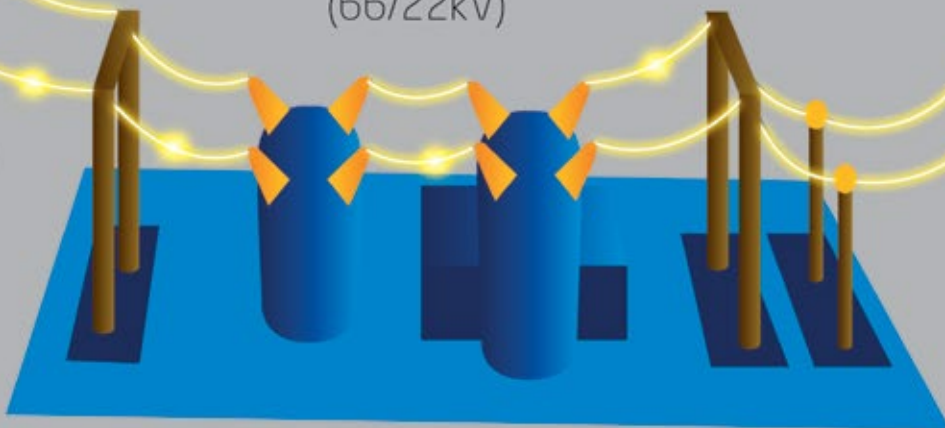
## Residential

\* Mauritius

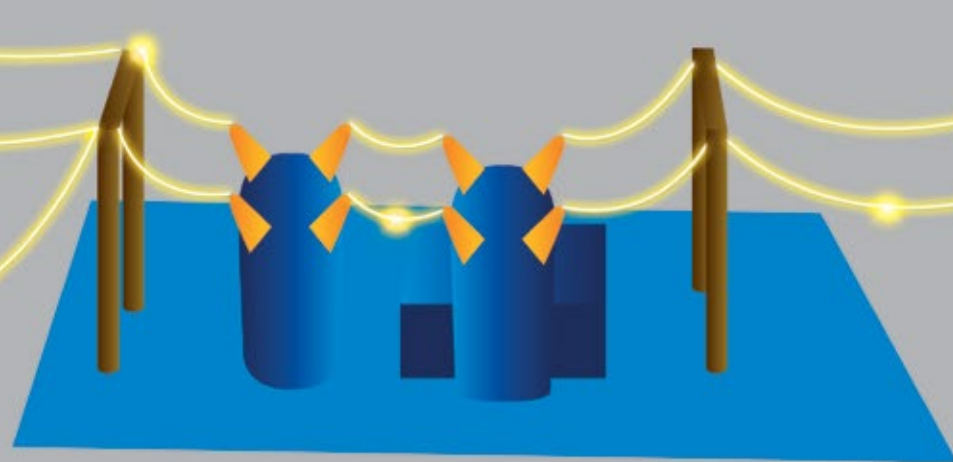
**High-Voltage**  
Transmission Lines (66 kV)



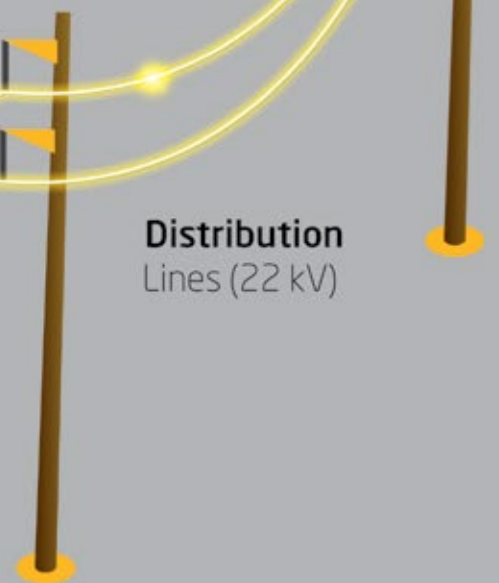
**Sub Stations**  
(66/22kV)



**Distribution**  
Lines (22 kV)



**Transformers**  
(22 kV > 230 V)



## CORPORATE PROFILE

The Central Electricity Board (CEB) is a parastatal body wholly owned by the Government of Mauritius and reporting to the Ministry of Energy and Public Utilities. Established in 1952 and empowered by the Central Electricity Board Act of 25 January 1964, the CEB's business is to "prepare and carry out development schemes with the general object of promoting, coordinating and improving the generation, transmission, distribution and sale of electricity" in Mauritius and Rodrigues Island.

### History

The CEB was constituted on 8 December 1952 in accordance with the provisions of the first Central Electricity Board Ordinance 1951. It took over the functions and assets of the individual electricity undertakings operated by the Department of Electricity and Telephones, and the Electric Generating Power Company.

At the time of Independence in 1968, the national rural electrification program got under way. As the population increased and habitations cropped up all over the island, the CEB had to expand its networks to connect schools, water pumping stations, housing estates and allotments, as well as various industries.

As from the early 1970s, further network extension took place to supply new sectors such as Tourism and Textile. By 1981, the national rural electrification programme was completed, with about 153 villages and housing estates connected to the grid.

Over the years, the CEB has set a proven record of providing reliable, safe and affordable electricity supply to the country, through massive capital investment in new generation capacity and development of the electricity infrastructure. Today, Mauritius enjoys a more diversified economy, an extensive network of electricity supply facilities, and the benefits of a stable and continuous electricity supply.

### Mission, Vision and Strategic Objectives

CEB's overall mission is to provide affordable, safe, reliable, and quality electricity supply to the nation.

Its vision is to become a world-class commercial electricity utility enabling the social and economic development of Mauritius, and ensuring that sustainable growth becomes a reality.

The utility's main strategic objectives are:

- To ensure the sustainability of the business through balanced financial, social and environmental decision-making;
- To optimise the use of assets, resources and skills;
- To balance supply and demand of energy for security of supply;
- To exploit alternative and renewable sources of energy;
- To promote energy conservation; and
- To enhance customer service delivery.

### Outlook

The needs of Mauritius in terms of energy will inevitably increase in the coming years, as the country strives to embark on a higher growth trajectory in a harshly competitive world economy. With the volatile prices of energy sources on the world market, resulting in increasing costs of production, the CEB will be faced with the difficult task of maintaining a fair balance between the financial sustainability of the utility and price affordability to its customers.

The key for a secure and sustainable energy future is to create a sufficiently broad energy portfolio, with more emphasis laid on renewable sources and the exploitation of alternative sources, while being sensitive to energy conservation and environmental protection.

## CORPORATE GOVERNANCE

In compliance with the Code of Corporate Governance for Mauritius, this section delineates, inter alia, the corporate governance structures in place at the CEB and describes the organisation of the Board's business. It also sets out the systems and processes established for maintaining and monitoring internal controls, as well as identifying and managing risks. Moreover, it outlines the efforts made for enhancing Corporate Social Responsibility and communication with stakeholders.

The CEB views good corporate governance practices as integral to good performance. As a parastatal body wholly owned by the Government, the utility is committed to fulfilling its mandate in a manner which is consistent with good governance practices and, in particular, with regard to accountability, transparency, responsibility and ethics.

The year 2013 was a particularly challenging one for the CEB, due to the numerous and diverse issues which had to be dealt with. The existing systems, structures and governance processes had to stand up to this juncture and take on these challenges in a coherent and effective manner.

Fifty-six meetings of the Board of Directors and Sub-Committees were held during the review period and numerous matters were discussed and resolved. A number of joint task teams, for instance the Enlarged Committee, the Environment Committee, and the Investment & Strategic Committee, were also established to assist with the resolution of specific issues.

One of the main tasks of the Board in 2013 was planning for additional generating capacities to meet the ever-increasing demand. In this respect, the Board approved the redevelopment of the Saint Louis Power Station which would cater for the commissioning of 4x15 MW new medium-speed diesel engines in the short term. The execution of the updated Power Purchase Agreement with Mauritius CT Power Ltd. in relation to the setting up of a 100 MW coal plant at Pointe aux Caves was also sanctioned. At the same time, the strategy to increase our renewable energy usage was maintained through the approval of a number of medium to large solar photovoltaic projects from private promoters. The conduct of a pre-feasibility study for the use of Liquefied Natural Gas (LNG), which is another interesting alternative for cleaner electricity generation in Mauritius, was also approved. On another front, the Board appointed Consultant B.C. Appanah to carry out a comprehensive review of the salary and conditions of service of CEB employees and submit a report accordingly. The aim is to maintain the CEB as an employer of choice and step up the motivational level of employees at large.

### Governing Bodies

The direction, control and accountability of the business of the CEB are vested in the Board. The fulfilling of these responsibilities is facilitated by a well-developed governance structure comprising various Board Sub-Committees. Management is accountable and subject to the control of the Board and operates within the policy framework laid down by the latter.

Business is conducted in accordance with the CEB Act, other relevant statutory provisions, and the principles of good corporate governance. All functions are exercised honestly, in good faith, with due care and diligence and in the best interests of the CEB and its stakeholders.

### The Board

The Board is ultimately responsible and accountable for the performance and affairs of the Organisation. It subscribes to sound corporate governance principles and ensures that the highest standards of business ethics, honesty and integrity are maintained.

The role and functions of the Board include:

- Providing strategic direction and leadership;
- Reviewing objectives, strategies and structures with a view to satisfying stakeholders' interests;
- Ensuring that the CEB complies with all relevant laws, regulations, codes of best business practice, and guidelines laid down in the Code of Corporate Governance;
- Ensuring greater levels of fairness, transparency and accountability in the decisions and acts of the CEB;
- Ensuring the integrity of CEB's accounting and financial reporting systems, including the independence of audit, control systems, systems for monitoring and managing of risks, financial control, and compliance with the Law and relevant accounting standards;
- Overseeing the process of disclosure and communication; and
- Ensuring that the utility develop a succession plan, both for its executive directors and senior management.

## Composition of the Board

In accordance with the CEB Act, the Board is constituted of a Chairman, the General Manager and nine other members. The latter are drawn from diverse backgrounds and they bring a wide range of experience and professional skills to the Board.

The Chairman and members of the Board are appointed by the Minister to whom responsibility of the Board is assigned in accordance with Section 2 of the CEB Act. The General Manager is appointed by the Board.

The profiles of the directors for the year 2013 are given hereunder. None of the Directors, who held office at the end of the financial year, had any interest in the affairs of the CEB.



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**1. Balraj Narroo, MSK**  
Chairman  
Age: 52

**2. Shiam Krisht Thannoo**  
General Manager  
Age: 47  
Qualifications: B. Tech (Hons), MBA, CRPE

**3. Dr. P. M. K. Soonarane**  
Representative of the Minister of Energy and Public Utilities  
Age: 56  
Qualifications: BSc (Hons) Mechanical Engineering; MSc Advanced Mechanical Engineering; PhD Renewable Energy  
Position: Deputy Director, Technical Services, Ministry of Energy and Public Utilities

**4. Kresh Seebundhun (up to June 2013)**  
Representative of the Ministry of Finance and Economic Development  
Age: 53  
Qualifications: FCCA  
Position: Lead Analyst Ministry of Finance & Economic Development; Board Director Central Water Authority; Member National Savings Fund Committee; Member Maurice Ile Durable Fund Management Committee; Company Secretary Mauritius Post Ltd.

**5. Mrs Sadhna Appanah (as from September 2013)**  
Representative of the Ministry of Finance and Economic Development  
Age: 49 years  
Qualifications: MBA Finance University of Leicester UK, BA Hons Economics with Management Studies, Napier University Edinburgh  
Position: Lead Analyst, Responsible for Energy and Public Utilities Sector, Procurement and PPP at MOFED



**6. Abdool Feroze Acharauz**

**Member with experience in Agricultural, Industrial, Commercial, Financial, Scientific or Administrative Matters**

Age: 49

Qualifications: Dip. Personnel Management; Cert. Safety Mgt; Fellow Chartered Institute of Mgt UK; Associate of International Institute of Risk & Safety Mgt  
Position: HR Manager, Panache & Co Ltd

**7. Rohit Mungra**

**Representative of the Central Water Authority**

Age: 64

Qualifications: B. Tech (Civil); Dipl. In Public Health Engineering; Dipl. in Water Quality Control  
Position: Senior Advisor, Central Water Authority

**8. Claude Wong So, OSK**

**Representative of the Institution of Engineers**

Age: 60

Qualifications: BSc Civil Engineering, University of Nairobi, Kenya; MSc Occupational Hygiene, University of Newcastle Upon Tyne, U.K; Fellow Institution of Engineers Mauritius (FIEM); Fellow Institution of Occupational and Safety Management Mauritius (FIOSHM); Retired Fellow Institution of Occupation Safety UK (FIOSH)

Position: President of Institution of Engineers Mauritius, Chairman of Airport of Rodrigues Ltd

**9. Shivdutt Bheechook**

**Member with experience in Agricultural, Industrial, Commercial, Financial, Scientific or Administrative Matters**

Age: 68

Qualifications: M.A Economics

Position: Chairman Irrigation Authority

**10. Dhinnesh Ramduny (up to June 2013)**

**Representative of the Electricity Advisory Committee**

Age: 61

Qualifications: D.M.E.E. (U.O.M); Cert. Design Principles, Building & Civil Engineering (U.O.M)

Position: Engineering Assistant, Municipal Council of Curepipe

**11. Balrajsanee Narayan (up to June 2013)**

**Representative of the Electricity Advisory Committee**

Age: 55

Qualifications: Cert. in Design Principles for Draughtsman (UOM)

Position: Chief Inspector of Works, Black River District Council

**12. Deepnarain Seebaluck (as from July 2013)**

**Representative of the Electricity Advisory Committee (Urban)**

Age: 46

Qualifications: B. Tech (Hons) Civil Engineering; MSc Engineering Project Management; Registered Professional Engineer of CRPE; Associate Member of the Association of Project Managers; Member of the National Land Drainage Committee; Member of the Regional National Disaster Risk Reduction Committee

Position: Head Public Infrastructure Department, Municipal Council of Curepipe

**13. Haroon Rashid Duffaydar (as from October 2013)**

**Representative of the Electricity Advisory Committee (Rural)**

Age: 53

Position: Member of District Council of Pamplemousses

Board meetings are scheduled annually in advance. Special meetings are convened as necessary to address specific issues. The attendance of members at the 25 Board meetings (including 7 special meetings) held during the reporting period is shown hereunder.

**BOARD MEETINGS 2013**

	No. of Meetings Attended	Overall Percentage %
Balraj Narroo, MSK (Chairman)	25 of 25	100
Shiam Krisht Thanoo	25 of 25	100
Dr. P. M. K. Soonarane	24 of 25	96
C. Wong So, OSK	21 of 25	84
K. Seebundhun (up to June)	9 of 12	75
Mrs S. Appanah (as from September)	4 of 7	57
S. Bheechook	25 of 25	100
F.A. Acharauz	21 of 25	84
R. Mungra	25 of 25	100
D. Ramduny (up to June)	9 of 12	75
B. Narayan (up to June)	12 of 12	100
D. Seebaluck (as from July)	11 of 13	85
H.R. Duffaydar (as from October)	4 of 5	80

## Directors' Remuneration

During the year 2013, the fees paid to Directors amounted to Rs 437,422 (excluding the Chairman and General Manager).

The Chairman was paid a monthly fee of Rs 80,420. The gross monthly salary of the General Manager amounted to Rs 140,420.

All other Board Members were entitled to a monthly fee of Rs 2,500 in respect of attendance to the main Board meetings. No fee was payable if a Board Member absented himself during a calendar month. Likewise, the fee was not payable if there was no Board meeting in a calendar month.

In regard to attendance at Sub-Committee meetings, the monthly fee was Rs 1,500 and was payable only if a Sub-Committee member attended a meeting during one calendar month. No fee was payable in case of absence or non-holding of meeting during a calendar month.

## Board Committees

In the conduct of its duties, the Board is assisted by three Committees, namely: the Finance Committee, the Human Resource (HR) Committee, and the Audit and Risk Committee. Each Committee operates within its defined terms of reference that set out the composition, role, responsibilities and delegated authority. Matters are discussed in advance at the level of these committees before they are presented to the Board.

### Finance Committee

The Finance Committee is made up of four Non-Executive Directors and the General Manager. The committee reviews and makes recommendations to the Board on the financial situation, the budget and the evaluation of tenders.

The functions of the Committee include the:

- Examination of tender evaluation reports prepared by Management in respect of tenders whose value exceeds Rs 10 million, and submitting recommendations to the Board for their award;
- Examination of Capital and Revenue Budgets, Cash-flow Statements, Management Accounts and Financial Statements; and
- Analysis of proposals for tariff review.

Sixteen Finance Committee meetings were held during the year 2013.

### FINANCE COMMITTEE MEETINGS 2013

	No. of Meetings Attended	Overall Percentage %
R. Mungra (Chairman)	16 of 16	100
Dr. P. M. K. Soonarane	14 of 16	88
K. Seebundhun ( <i>up to June</i> )	5 of 7	71
Mrs S. Appanah ( <i>as from September</i> )	3 of 5	60
C. Wong So, OSK	14 of 16	88
S.K. Thannoo	16 of 16	100

### Audit and Risk Committee

The Audit and Risk Committee is made up of four Non-Executive Directors and ensures that risks, audit and internal control are properly addressed. Furthermore, the committee examines the annual financial statements and reviews the financial aspect of transactions which are considered as significant.

The functions of the Audit and Risk Committee include:

- Monitoring important risk areas and ensuring that these are being effectively addressed by Management;
- Monitoring the effectiveness of the system of internal control, accounting practices, information systems and internal audit;
- Evaluation of the financial management and auditing policies of the CEB;
- Review of the financial reporting process to ensure CEB's compliance with the applicable laws and regulations;
- Examination and review of the annual financial statements;
- Examination of accounting and auditing concerns identified by internal and external audit;
- Ensuring integration of internal control and risk management;
- Making recommendations to the Board on risk policies;
- Examination of risk reports on the cash-flow position of the CEB, market changes, the current situation in terms of interest rates, exchange rates and commodity prices, and forecasts; and
- Providing advice on financing arrangements and structure.

In 2013, the Audit and Risk Committee met on two occasions.

### AUDIT AND RISK COMMITTEE MEETINGS 2013

	No. of Meetings Attended	Overall Percentage %
K. Seebundhun (Chairman) ( <i>up to June</i> )	2 of 2	100
S. Bheechook	2 of 2	100
D. Ramduny ( <i>up to June</i> )	2 of 2	100
F.A. Acharauz	2 of 2	100

### HR Committee

The HR Committee consists of four Non-Executive Directors and the General Manager. Its specific terms of reference include direct authority for, or consideration of, and recommendations to, the Board on matters relating to, *inter-alia*:

- Human resource strategies;
- Selection and appointment;
- Remuneration and performance management;
- Training and development;
- Industrial relations; and
- Succession planning.

Thirteen meetings of the HR Committee were held during the review period.

### HR COMMITTEE MEETINGS 2013

	No. of Meetings Attended	Overall Percentage %
F. Acharauz (Chairman)	13 of 13	100
Dr. P. M. K. Soonarane	11 of 13	85
B. Narayen ( <i>up to June</i> )	5 of 6	83
S. Bheechook	13 of 13	100
S.K. Thannoo	12 of 12	100

## Major Decisions of the Board

The major decisions of the Board during 2013 were as follows:

- Approval for the release of the CEB Integrated Electricity Plan (IEP) covering period 2013-2022;
- Approval for an agreement with Emtel for infrastructure leasing in respect of the Fibre-to-the-Home project;
- Approval for the Redevelopment of the Saint Louis Power Station consisting of the retirement of six old Pielstick engines and the commissioning of 4x15 MW medium-speed diesel engines;
- Approval for the introduction of a new Smart Metering for the Pre-paid Electricity project;
- Approval of the Energy Supply and Purchase Agreement between CEB and Sarako for the setting up of a 15 MW Solar PV Farm at Bambous;
- Approval for the signature of the Energy Supply and Purchase Agreement between CEB and Aerowatt for a 9.35 MW Windfarm at Plaine des Roches;
- Approval for the release of established safety practices and guidelines to sensitise the general public on the safe operation of standby sets;
- Approval for the purchase of 4 acres of land at L'Avenir for the re-location of the Transport Workshop and the Transformer Workshop found at Plaine Lauzun to make way for the redevelopment of the Saint Louis Power Station;
- Approval for the launching of an Energy Saving Campaign in the media, in collaboration with the Ministry of Energy and Public Utilities;
- Approval for the launching of the pre-paid metering project for customers belonging to vulnerable groups;
- Approval for the setting up of an Environment Committee at the level of the Board;
- Approval for the signature of a Memorandum of Understanding (MoU) with Mauritius Post Ltd for the payment of electricity bills in Post Office outlets in Rodrigues;
- Approval for the conduct of a Pre-feasibility Study for the use of Liquefied Natural Gas (LNG) in electricity generation in Mauritius;
- Approval for the creation of a Strategic and Investment Committee at the level of the Board;
- Taking note of the submission of the preliminary report of Consultant B.C. Appanna for the review of the salary and conditions of service of CEB employees for the period July 2013 to June 2017;
- Approval for the signature of a Confidentiality Agreement with Emtel Ltd pertaining to the payment of electricity bills through the Emtel Mobile Payment Solution;
- Approval to proceed with the execution of the updated Power Purchase Agreement with Mauritius CT Power Ltd in respect of the setting up of a 100 MW coal plant at Pointe aux Caves;
- Approval to proceed with the execution of two Energy Supply and Purchase Agreements with Synnove Solar (Mauritius) for the setting up of: (1) a Grid-Connected Photovoltaic Farm of 2 MW at Plaine des Roches; (2) a Grid-Connected Photovoltaic Farm of 2 MW at Esperance.

## Other Governance Structures

### *Tender Committee*

The Tender Committee assists the Board in making procurement decisions, approves procurement policies, and ensures that CEB's procurement system and processes are fair, transparent, competitive and cost effective. It examines evaluation reports in respect of tenders and makes recommendations for their approval to the General Manager or the Finance Committee, as appropriate.

### *Internal Audit*

CEB's internal audit function provides the Audit Committee and Management with assurances that the internal controls are appropriate and effective. This is achieved by means of an independent and objective appraisal and evaluation of internal controls and other governance processes.

The Audit Department is fully supported by the Board and the Audit Committee, and has unrestricted access to all organisational activities, records, property and staff.

### *Technical Audit*

The Technical Audit Unit provides assurance to the Executive Management, through the audit function, with respect to the technical, environmental, quality and safety performance of the CEB. The Unit is responsible for technical audits as well as for quality assurance and incident investigation.

## Management

Management is accountable for, and subject to, the control of the Board and operates within the policy framework laid down by the latter. The profiles of members of the CEB Top Management team are given hereafter.



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### 1. Shiam Krisht Thannoo

General Manager

Age: 47

Qualifications: B. Tech (Hons), MBA, CRPE

Experience: Joined CEB in 1985 as Clerical Assistant; Appointed Engineer in 1996; Appointed Non-Utility Generation Planner in 2002; Appointed Secretary/Non-Utility Generation Manager in 2007; Nominated Officer-in-Charge in November 2010; Appointed General Manager in October 2011

### 2. Gérard Hébrard, O.B.E.

Deputy General Manager

Age: 64

Qualifications: Ing. EEMI, AMI. MechE., C. Eng., MIEE.

Experience: Joined CEB in 1966 as Apprentice; Appointed Asst. Head of Department (Production) in 1984; Appointed Production Manager in 1989; Appointed Deputy General Manager in 2006

### 3. Prabhakar Sembhoo

Transmission & Distribution Manager

Age: 61

Qualifications: B.E. (Elec.), MIEEE

Experience: Joined CEB in 1976 as Cadet Engineer; Appointed Principal Engineer in 1998; Appointed Area Manager in 2002; Appointed Transmission & Distribution Manager in 2004

### 4. Hassen Fakim, O.S.K.

Production Manager / Ag Secretary  
(up to November 2013)

Ag. Deputy General Manager / Ag Secretary  
(as from Dec 2013)

Age: 60

Qualifications: B.Sc (Hons.); DOSH

Experience: Joined CEB as Cadet Engineer in 1977; Appointed Principal Engineer in 1993; Appointed Production Manager in 2006; Ag. Secretary as from Nov 2010; Ag. Deputy General Manager as from Dec 2013

### 5. Darma Veragoo

Ag. Human Resources Manager

Age: 61

Qualifications: FCCA

Experience: Joined CEB in 1986  
1986-1990: Chief Internal Auditor/Financial Controller  
1990-1992: Human Resources Manager  
1992-2003: Chief Internal Auditor/Financial Controller  
2003-2006: Management Accountant  
Jan 2007-Mar 2008: Ag. Chief Financial Officer  
Mar 2008-Feb 2012: Chief Financial Officer  
Mar 2012-Nov 2012: Treasurer  
Ag. Human Resources Manager as from Dec 2012

**6. Jadoonundun Charitar**  
Chief Internal Auditor

Age: 64  
Qualifications: FCCA., MBA

Experience: Joined CEB in 1969 as Meter Reader;  
1984: Chief Internal Auditor/Financial Controller  
1985: Financial Manager  
2003 to-date: Chief Internal Auditor

**7. Jayram Luximon**  
Customer Services Manager

Age: 44  
Qualifications : DEUG-Sciences Economiques;  
Diplôme des Hautes Etudes Commerciales et Financières  
(ESC Pau, France)

Experience : Shop Manager Winners (IBL) 1994-1998 ;  
Marketing Manager, Consumer Health, IBL  
Pharmaceuticals 1998-2005; Appointed Customer  
Services Manager CEB in 2006

**8. Shamshir Mukoon**  
Corporate Planning & Research Manager

Age: 51  
Qualifications: B. Tech (Hons), MBA, CRPE, MIEM

Experience: Joined CEB in 1989 as Cadet Engineer  
1992-2002: Engineer  
2002-2007: Senior Engineer  
2007-2008: Principal Engineer (Generation Planning,  
New Projects & Power Station Operations)  
Appointed Corporate Planning & Research Manager in  
2008

**9. Chavan Dabeedin**  
Corporate Administration Manager

Age: 47  
Qualifications: B. Tech (Hons), MBA, MSc, EPSE Bath U.K,  
MIET, MIEEE, MIDGTE, CRPE

Experience: Joined CEB in Feb 1992 as Trainee Engineer;  
Appointed Engineer in Aug 1995; Appointed Senior  
Engineer in Sep 2002; Appointed Principal Engineer in  
Nov 2007; Appointed Corporate Administration Manager  
in Aug 2008; General Manager Nov 2008 – Nov 2010

**10. Shyam Abacousnac**  
Information Technology / MIS Manager

Age: 44  
Qualifications: BSc Computer Science; MSc Software  
Engineering

Experience: Research Officer, National Computer Board  
1997-2001; Systems-Analyst, Development Bank of  
Mauritius Ltd 2001-2002; IT Manager, State Trading  
Corporation 2002-2006; IT Manager, Wastewater  
Management Authority 2006-2009; Joined CEB as IT/MIS  
Manager in March 2009

**11. Vishwanath Jhummon**  
Non-Utility Generation Manager

Age: 61  
Qualifications: Bachelor in Technology in Electrical Engineering;  
PG Diploma in Electric Power Distribution Systems; MBA

Experience: Joined CEB in 1976 as Cadet Engineer; Appointed  
Senior Engineer in 1983; Appointed Principal Engineer in 2002;  
Appointed Corporate Administration Manager in 2009; Appointed  
Non-Utility Generation Manager in July 2012

**12. Pharad Kurreemun**  
Officer-in-Charge Supply Chain (up to September 2013)  
Acting Chief Financial Officer (as from October 2013)

Age: 52  
Qualifications: ACMA; CGMA

Experience: Joined CEB in 1985 as Temporary Clerical Assistant;  
Appointed Meter Reader in 1986; Appointed Auditor in 1993;  
Appointed Chief Salaries and Wages Officer in 2002; Appointed  
Administrative/Finance Officer in 2003; Appointed Accountant  
(Budget & Reporting) in 2005; Appointed Senior Accountant in  
2006; Acting Chief Financial Officer Mar 2011-Feb 2012; Officer  
in Charge Supply Chain Dec 2012- Sep 2013; Acting Chief  
Financial Officer as from Oct 2013

**13. Li Yun Fong Kin Cheong Patrick**  
Officer-in-Charge Finance Dept (up to September 2013)

Age: 57  
Qualifications: FCCA

Experience: Joined CEB in 1990 as Principal Accounts Asst.  
Appointed Accountant (Production Dept) in 2003  
2006-2008 : Supervising Officer, Internal Audit Dept  
2009-2010 : SAP Controller  
2011-Feb 2012 : Management Accountant Officer-in-Charge  
Finance Dept. Mar 2012- Sep 2013

**14. Rajden Chowdharry**  
Officer-in-Charge Supply Chain (as from October 2013)

Age: 54  
Qualifications: B. Tech (Mech), MBA, C Eng, AMIE, MIEM, MIDGTE

Experience: 1989-1991 Cadet Engineer; 1991-1992 Engineer;  
1992-2006 Station Superintendent; 2006-2013 Principal  
Engineer; Officer Supply Chain Department as from Oct 2013

**15. Ravin Nundlall**  
Ag. Production Manager (as from Dec 2013)

Age: 54  
Qualifications: B.E-Mech; MIEM; RPEM

Experience: May 86 to Nov 87-Trainee Engineer; Dec 87 to Nov  
89-Cadet Engineer; Dec 89 to Aug 93-Engineer;  
Sep 93 to Apl 2006-Senior Engineer; May 2006 to Nov 2013 -  
Principal Engineer; Ag. Production Manager  
as from Dec 2013

## Communication with Stakeholders

Open lines of communication are maintained to ensure transparency and optimal disclosure. Besides official press communiqués, regular meetings are held with the press to ensure that stakeholders and the public at large are kept informed of matters affecting the utility.

## Corporate Social Responsibility

The CEB recognises the need to be socially involved and supportive of the wider needs of the community, more specifically those of less fortunate citizens.

During the review period, a number of assistance schemes were maintained to promote access to electricity to low-income customers and support to those with financial difficulties. They included:

### *Low Voltage Network Extension Government Assistance Scheme*

This scheme provides assistance to needy households for the supply of electricity to their first and new residence. It is applicable to households whose income band is less than Rs 17,500.

A total of 95 projects were implemented during the year under review, including 9 in Rodrigues.

### *Social Tariff*

Special consideration is given to the social dimension of electricity consumption by households. In this respect, the CEB has in place a Social Tariff (Tariff 110A) which is meant for needy customers. Under this scheme, customers whose monthly consumption does not exceed 75 kWh benefit from concessionary electricity rates.

## Statement of Directors' Responsibilities

The responsibility to prepare financial statements, in accordance with applicable accounting standards, rests upon the Directors and, accordingly, the financial statements for the year ending 31 December 2013 have been prepared in compliance with the International Public Sector Accounting Standards (IPSAS). Appropriate accounting policies have been selected and applied consistently, and reasonable and prudent judgements have been made, as and when required. Adequate accounting records have been kept and an effective internal control system has been maintained to ensure that all transactions have effectively occurred and have been captured in a reliable information system.

To that effect, the Directors have recruited capable and trained employees to ensure adequate segregation of duties so that no process is carried out from start to end by one and the same person. Furthermore, approval of documents rests upon personnel with appropriate level of authority and integrity. Assets have also been safeguarded from loss, misuse, and fraud. Finally, the Internal Audit Department enhances the internal control system, detecting errors and acting as a deterrent against fraud.

## Internal Control

Management is charged with the responsibility of establishing an effective internal control environment, including adequate internal financial controls. In addition, operational control systems are developed and maintained on an on-going basis to provide reasonable assurance to the Board regarding:

- The integrity and reliability of the financial statements;
- The safeguarding of the Organisation's assets;
- The economic and efficient use of resources;
- The verification of the accomplishment of established goals and objectives;
- The detection and minimisation of fraud, potential liability, loss and material mis-statement; and
- Compliance with applicable legislation and regulations.

These controls are contained in organisational policies and procedures, structures and approval frameworks, and they provide direction, establish accountability and ensure adequate segregation of duties. They each contain self-monitoring mechanisms.

The Board ensures that an effective internal control framework has been established. The Internal Audit function monitors the operation of the internal control systems and reports findings and recommendations for improvement to Management and the Audit Committee.

The Audit and Risk Committee monitors and evaluates the duties and responsibilities of Management and of Internal and External Audit to ensure that all major issues reported have been satisfactorily resolved. Finally, the Audit Committee reports all important matters to the Board.

Over the years, the CEB has regularly upgraded its organisational structure and accounting system so as to produce timely financial statements that present a true and fair view of its state of affairs. An effective internal control system has been developed in all spheres of activities and processes and all transactions are accounted for and recorded in an integrated accounting system.

## Processes

The day-to-day operational activities are performed throughout different organisational processes, which are subject to rules and regulations. The CEB has introduced these rules and regulations over a long period of time in an objective manner to detect and prevent malpractices and corruption. Some of the processes are examined below:

### Accounts Payable

Management is committed to ascertain that all purchases, or services rendered to the CEB are settled in accordance with contractual terms and are adequately recorded. It also ensures that operations in the Accounts Payable Section are as transparent as possible and that necessary internal control is inherent in the system to prevent fraud and corruption. The control framework regarding Accounts Payable is summarised hereunder.

Framework	Details
Risk Management	<ul style="list-style-type: none"> <li>• Invoices can be processed only if goods or services have been received and are in accordance with contractual terms as evidenced by authorized persons</li> <li>• Physical access to Accounts Payable Section is restricted to authorized personnel</li> <li>• Safe custody of bank cheques</li> <li>• All cheques bear 'A/C PAYEE ONLY'</li> <li>• All payments are supported by original documents</li> <li>• All documents are stamped 'PAID' and filed after payments</li> </ul>
Transparency	<ul style="list-style-type: none"> <li>• General rules in connection with payment procedures are laid down in General Staff Instruction Circulars</li> <li>• Payment terms are clearly specified on contracts/order forms</li> <li>• Audit trail of all payments are kept</li> </ul>
Accountability	<ul style="list-style-type: none"> <li>• All payments are approved by duly authorized persons</li> <li>• Access to capture invoices and process payments are restricted</li> <li>• Cheques and bank transfers are signed by Top Management only</li> <li>• All payments are accounted under appropriate General Ledger Code</li> </ul>
Integrity Management	<ul style="list-style-type: none"> <li>• Information system records all users who accede to any Module on SAP</li> <li>• Payments, once processed, cannot be captured in the system again</li> <li>• Segregation of duties in the Accounts Payable Section</li> </ul>

### Supply Chain Management (SCM)

The SCM function at the CEB has a strategic approach to procurement, and the focus is on meeting business-related outcomes, while ensuring that basic principles of procurement best practices such as Economy, Efficiency, Fairness, Reliability, Transparency, Accountability and Ethical Standards are maintained. To this end, four core functions, namely Procurement, Contract Management, Transport and Warehousing, and Supplier Management have been established. The internal processes and procedures, which were already well developed, have been aligned with the provisions of the Public Procurement Act.

The functions highlighted above have been interrelated to ensure a reliable flow of goods and services and information along the value chain, as well as within the whole supply chain of the CEB. However, appropriate separation of responsibilities has been established in order to maintain confidentiality and transparency in the system.

### Bidding Exercise

The bidding exercise at the CEB is established in a structured way so as to ensure compliance with existing procurement regulations and maintain confidentiality and transparency in the process. A systematic approach is adopted as soon as a procurement need arises until bids are received and opened in public. Interface between bidders and the CEB is made through the Chairman of the Tender Committee who has the sole prerogative to communicate and instruct bidders on matters pertaining to the bidding process.

### Evaluation of Bids and Approval of Procurement Contracts

As soon as bids are received and registered by the Tender Committee, all bids are secured until the setting up of an Evaluation Committee composed of at least three members. The Evaluation Committee evaluates the bids according to pre-determined evaluation criteria and in all independence. An appropriate internal control system has been set up to ensure that all procurements are supported by approval at relevant levels so that no commitment is taken by any officer on behalf of the CEB until approval has been obtained.

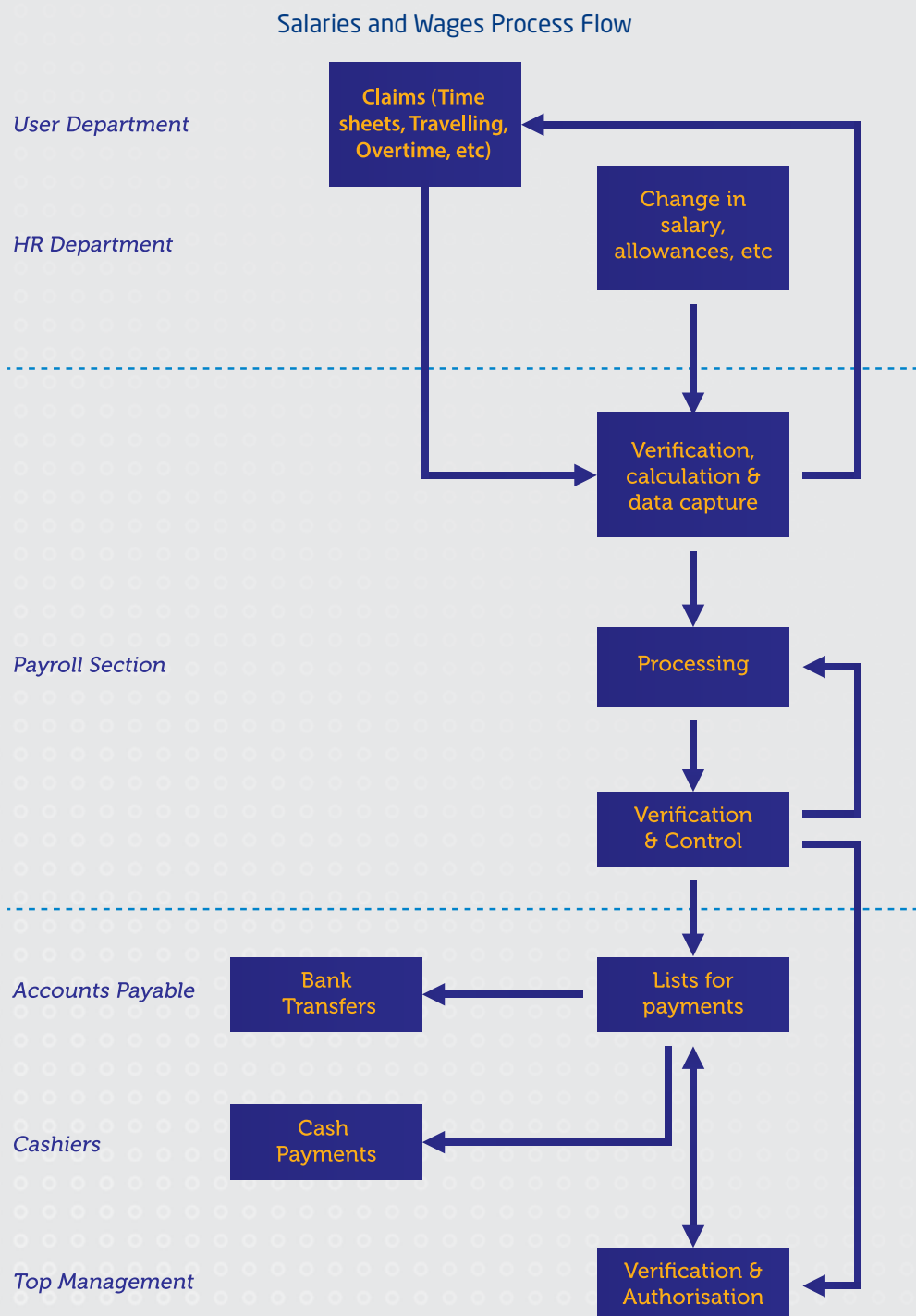


## Meter Reading, Billing, Cash Collection and Debtors Management

The principle of separation of functions and responsibilities is also maintained with regard to meter reading, billing, revenue management, and revenue protection. This ensures that officers who issue bills do not collect payments or investigate into suspected cases of illegal abstraction of electricity or under-billing.

## Salaries and Wages

There is a well-defined payroll process, with adequate internal controls, in accordance with the principle of check and balances. The process flow is shown below:



## People

The Board acknowledges that organisational objectives can only be achieved through its employees. Accordingly, a lot of emphasis is placed upon the human capital by providing a healthy and safe working environment and adopting an equitable and fair approach towards employees' remuneration and benefits.

## Leaves

Employees are encouraged to proceed on vacation leave, whether locally or abroad. The general rule is that every employee should enjoy at least 50% of her/his yearly vacation leave entitlement which, otherwise, would be forfeited. Not only does this scheme ensure that employees get a deserved rest during the year, with increased efficiency and output thereafter, but it also helps the organisation in preventing and detecting corrupt practices during the employees' absence.

## Conflict of Interest

The internal rules provide that, where an employee, in the course of the discharge of his duties, suspects or should reasonably suspect that he may find himself in a conflict of interest, he shall disclose his suspicion to his immediate superior who shall note the declaration in writing and issue such direction as he feels proper.

Such disclosures are made by members of panels set up to evaluate tenders and by members of the Tender Committee.

## Code of Ethics / Conduct

The Collective Agreement between the Board and the Unions on salaries and conditions of service contains a revised Code of Conduct which should be adhered to by the personnel. The Code of Conduct was reviewed in consultation with ICAC.

By setting out the minimum standards of ethical conduct expected from employees, the Code of Conduct aims at ensuring that their conduct and behaviour are professional and lawful at all times. The dissemination of the Code of Conduct has been done through circulars and e-mails and is also readily available on the Organisation's intranet. New recruits are made aware of its content during their induction programme.

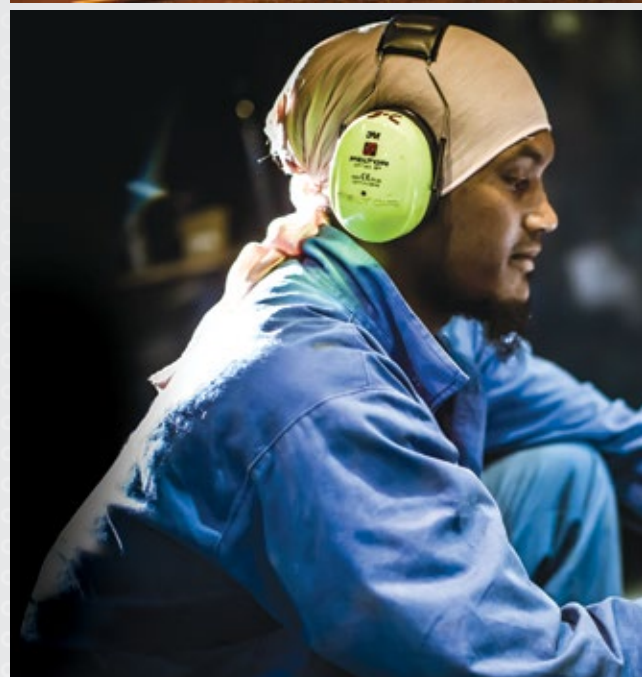
Employees at different levels of the Organisation hierarchy are required to abide by the Code of Conduct and report to their respective Heads of Department or immediate superiors, difficulties encountered in its interpretation and understanding. Non-compliance can end up with sanctions depending on the seriousness of the breach; accordingly, disciplinary proceedings may be initiated.

## Confidentiality and Secrecy

The affairs of the CEB are conducted in a transparent manner, with the timely preparation of financial statements and annual report. In addition, there are certain rules that employees have to adopt in relation to disclosure of information regarding the CEB.

## Disciplinary Procedures

There is a clear and defined policy at the CEB regarding disciplinary procedures which act as a deterrent to malpractices and wrongful conduct.





## Technology

The CEB has adopted an IT Governance Framework, referred to as COBIT (Control Objectives for Information and Related Technology), to implement, operate and maintain its IT infrastructure and applications.

COBIT provides the CEB with a set of clearly-defined processes that integrates good practices grouped into four domains, namely:

- Planning and organising;
- Acquiring and implementing;
- Delivering and supporting; and
- Monitoring of IT performance.

It ensures that IT resources are properly and optimally used to provide the CEB with the information that it needs in order to achieve its business objectives, while minimizing the risks of fraud, corruption and misuse of resources.

While providing its employees with up-to-date IT facilities and tools to enable them to operate more efficiently and effectively, the CEB has adopted a number of policies and implemented measures to ensure an ethical and lawful use of the IT infrastructure.

However, with the rapidly-changing nature of electronic media and services, no policy would be able to cover every possible situation. Therefore, the policies adopted at the CEB express the general principles and define the boundaries for the “acceptable use” of the information technology infrastructure and applications of the CEB.

## Voice Recording

In very sensitive and high risk areas, dealings between CEB officers and Financial Institutions are recorded with a view to mitigating any risk of collusion.

## Electronic Meter-Reading Equipment

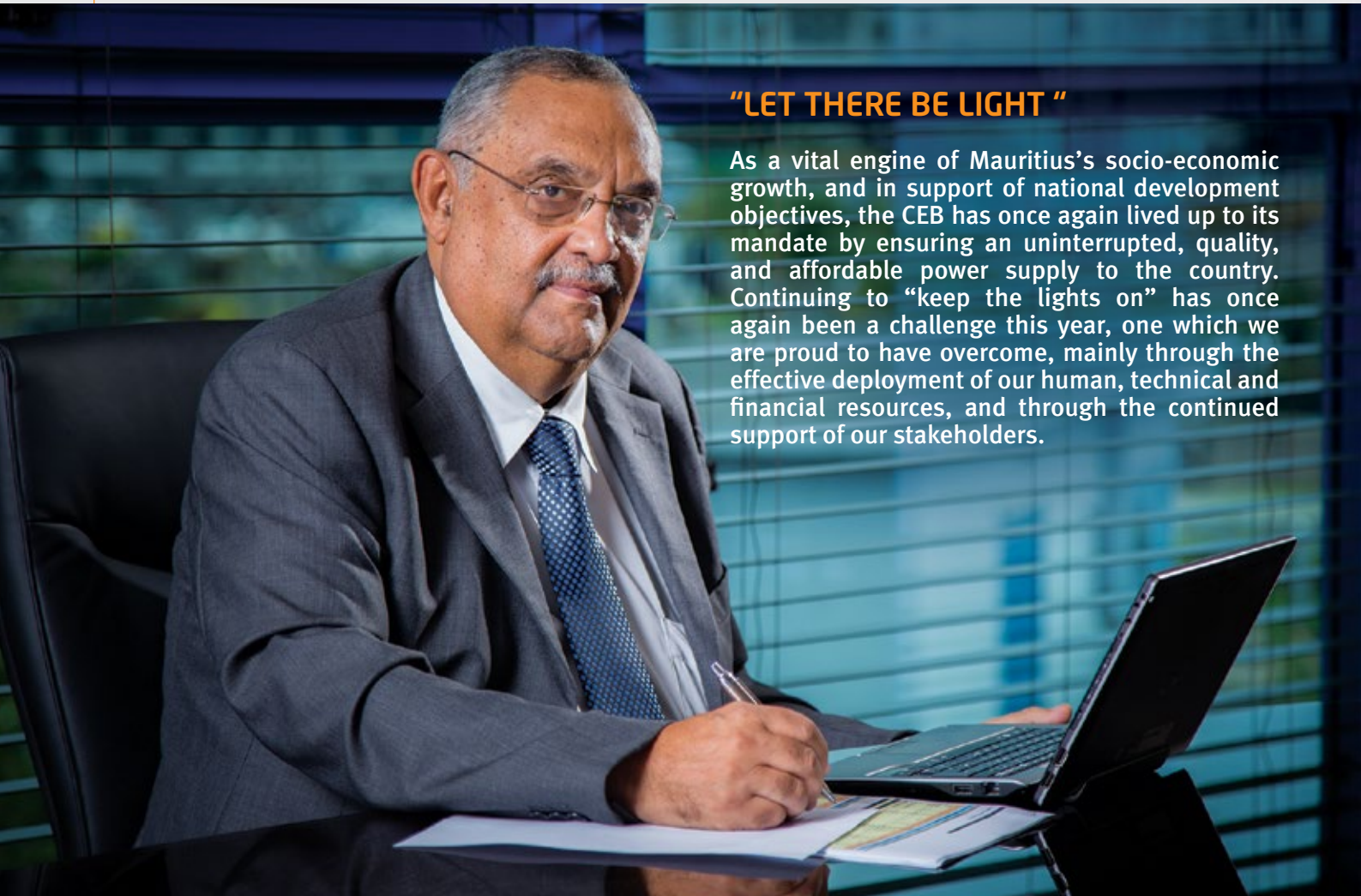
The CEB has witnessed a significant increase in illegal abstraction of electricity involving substantial loss of revenue. Accordingly, it has invested in the latest technology as regards metering equipment, which have an in-built system to detect and reveal any tampering thereof. More importantly, all movement of meters, both used and unused, are strictly controlled to minimise any risk of misuse.

## Outlook

As the business world continues to recover from the recent recession and attempts to regain its momentum, we are still learning about how lapses in corporate governance contributed to the failures and losses of many global companies. It is important to learn from these experiences and to realise that firms need to take pre-emptive actions and revisit their existing governance practices, so as to identify where any weaknesses exist and what improvements are necessary.

In the face of these challenges, the CEB is conscious of the need to further improve its governance processes and principles so that they are in line with best practices and responsive to the prevailing business environment. The utility is equally aware of the need to re-examine and reinforce its risk management structures. These are being addressed in the short-to-medium term perspective in the context of various reform programmes.

## GENERAL MANAGER'S REVIEW



### "LET THERE BE LIGHT "

As a vital engine of Mauritius's socio-economic growth, and in support of national development objectives, the CEB has once again lived up to its mandate by ensuring an uninterrupted, quality, and affordable power supply to the country. Continuing to "keep the lights on" has once again been a challenge this year, one which we are proud to have overcome, mainly through the effective deployment of our human, technical and financial resources, and through the continued support of our stakeholders.

### Strategy Going Forward

The close of the year 2012 marked the end of CEB's first Integrated Electricity Plan (IEP), covering period 2002-2012. This strategic master plan was centred on guiding Mauritius towards a more stable electricity future, and at supporting the continued socio-economic development of the nation. It is gratifying to note that during the above-mentioned decade, the CEB has, by and large, implemented the various strategies and action plans that were enumerated in the IEP, while taking on board the various demands of the ever changing business environment.

As a logical sequence, a new IEP, covering period 2013-2022, was released in February 2013. It gives an overview of CEB's broad strategies to address the future energy challenges of Mauritius. The defined objectives are to carefully plan the allocation of the country's power systems resources, to effectively balance the supply and demand of electricity for the coming decade through least-cost investment, and to diligently meet emerging challenges such as demand-side management, compliance with environmental norms, and increasing the share of renewable energy.

It is worth mentioning that the IEP 2013-2022 plan is fully aligned with and puts the CEB at the forefront of the country's broader energy policy. Uppermost in our minds as we forge

ahead with implementation of our ten-year plan will be the huge responsibility the CEB has, and the significant contribution energy can and must make, towards fulfilment of the nation's socio-economic objectives.

### Tapping into the Renewable Energy Potential

The CEB fully recognises the importance to society of environmentally sustainable operations. In this respect, much emphasis is put on the exploitation of renewable energy sources which, in 2013, accounted for some 17% of the total electricity generation. In keeping with the Government's long term strategy, the target is to progressively increase the share of renewables to attain 35% of the overall generation mix by 2025.

The major initiatives undertaken in the renewable energy domain in 2013 included the implementation of a 15 MW Solar PV farm by Sarako, the finalisation of Energy Supply and Purchase Agreements with selected promoters for the setting up of 10 MW grid-connected photovoltaic farms, and the commissioning of a study for the identification of potential sites for mini/micro hydro power plants. In a similar vein, the Small Scale Distributed Generation (SSDG) project really took off and, by the close of the year, some 232 units, equivalent to a capacity of 1958 kW, were already in service.

I wish to highlight that some of our critics usually take us to task for not going far enough with the exploitation of renewable sources for the generation of electricity. It is vital for the public to realise that a small island state, like ours, cannot, from one day to the next, decide that renewable energy will replace fossil fuels. Given the intermittent nature of renewable energy sources and in order to maintain the stability of our grid, we shall, for a long time to come, continue to depend for the most part on fossil fuels for electricity generation. This is, alas, an inescapable fact, but we must do our very best to reduce the latter's negative effects on the environment.

### Meeting the Supply Challenge

While focusing on the promotion of renewable energy sources, a prime concern of the CEB is also to ensure the availability of electricity supply in the short, medium and long term.

Accordingly, generation capacity expansion and network infrastructure development take centre stage, and the CEB has to either erect new power stations or enter into new power purchase agreements in a timely manner in order to balance the expected demand and supply electricity scenarios. It is worth noting here that wherever commissioned around the globe, power stations are not only expensive but also slow to build; even excluding all the various impact assessments and analyses that must come beforehand, lead times for power plants usually vary between two to five years, depending on type.

During the year under review, much emphasis was laid on the redevelopment of the Saint Louis Power Station, as a contingency plan to respond to the significant delay in the implementation of the CT Power 110 MW coal-power project. The proposed re-development plan consists of the retirement of six old and less-efficient Pielstick engines, and the subsequent commissioning of new generation capacity to the tune of 60 MW. It is to be noted that the Saint Louis Power Station has all the required amenities for expansion of the existing capacity.

### Financial Performance

The financial health of the CEB has always been of utmost importance. As the provider of an essential service, we are well aware of how important it is for the utility to be financially sound and capable of supporting itself. Our aim is to achieve a proper balance between providing a reliable and affordable service, and consolidating our financial position.

At the close of financial year 2013, the CEB delivered yet another solid financial performance with a surplus of Rs 975 million, as compared to the restated surplus of Rs 96.8 million for 2012. As regards our liquidity position, there was a marked improvement, with a positive balance of some Rs 396 million as at 31 December 2013 as against an overdrawn balance of around Rs 928 million as at 31 December 2012.

The good financial results for the year under review were mainly due to favourable macro-economic conditions prevailing on the international market, in particular regarding fuel oil prices and coal prices.

It is expected that, over the next few years, the CEB will continue to benefit from lower commodity prices and, consequently, consolidate its financial position. This will certainly help us to raise the requisite funding for upcoming generation expansion projects, which have to be implemented on a priority basis. However, in view of the magnitude of funds needed, we will have to, as well, rely on external sources for the required investments.

### Transmission and Distribution System Performance

Electricity cannot be stored on a large scale. It must always be available, in real time, regardless of fluctuations in demand. This balance between production levels and satisfying demand, which needs to be continually renewed, relies on the transmission and distribution network, which constitutes the backbone of CEB'S power system.

Transmission and distribution operations were kept at high levels of technical excellence during 2013 through timely maintenance, continuous upgrading of the infrastructure, and proactive management. No total system blackout was experienced during the year. The peak demand reached 441.13 MW and was recorded on 17 December, representing an increase of nearly 11 MW over the figure for 2012. As for the overall system losses, they were contained to 7.1 %, which was a remarkable performance and well within international standards.

Various major projects were initiated or implemented during 2013 to improve the quality and reliability of supply. These included the construction of 66 kV lines in different parts of the island, as well as the refurbishment of existing 66 kV lines. In addition, construction works at a number of new major 66 kV/22 kV substations were initiated or progressed satisfactorily namely, at Case Noyale, Jinfei, La Tour Koenig, and Fort Victoria.

### Customer Focus

Customer service and satisfaction remain top priorities for the CEB, to be pursued at all levels: from face-to-face interaction with individual clients up through the basic architecture of a reliable and responsive power system meeting the nation's needs.

Building on the initiatives undertaken over the past few years, several projects were implemented during the period under review in order to enhance our customer service delivery and improve our relationships with the growing customer base. Further progress were recorded in such key metrics as service response times and service interruption periods.

Other significant improvements brought about in the customer service field in 2013 included the establishment of additional payment channels, the extension of operating hours of our main Customer Service Centres, and the implementation of Automatic Meter Reading.

In a similar vein, we remained very active in providing support and special attention to our more “vulnerable” customers. Electricity is an essential commodity and we firmly believe that providing access to those who are “energy poor” is an integral part of our corporate social responsibility. In keeping with this philosophy, the CEB, in collaboration with the Ministry of Social Integration and Economic Empowerment, also came forward with the Prepaid Metering System during 2013. This pilot scheme is targeted at helping vulnerable groups manage their monthly energy consumption and prevent the accumulation of unpaid energy bills.

### Valuing our People

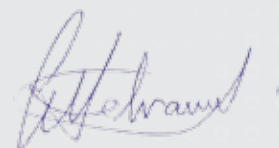
In an era where human capital is regarded as the most important asset of any corporation, the CEB is proud of its longstanding record as a leading employer in the country. I would like to extend my gratitude to our dedicated team of employees who recommit themselves daily to the path we have embarked on together, and whose tireless efforts ensure that electricity is available to the nation round the clock.

Understanding that people are our most important asset, we will pursue our efforts to attract and retain the talents we require to carry out the very complex and far-ranging tasks that comprise our mandate, while at the same time promoting employee motivation through appropriate incentive and reward schemes. We will also continue to invest in human resource development in order to maintain high quality standards and deliver to the expectations of customers.

### The Way Forward

Going forward, we have to be mindful that the CEB will continue to be a key contributor towards the achievement of national goals and in helping Mauritius sustain its path to prosperity. Our competitiveness as a nation, which is ultimately our most important variable in creating sustainable jobs, exports, and growth, will always depend on the availability and pricing of electricity.

We are confident that, through the combined efforts of our employees and with the continued support of all our stakeholders, we are well equipped to take on whatever challenges and opportunities lying ahead. All in all, we are positive that we will succeed in fulfilling our public service duties and act as a key player in the renewal of economic activity.



**Gérard Hébrard, O.B.E.**  
*General Manager*

## KEY FACTS 2013

<b>Total Assets (Rs M)</b>	<b>26,709</b>
<b>Surplus (Rs M)</b>	<b>975</b>
<b>Net Cash from Operating Activities (Rs M)</b>	<b>2,547</b>
<b>Capital Expenditure (Rs M)</b>	<b>876</b>
<b>Employees (number)</b>	<b>2,012</b>
<b>Customers (number)</b>	<b>435,311</b>
<b>Electricity Sales (MWh)</b>	<b>2,384,134</b>
<b>Nominal Capacity including IPPs (MW)</b>	<b>775.78</b>
<b>Effective Capacity including IPPs (MW)</b>	<b>684.04</b>
<b>Peak Demand (MW)</b>	<b>441.13</b>
<b>Power Lines (all voltages) (km)</b>	<b>9,642</b>



*REVIEW OF  
OPERATIONS*





## PRODUCTION

The bulk of the energy production for Mauritius comes from fossil fuels, namely fuel oil and coal. The CEB uses heavy fuel oil for its base load plants and kerosene for its gas turbines. The plants of Independent Power Producers (IPPs) are operated mainly as co-generation facilities, with bagasse as fuel source during the crop season, and coal during the off-crop season. The CEB also produces energy from its hydro facilities, but in a relatively smaller proportion.

During 2013, the share of CEB's production totalled 44.26 % of the total energy generated, with the remaining 55.74 % being supplied by Independent Power Producers (IPPs).

### Demand Pattern (Energy and Power)

The total energy generated was 2,576.9 GWh representing an increase of 3.26 % over last year. The CEB plants generated nearly 1,140.6 GWh and purchases were nearly 1,436.3 GWh. The maximum power demand was 441.13 MW and was recorded on 17 December at 14 00 hrs, representing an increase of 10.89 MW (2.5 %) over the maximum demand of 2012 (430.24 MW).

The various outputs are tabulated below:

Sector	Energy Source	Output (GWh)	%
Hydro	Water	94.84	3.68
Thermal	Fuel Oil & JET A1	1,045.8	40.58
Purchase (CPP)	Bagasse	5.03	0.19
Purchase (IPP)	Coal & Bagasse	1,408.6	54.67
Purchase (landfill)	Landfill gas	20.01	0.78
Purchase (SSDG & MSDG)	Renewable	2.64	0.10
<b>Total</b>		<b>2,576.9</b>	<b>100</b>

### Operation and Maintenance

Regular maintenance programmes were carried out, with the aim of sustaining and improving current and future reliability and availability of plants. Another objective was to meet the challenges set by obsolescence and the ageing of critical plant items.

### Thermal

#### Fort George Power Station

The total energy generated was 627.8 GWh, i.e. 24.4 % of total energy generated.

The table below shows the cumulative running hours of each unit as at 31 December 2013:

Unit	Running Hours	
	During year 2013	Since commissioning
G1	6,650	146,331
G2	5,659	145,367
G3	7,408	123,210
G4	7,120	103,215
G5	7,183	100,049

Unscheduled outages of Unit 1 and Unit 2 were required. This was due to cracks noticed on the A-frame of both engines in September. The cracks were more pronounced on Unit 2 and the engine was not available for the months of October and November. Wartsila Switzerland was contacted and both engines underwent major repair works. A special provision of Rs 35 M had to be made in the 2013 capital budget after the reallocation of funds from underspent capital projects. Both Sulzer engines were back to normal operation as from 10 December and Wartsila Switzerland has removed the loading restriction imposed on these engines.

Units 3, 4 and 5 clocked an average of 7,200 running hours each. No major problem was encountered on Unit 3. Hyundai (Korea) attended to power station in July 2013 and the cracks on bedplate of Units 4 and 5 were repaired.

Scheduled maintenance was successfully carried out on all units.

The capital projects that were successfully implemented during 2013 were:

- Replacement of critical parts on Units 1, 2 and 3;
- Replacement of corroded fire crowns on HFO Bulk Storage Tanks A, B and C; and
- Refurbishment of superheated water and HFO pipelines from bulk storage tanks to service tanks.

### Fort Victoria Power Station

The total energy produced was 258.8 GWh, i.e. 10.04% of the total energy generated.

The Wartsila engines generated 245.5 GWh, and the two MAN B&W engines produced 13.3 GWh. The table below shows the cumulative running hours of each unit at Fort Victoria Power Station during 2013.

Unit	Running Hours	
	During year 2013	Since commissioning
Wartsila G1	2,415	13,078
Wartsila G2	4,319	15,445
Wartsila G3	5,130	7,783
Wartsila G4	3,673	6,321
Wartsila G5	3,022	5,590
Wartsila G6	1,916	4,273
MAN B&W G11	595	100,613
MAN B&W G12	1,113	86,087

A total of 12,000 hours scheduled maintenance was carried out on both G1 and G2 and no abnormality was detected. In a similar manner, 6,000 hours of scheduled maintenance were devoted to Units G3 & G4, while 4,000 hours of scheduled maintenance were carried out on Units G5 & G6.

The MAN B&W Engine G11 was operated for 595 hours during the year and no major problem was encountered on this engine.

The alternator for MAN B&W Engine G12 suffered a major breakdown in June 2009 due to damage to three rotor poles and stator winding. The repair works were completed by BWSC and the alternator unit was successfully commissioned on 6 February 2013. At the close of 2013, Unit G12 clocked a total of 1,113 hours and no abnormality has been noted with this unit.

The design and construction of a 5,000 m<sup>3</sup> HFO tank at Fort William Depot, which started in 2012, was successfully commissioned and put in service in January 2013.

Another major capital project in the pipeline was the construction of a 6 x 6,500 m<sup>3</sup> HFO tank farm at Les Grandes Salines. A pre-qualification exercise was undertaken through the Central Procurement Board (CPB) and four bidders were shortlisted for tendering for this project. It was estimated that the tender document would be finalised for launching through the CPB in early 2014.





### **Saint Louis Power Station**

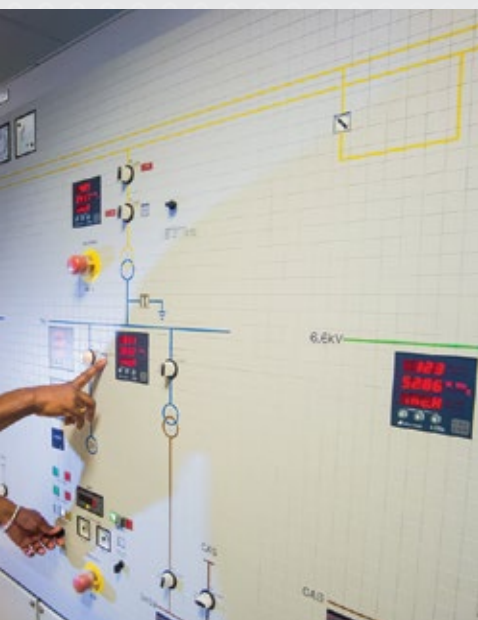
The total energy produced was 157.5 GWh, i.e. 6.11 % of the total energy generated. The Wartsila units generated 126 GWh and the Pielstick engines generated 31.50 GWh.

The Pielstick generating sets (Units 1 to 5), though having reached the end of their serviceable life, were, on average, operated for around 1,200 hours per unit for peak looping.

The Wartsila units performed satisfactorily, clocking an annual average of 3,660 operating hours each. As scheduled, a major overhaul was carried out on Unit 9 from 2 May to 12 July 2013.

The major capital projects implemented at Saint Louis Power Station during 2013 were the extension and rehabilitation of the administration buildings and the relocation of the standby generating set.

It is to be noted that the Board has approved the re-development of the Saint Louis Power Station on a fast track basis. This project consists of the installation of four medium-speed diesel engines of 15 MW each. The CEB was granted an EIA license in August 2013 for this project from the relevant authorities. Following an RFP exercise, Mott McDonald Ltd was appointed as consultant for the preparation of tender documents and the site supervision.



### **Nicolay Power Station**

The three Gas Turbine units have clocked an average of 112 operating hours for the year 2013, generating 1.67 GWh. This is equivalent to 0.06 % of the total energy generated, the lowest for the last ten years.

As part of a predictive maintenance plan, Vibration Signature Analysis was carried out on all units to verify alignment and balance characteristics of the turbine and generator rotor. A borescopic inspection was also carried out on all units in order to ascertain the healthiness of hot gas path and combustion components.

Major overhaul of the Accessory and Load Gearbox, inspection of Alternator, and train realignment were also carried out on Gas Turbine No 3 during the review period.

Another major project that was completed at Nicolay Power Station in 2013 was the Rehabilitation of JET A-1 Fuel Tanks No 1 and 2.



### **Hydro**

The generation from Hydro Power Stations in 2013 amounted to 94.8 GWh. Scheduled maintenance of all Hydro Power Stations was successfully carried out during the year.

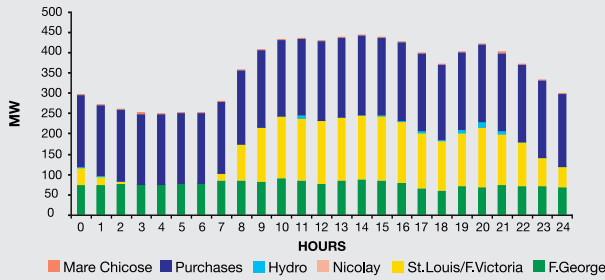
The feasibility study for increasing the capacity of Sans Souci Dam was carried out by SMEC and its final report was received around mid-January. The refurbishment of the Dam Monitoring Instrumentation was successfully carried out in August.

The construction works for Midlands Dam micro-hydro project with a capacity of 350 kW, which started in February 2012, were completed and the power station was commissioned in March 2013.

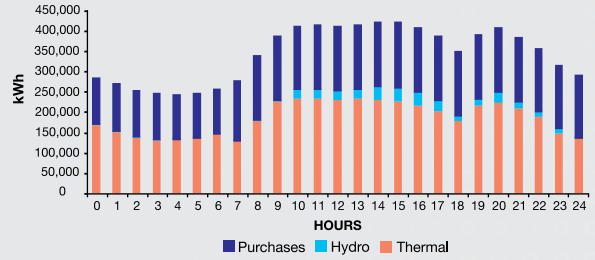
The upgrading of the governor system on both Unit G1 and Unit G2 at Champagne Power Station was completed and those units were commissioned in October and December respectively.

The other capital projects which were completed during 2013 included the installation of new 6.6 kV GCB at Champagne Power Station, and the installation of CCTV cameras at Ferney Power Station.

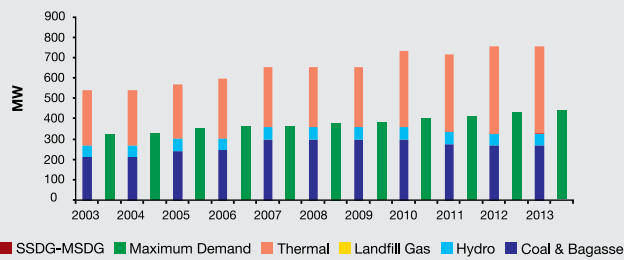
**Highest Maximum Demand 441.13 MW - 17 Dec 2013 at 14.00 hrs**



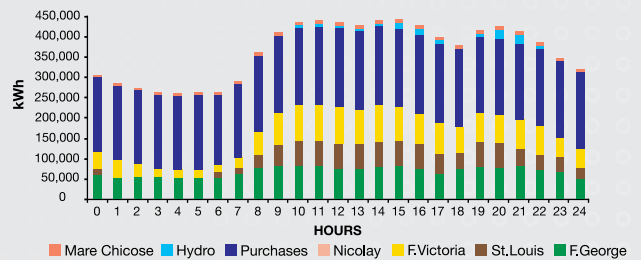
**Highest Thermal Production 4,460,642 kWh on 23 January 2013**



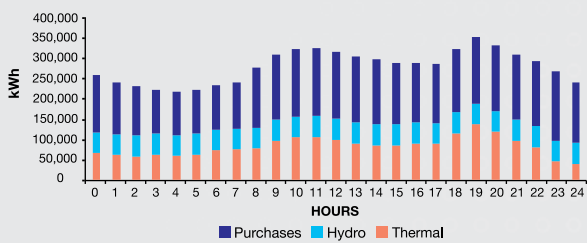
**Installed Capacity and Maximum Demand 2003-2013**



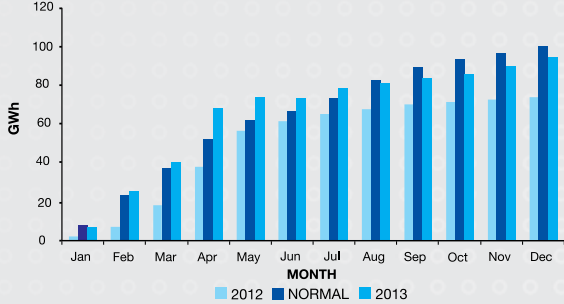
**Maximum Units Generated 8,842,789 kWh on 20 December 2013**



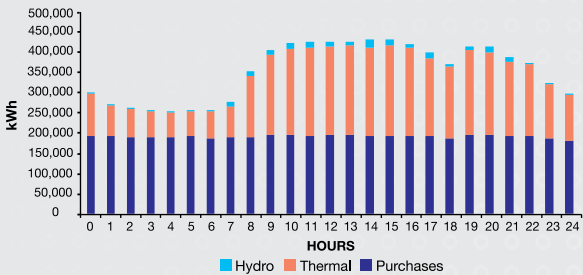
**Highest Hydro Production 1,260,831 kWh on 20 April 2013**



**Cummulative Hydro Production 2013**



**Highest Purchases 4,896,087 kWh on 10 December 2013**



## Energy Purchases

The total energy purchases for the year from Independent Power Producers (IPPs) and Continuous Power Producers (CPPs) amounted to 1,436.29 GWh.

Overall, the IPPs and CPPs accounted for 55.74% of the total energy sent out to the grid. The total amount of energy sent out from Bagasse and Coal was 346.49 GWh and 1,067.15 GWh respectively. The total amount of energy sent out from Landfill Gas was 20.01 GWh.

Only one CPP operated during the crop season 2013, namely Médine Limited. It is to be noted that Médine Limited has notified the CEB of the non-renewal of its Power Purchase Agreement (PPA) for additional terms. Thus, the PPA shall expire on 31 December 2014. Sotravic Ltée, which generates electrical energy from landfill gas, started commercial operation in November 2011 with two gas engines of 1 MW each. Following the commissioning of the 3<sup>rd</sup> gas engine, the Facility Commercial Operation Date was declared on 6 February 2013 and the third engine started exporting to the grid from 14 February 2013.

The CEB signed an Energy Supply and Purchase Agreement (ESPA) with Sarako PVP Co. Ltd. (SPCL) on 21 May 2013 in respect of a Solar Farm at Bambous. The Solar Farm shall have a maximum installed capacity of 15 MW. SPCL has already provided the Development Security and obtained its EIA License. The pre-commissioning tests have already started and the Solar Farm is scheduled to be commissioned in February 2014.

Consortium Suzlon-Padgreen Co. Ltd., which signed an ESPA with the CEB in August 2012 in respect of the Curepipe Point Wind Farm of 29.4 MW capacity, obtained its EIA License in June 2013. The commissioning of the wind farm has been rescheduled for 2015 instead of 2014 on account of delays in finalising the site.

## Small Scale Distributed Generation (SSDG) Scheme

In line with the *Maurice Ile Durable* concept and with a view to curtailing the country's dependency on fossil fuels, and eventually reducing the emission of greenhouse gases, the Government and the CEB came forward, in 2010, with a project to enable Small Independent Power Producers (SIPPs) to generate electricity from renewable sources of energy such as the sun, wind and water. These SIPPs produce electricity via Small Scale Distributed Generation (SSDG), primarily for their own consumption and export any surplus energy to the CEB grid for which they are paid. To allow connection of the SSDGs to the CEB grid, a Grid Code was developed along with appropriate Feed-in-Tariffs (FIT).

In December 2010, the first phase of the SSDG project was launched with a total capacity of 2 MW out of which 1 MW was reserved for Residential customers and 1 MW for Commercial and Industrial Customers. This project catered for installations with a capacity from 1 kW to 50 kW to be connected to the low voltage network. During this first phase, applications were received for more than 2 MW. Due to the growing demand for the SSDG project, a second phase was launched in December 2011 for 1 MW. This time, 100 kW was reserved exclusively for Rodrigues, while the remaining 900 kW was allocated to Mauritius for Residential, Commercial and Industrial Customers. Besides the SSDG scheme, a new scheme called PECR Scheme was launched for 2 MW which was reserved exclusively for Public, Educational, Charitable and Religious institutions. Under this Scheme, all the surplus energy exported is being paid at the CEB's marginal cost of production.

As at December 2013, the number of SSDGs commissioned and their equivalent capacity, together with the amount disbursed for the energy exported were as follows:

Scheme	No. of SSDG Commissioned (units)	Capacity (kW)	Amount Disbursed for Exported Energy (Rs)
FIT (Mauritius)	208	1,724	21,117,770
FIT (Rodrigues)	10	56.5	58,215
PECR	14	177.7	56,088
<b>TOTAL</b>	<b>232</b>	<b>1,958.2</b>	<b>21,232,073</b>

## PLANT CAPACITIES, UNITS GENERATED AND EXPORTED: YEAR 2013

	Plant Capacity (MW)	Effective Capacity (MW)	Units Generated (kWh)	% Units Generated	Units Exported (kWh)
<b>CEB - HYDRO</b>					
1. Champagne	30.00	28.00	36,046,500	1.40 %	35,787,680
2. Ferney	10.00	10.00	29,155,540	1.13%	29,066,440
3. Tamarid Falls	11.70	9.50	12,221,600	0.47 %	12,138,170
4. Magenta	0.94	0.90	1,878,650	0.07%	1,878,650
5. Le Val	4.00	4.00	6,978,996	0.27%	6,927,507
6. Cascade Cécile	1.00	1.00	2,876,436	0.11%	2,853,205
7. Réduit	1.20	1.00	1,721,574	0.07%	1,705,068
8. La Ferme	1.20	1.20	2,056,635	0.08%	2,040,358
9. La Nicolière F.C	0.35	0.35	730,908	0.03%	727,405
10. Midlands	0.35	0.35	1,777,957	0.05%	1,176,203
<b>TOTAL HYDRO (A)</b>	<b>60.74</b>	<b>56.30</b>	<b>94,835,796</b>	<b>3.68%</b>	<b>94,300,686</b>
<b>CEB - THERMAL</b>					
1. St. Louis	100.90	72.60	157,557,725	6.12 %	150,972,064
2. Fort Victoria	109.60	107.00	258,807,783	10.04 %	253,760,455
3. Nicolay	78.40	75.00	1,668,300	0.06%	1,258,533
4. Fort George	138.00	134.00	627,770,800	24.36%	600,929,311
<b>TOTAL THERMAL (B)</b>	<b>426.90</b>	<b>388.60</b>	<b>1,045,804,608</b>	<b>40.58%</b>	<b>1,006,920,363</b>
<b>TOTAL CEB</b>	<b>487.64</b>	<b>444.90</b>	<b>1,140,640,404</b>	<b>44.26%</b>	<b>1,101,221,049</b>
<b>IPPs - PURCHASES</b>					
1. CTSAV	90.00	74.00	493,947,801	19.17%	493,947,801
2. CEL – Beau Champ	28.40	22.00	122,446,829	4.75%	122,446,829
3. CTBV – Belle Vue	71.20	62.00	393,727,855	15.28%	393,727,855
4. F.U.E.L	36.70	27.00	168,809,804	6.55%	168,809,804
5. CTDS	32.50	30.00	229,672,358	8.91%	229,672,358
6. Médine	10.00	6.00	5,033,230	0.20 %	5,033,230
7. Sotravic	3.30	3.00	20,014,197	0.78%	20,014,197
8. SSDG – MSDG	2.46	2.46	2,636,589	0.10%	2,636,589
<b>TOTAL PURCHASES (C)</b>	<b>274.56</b>	<b>226.46</b>	<b>1,436,288,663</b>	<b>55.74 %</b>	<b>1,436,288,663</b>
<b>GRAND TOTAL (A+B+C)</b>	<b>762.20</b>	<b>671.36</b>	<b>2,576,929,067</b>	<b>100%</b>	<b>2,537,509,712</b>

Effective Capacity (MW)	Crop	Inter Crop
Beau Champ	11	22
Belle Vue	46	62
F.U.E.L	20	27
CTSav	65.5	74

## TRANSMISSION AND DISTRIBUTION

Further initiatives were taken during the year under review to improve the quality and reliability of supply. New substations and networks were commissioned, and the existing network was upgraded.

The major activities and key operational statistics for 2013 are highlighted below:

### SYSTEM PERFORMANCE

The general performance of the Transmission and Distribution System was satisfactory for the year under review. The networks were, however, subject to some disturbances caused by the passage of cyclones Dumile and Imelda in the vicinity of Mauritius. These disruptions were promptly cleared.

On Saturday 30 March 2013, heavy torrential rain caused severe flooding in Port Louis, Pailles, St Louis and Canal Dayot regions, resulting in the tripping of the Dr. Ferrière 22 kV feeder at Fort Victoria and the 22 kV feeder supplying Pailles and St Louis areas. After inspection by CEB teams on the same day, 15 substations in Port Louis, which were flooded, were isolated and four transformers, which were supplying the Canal Dayot area, were disconnected for safety reasons. Additional labour force was called in as from Sunday 31 March to provide assistance for restoration of supply to the affected areas. Re-establishment of supply to the Harbour Front and Esplanade du Pouce buildings were delayed due to the presence of water in the building. It is to be highlighted that, following the flooding of 30 March, an action plan for post-flooding reinstatement works has been set up in case of heavy torrential rain.

At 14.06 hours on 31 July 2013, a serious accident occurred at Line Barracks Substation resulting in the death of one CEB engineer as well as the tripping of the 22 kV Deschartes/Line Barracks feeder at Fort Victoria, the loss of the odd busbar at Line Barracks Substation, and a partial blackout in Port Louis. Supply was restored to the affected areas at about 17.00 hours. It is to be noted that a Board of Enquiry has been appointed to investigate into the cause of the accident and to submit its findings and recommendations.

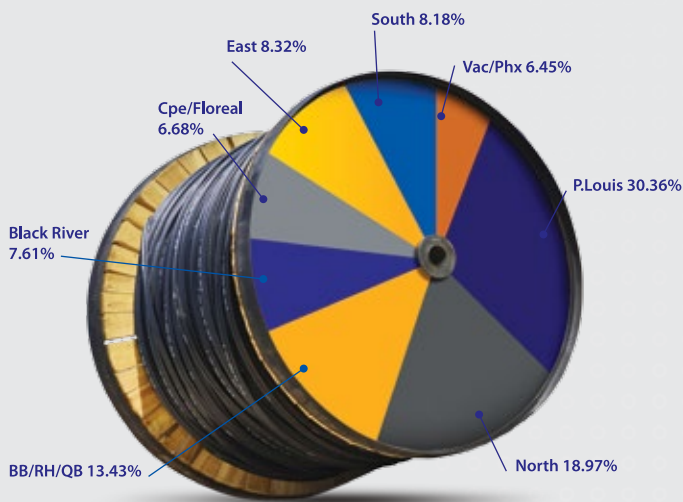


### System Maximum Demand

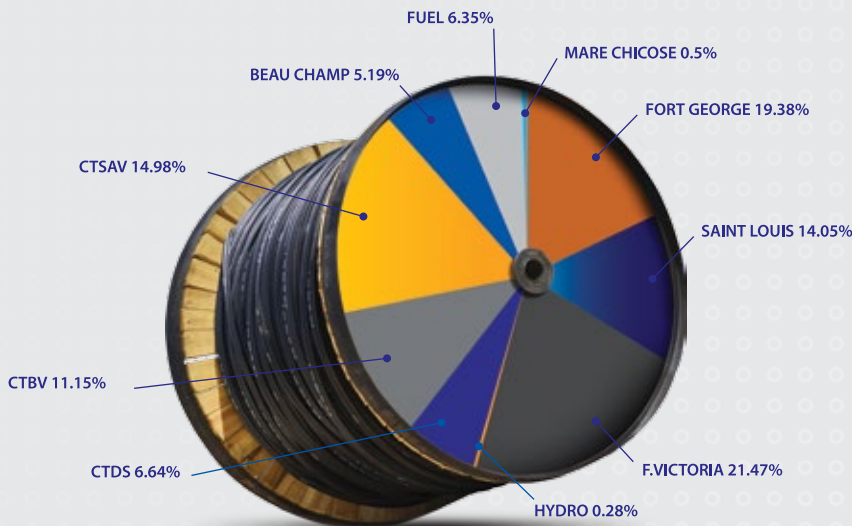
The maximum demand for the year 2013 reached 441.13 MW at 14.00 hrs on Tuesday 17 December. This represents an increase of 2.5% over the previous year. It is worth noting that the average increase in demand over the period 2007-2012 was 3.2%.

The approximate load distribution over the island on a regional basis at the time of the highest demand, and the generating plants' contribution at the time of the highest demand are shown hereunder:

Percentage Load Distribution per Region on  
 17 December 2013 at 14:00 hrs



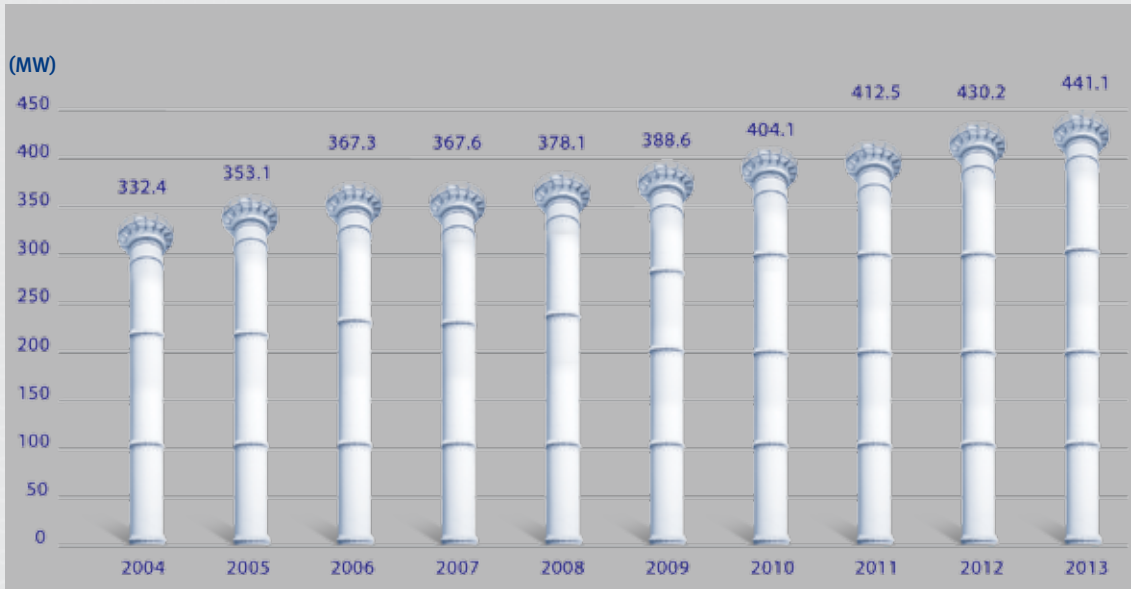
Generating Stations Contribution for  
 17 December 2013 at 14:00 hrs



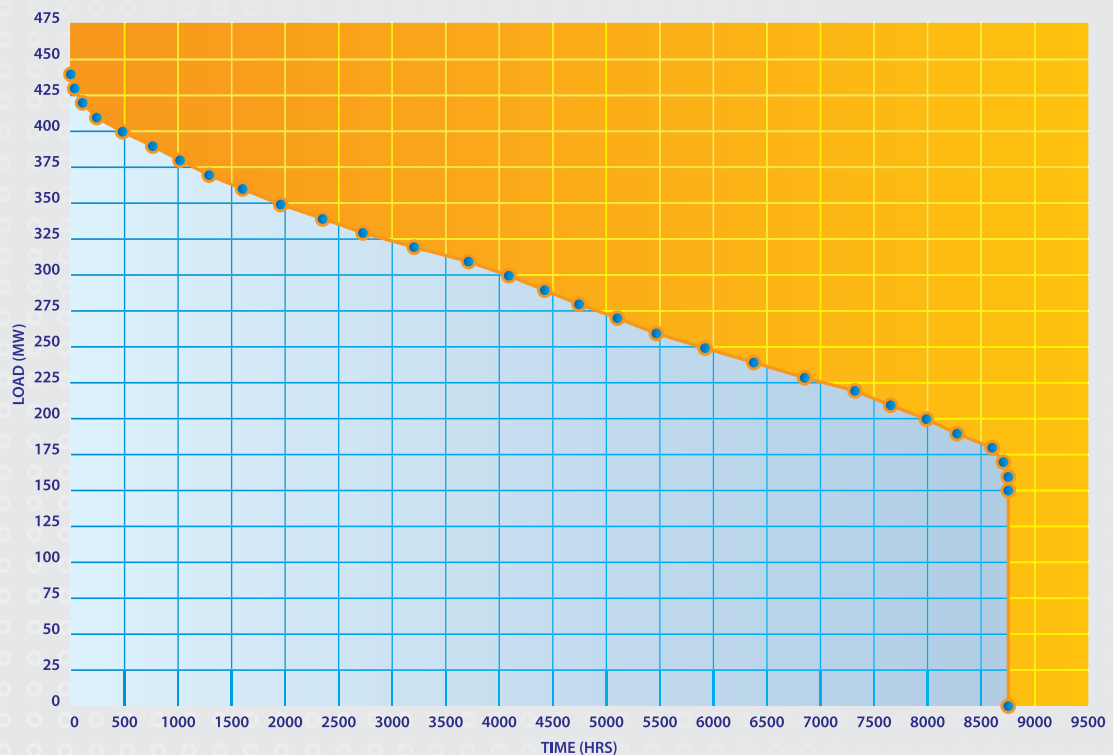


The maximum demand for the last ten years and the load duration curve for the year 2013 are shown hereunder:

### MAXIMUM DEMAND 2004-2013



### LOAD DURATION CURVE 2013



The total energy generation for the year was 2,576 GWh, representing an increase of 2.89% over 2012. It is worth noting that the average growth for the last five years was around 2.7%.

The average load factor for the year based on monthly average data was 72.91%, while the average load factor for the year based on daily data was 79.27%. This demonstrates that there has been a more efficient use of electrical plant during the review period.

## TRANSFORMER CAPACITY, NETWORK GROWTH, AND SYSTEM LOSSES

### Transformer Capacity

At the end of the year, the total installed transformer capacity in the major substations was 2,323 MVA, whilst for the distribution substations the total installed capacity reached 1,629 MVA, thus making a total of 3,952 MVA installed on the system.

### Growth of Network

In the course of the year the overhead transmission and distribution network was extended by 165 km, thus bringing the total length of overhead lines to 8,516 km. This figure includes 290 km of 66 kV overhead transmission lines.

The underground transmission and distribution network was extended by 29 km during the year to bring the total route length to 629 km, which includes 19 km of 66kV underground cables.

The grid lengths as at December 2013 were as follows:

Data	Transmission	Distribution MV	Distribution LV
Voltage levels ( kV)	66	22/6.6	0.400/0.23
Length of overhead cables ( km )	290	2,867	5,359
Length of underground cables ( km )	19	410	200

### System Losses

The overall system losses for the year under review were 7.1%. This figure compares favourably with the figure recorded for 2012 (7.65%).

Year	2009	2010	2011	2012	2013
Losses (%)	8.7	8.1	7.95	7.65	7.1

## TRANSMISSION

In order to cope with the load growth and to channel energy from both the CEB and the IPP generating plants, the following works were carried out on our transmission networks during the year 2013:

### 66 kV Networks

#### *Refurbishment of 66 kV Transmission Line*

The existing 66 kV Wooton – Champagne, Henrietta – St Louis, Henrietta – Chaumière, Dumas – Belle Vue – Amaury – FUEL lines, which are more than 30 years old, require proper refurbishment in order to extend their working life. During the year under review, major reconstruction works were scheduled for the systematic replacement of corroded members in order to strengthen and increase the life-span of the existing lines. Corrosion protection treatment and replacement were also carried out, subject to the availability of power cuts.

#### *Continuation of Works on Henrietta – Case Noyale – Combo 66 kV Line*

The construction of the 66kV line is motivated by the need to strengthen the Transmission network and provide the “N-1” criteria to the existing Combo – Henrietta 66 kV line. It will also improve the reliability of supply in the Black River and Le Morne areas, where major developments are in the pipeline. Its construction, over a line route of about 60 km, was planned to be completed by July 2009, but numerous problems cropped up, thus delaying its completion.

The outstanding works consist of the laying of approximately 1 km of underground 66 kV cables at Case Noyale on the land that has been earmarked for IRS Corniche Bay. Wayleave formalities for this outstanding stretch of underground cable works were completed in mid-2013.

Cable-laying works, which were scheduled to start in mid-2013 after the laying of 66 kV UG cables associated with Fort Victoria redevelopment project, have been re-scheduled for 2014 and are expected to be completed in the second half of 2014. The energizing of the line at 66 kV will be carried out after completion of above outstanding works.

### ***66 kV lines from Beau Plan to Riche Terre - Jinfei Economic Zone***

The requirement of 45 MW of power in 2014 for the Jinfei project necessitates the erection of about 8 km of double-circuit 66 kV lines from Beau Plan to Riche Terre. Approximately 1.3 km of this new line will consist of underground cables.

The erection of the 66 kV line to supply the 66/22 kV substation at Jinfei was initiated in March 2009. Some 2.6 km of double-circuit overhead line were laid in 2012, taking the total length to approximately 5.5 km. The underground cables, earmarked for this project, were reassigned to the Fort Victoria re-development project. Formalities for the procurement of new underground cables have been initiated and the cables are expected to be received in mid-2014. The underground cable works are scheduled to be completed in 2014.

### ***66 kV lines to supply La Tour Koenig***

The La Tour Koenig 66/22 kV substation will be energised from the existing 66 kV St Louis – Chaumière lines and will involve the erection of 0.5 km overhead network and the laying of some 1.3 km of underground cables. On account of the urgency of the Fort Victoria Re-development Project, the ear-marked cables for La Tour Koenig Substation were re-allocated to this project. Formalities for the procurement of new 66 kV cables have been initiated and the cables are expected to be received in 2014. Cable-laying is scheduled to start and be completed in 2014.

### ***OPGW on Transmission lines***

The purpose of optical ground wire (OPGW) is to shield the transmission lines against lightning-stroke effects, while also providing communication facilities between the System Control and all the major 66/22 kV substations. It is planned to replace all traditional earth conductors on transmission networks by OPGW.

In 2013, stringing of OPGW on the existing 66 kV network from FUEL to Champagne, at Grand Bassin (on the existing Henrietta – Combo) and at Ebène (on the existing Ebène – Wooton 66 kV network), over distances of 16.5 km, 4 km and 2 km respectively, was carried out. Tender for the procurement of new OPGW conductor was awarded in mid-2013. Stringing works on existing 66 kV St Louis – Chaumière, and Chaumière – Henrietta are scheduled to be carried out in 2014 after receipt of the OPGW conductors. It is to be noted that stringing works are carried out subject to availability of power-cuts.

As at end 2013, 206 km of OPGW had been installed, corresponding to 62% of the total length contemplated. It is to be noted that Management is considering the possibility of enhancing its revenue stream through the lease of some circuits for public communication.

### ***66 kV line from Saint Louis to Fort Victoria***

Implementation of the Fort Victoria Re-development Project has relied on the use of the existing oil-filled 66 kV cables between Saint Louis and Fort Victoria for the evacuation of power from the newly-installed generators. The CEB was advised in early 2011 by BWSC, the contracting firm responsible for the implementation of the project, to consider the replacement of two existing 66 kV cables which are more than 30 years old. This work involves the laying of two underground 66 kV cables from Saint Louis to Fort Victoria over a distance of approximately 2.3 km. Way-leave formalities have been completed. Cable-laying works, which were scheduled to be completed in 2013, have suffered unforeseen delays due to reluctance of the Traffic Management and Road Safety Unit to provide necessary permission for road closures for excavation works. Completion of the works is now scheduled for April 2014.

### ***66 kV line from Belle Vue to Sottise***

Construction of a second 66 kV line from Belle Vue Substation to Sottise Substation will help reinforce the 66 kV transmission grid and improve reliability of power supply to the Northern part of the island. The route length of the proposed line is about 10 km. Survey works have been completed and way-leave formalities, which were initiated in 2012, are expected to be completed in 2014. Implementation works will involve the undergrounding of existing 22 kV networks along the proposed corridor and are scheduled to start in 2014 and to be completed during the same year.

It is to be noted that the tender for the procurement of 14m rectangular concrete pole was awarded in the second half of 2013. Erection of new 66 kV network is scheduled to start in 2014 and expected to be completed in 2015.

### ***66 kV line from Fort Victoria to Neotown***

The requirement of 60 MW of power in 2016 for the Neotown project will necessitate the laying of about 1.3 km of 66 kV underground cables from the proposed 66 kV substation at Fort Victoria to the new 66/22 kV substation which will be erected at Les Salines. Excavation works and laying of a major portion of UPVC pipes were carried out in 2012. Formalities for the procurement of underground cables were initiated and the cables are expected to be received in early 2014. Cable-laying is scheduled to start in 2015.

### ***Pointe aux Caves – Chebel 132 kV Lines – CT Power Project***

Following the EIA tribunal's decision to grant an EIA license to CT Power and the signature of an amended PPA in December 2013, formalities were initiated for the laying of approximately 8 km of underground 132 kV cables for the evacuation of 110 MW of power from the new coal-fired power station to be constructed at Pte aux Caves to La Chaumière Substation. Way-leave formalities for the laying of these underground cables have almost been completed except for a stretch of approximately 300m which is awaiting approval from the Ministry of Housing and Lands. It is to be noted that the design and construction of the transmission network, which was originally planned to be carried out by CT Power, will now be carried out by the CEB. Formalities for the procurement of consultancy services for the procurement and laying of underground 132 kV cables are in progress and the tender is scheduled to be floated in 2014. Cable-laying is scheduled to be started in mid-2015.

### ***Upgrading of 66 kV Henrietta - Combo***

Refurbishment works, involving the replacement of rotten poles and upgrading of conductors over a distance of 4 km in the region of Grand Bassin on the existing Henrietta – Combo network, were partly implemented in 2012 over a distance of 1.43 km from Roche Blanc to Plaine Sophie. Upgrading of the remaining stretch of 2.6 km was carried out in October 2013. It is to be noted that stringing of OPGW conductors was also carried out during the same power-cut over a distance of 4 km.

## **66 / 22 kV Major Substations**

### ***Case Noyale 66/22 kV Substation***

This substation will improve the quality and reliability of supply to existing hotels and consumers in the Southern and Western parts of the island, while providing power to the various IRS projects located at La Balise (Tamarin), Valriche (Bel Ombre), Baie du Cap, Corniche Bay, Les Salines and Ile-aux-Bénitiers.

Formalities for the acquisition of land from Bel Ombre S.E. for the construction of the substation have been completed. Tender for the procurement of services for the construction of the proposed station is scheduled to be floated in early 2014. Civil works are expected to start in late 2014. Commissioning of the substation is planned for end of 2016 after completion of works at Jin Fei Substation, La Tour Koenig Substation and Fort Victoria 66 kV Switching Substation.

### ***Jinfei 66/22 kV Substation***

This substation is being constructed to cater for the projected load of the Jinfei Economic Zone, as well as for the future load growth in this part of the island.

Electrical and civil designs have been completed and all substation equipment procured. Civil works related to the construction of the substation were completed and the building was handed over to the CEB in 2013. An intruder alarm system was installed and commissioned in May 2013. The installation of the substation equipment, which started at the end of 2013, is scheduled to be completed and commissioned by early 2015.

### ***Bus Zone Protection at 66 kV Anahita, Dumas and Union Vale Substations***

In line with the recommendation of PB Power, bus zone protection schemes were implemented at Anahita and Union Vale Substations. Installation of 66 kV bus zone protection at Dumas Substation is in progress and is scheduled to be completed in 2014.

### ***Construction of Additional 66 kV Bay at La Chaumière Substation – Sarako Project***

Following the approval by Government in early 2013 for the connection of the Sarako PV Farm of 15 MVA capacity to the grid, formalities have been initiated for the construction of a new 66 kV bay. In view of the tight deadline and due to the fact that there was no responsive bidder for the initial tendering exercise launched in mid-2013, civil works have been carried out by Sarako itself. Installation of electrical equipment and commissioning are planned for early 2014.

### ***66 kV Bay Curepipe Point at Henrietta Substation***

The Curepipe Point Wind Farm Project has been awarded to Suzlon/Padgreen and is expected to be operational by the end of 2014. Connection of this new wind farm to the grid will involve the construction of an additional 66 kV bay at Henrietta Substation. Tenders for the procurement of services associated with the construction of this new 66 kV bay and for the procurement of electrical equipment were awarded in mid-2013. Construction works are scheduled to be completed by the end of 2013. Installation and commissioning of electrical equipment are scheduled to be carried out in 2014.

### ***Erection of 66 kV Bays at Henrietta and Combo Substation for Case Noyale 66 kV Line***

In connection with the construction of the Case Noyale 66/22 kV Substation, additional 66 kV bays would be required at Henrietta and Combo Substations. The civil works were completed in 2009, and erection of the 66 kV line is scheduled to be completed by the end of 2014.

### ***La Tour Koenig 66/22 kV Substation***

This substation will provide power to the Industrial Zone of la Tour Koenig, while relieving our existing 22 kV feeders.

The installation of substation equipment, which started in September 2010, was severely hampered due to a major theft in 2012. The list of missing parts was determined with the assistance of a technician from Schneider in mid-2013. These missing parts have already been ordered and will be received in early 2014. The commissioning of the substation has now been re-scheduled for mid-2015. It is to be noted that intruder alarm was installed at La Tour Koenig Substation in March 2013.

### ***Upgrading of Power transformers at Union Vale Substation***

Following the replacement of the existing power transformers with a capacity of 20/30 MVA by 36/45 MVA at Wootton Substation in late 2012, one power transformer with a capacity of 20/30 MVA was dismantled and transported to Union Vale Substation in February 2013.

Works associated with the installation of the additional 20/30 MVA power transformer at Union Vale were completed and the commissioning was done in October 2013. After the completion of this project, the 22 kV switching station will be converted into a 66/22 kV substation, equipped with two power transformers and provided with the “N-1” criterion.

### ***Upgrading of 66 kV Circuit Breakers in Substations***

It is necessary to replace Oil Circuit Breakers that are more than 20 years old and which do not operate correctly. In 2013, four old 66 kV circuit breakers were replaced by SF<sub>6</sub> gas insulated ones at Anahita, Champagne, FUEL, and Belle Vue. The replacement programme will be pursued in 2014.

### ***Fort Victoria 22 kV Substation***

This new 22 kV indoor substation will help to evacuate power from Fort Victoria and meet growing load demand, as well as improve reliability of supply in the Port Louis area and the surrounding localities.

Excavation works, associated with the laying of cables for the feeder Development Bank, which were scheduled to be completed in late 2013, were delayed and are now expected to be completed in early 2014. It is to be noted that this project, which is being implemented together with the laying of 66 kV cables between Fort Victoria and St Louis Power Stations, has experienced unforeseen delays due to the reluctance of the Traffic Management and Road Safety Unit to provide necessary permission for road closures for excavation works.

### ***66 kV Switching Substation at Fort Victoria***

This switching station caters for the evacuation of power from the Fort Victoria re-development project and for supply to the Neotown project at Les Salines. Geo-technical and Topographical surveys were carried out in mid-2013. Project implementation is due to start in early 2014 and is expected to be completed in 2015.

### ***Upgrading of Security in Major Substations***

Following numerous break-ins and loss of conductors, it was decided to construct a 2.4 metre- high boundary block wall with razor wire on top at La Chaumière and Belle Vue Substations to replace the existing fencing. Construction works, which started in early 2013, were completed in May 2013. It is worth noting that works have also been carried out to upgrade the earth mat so as to improve the earth resistance at Belle Vue and Henrietta substations.

The upgrading of the boundary wall at Floréal Substation is scheduled for 2014.

### ***Reconstruction of St Jean Substation***

Procedures for the purchase of land in connection with the proposed reconstruction of the St Jean Substation have not yet been completed.

During 2013, it was decided to proceed with the replacement of all 6.6 kV bulk oil circuit breakers by outdoor Ring Main Units, thus creating space for the installation of 22 kV switchgear panels. Commissioning of these Ring Main Units is scheduled for early 2014 and installation of the 22 kV switchgear panels is scheduled for the second half of 2014.

### ***Reconstruction of 22 kV Major Substation***

There are presently seventeen 22 kV outdoor oil circuit breakers installed at our outdoor substations island-wide. Replacement of these breakers by SF6 circuit breakers, and the renewal of old erratic battery sets have been envisaged. Replacement of outdoor circuit breakers at FUEL, Ferney, Roche Brunes, and St Jean substations are scheduled to be carried out in 2014.

### ***Upgrading and Extension of La Chaumière Substation***

Tender for the procurement of services, the construction of two additional 66 kV Bays for the evacuation of energy from the Pointe aux Caves Power Station, and the extension of the building for the installation of additional 22 kV panels, was issued in late 2013. Works are scheduled to start in 2014.

## **DISTRIBUTION**

Our objective is to serve the community and industry through prudent investment in the network so as to provide sustainable and reliable electricity, as well as secure timely connection of new requests.

In order to cope with the normal load growth and cater for the demand of new customers, the following works were completed in the distribution sector during the year under review:

### **22 kV Rings and Feeders**

The under-mentioned projects were implemented in 2013 with a view to improving the reliability and quality of supply, and reducing line losses:

- Ring between Sorèze and Coromandel at Pailles (1 km);
- New 22 kV feeder to Roches Noires from Amaury (7 km) (80% completed);
- Ring Terre Rouge Freeport 2 and Bois Pignolet Feeder (1 km);
- 22 kV Ring Blue Bay – Shandrani (2 km);
- 22 kV Ring Dagotière – Verdun (1 km);
- 22 kV Ring Providence – Melrose (0.8 km); and
- 22 kV Ring between feeders Wooton – Nouvelle France and Le Val – Motorway along Wireless Road to Beau Climat.

## MV Reconstruction and Distribution Network Reinforcement

In order to enhance the reliability of supply and reduce line losses, the following projects were implemented in 2013:

- Re-routing of part of existing 22kV feeder Pte aux Sables (1.5 km);
- Reconstruction of HT network at Fond du Sac (1.5 km);
- Reconstruction of main spur Amaury (0.8km);
- Displacement/Reconstruction of HT main feeder Union Vale – Combo at L’Escalier (4 km);
- Reconstruction of part of HT network at Roches Noires (4km);
- Reconstruction of part of HT feeder Traffic Centre from RMU Waste Water to Patisserie Suisse;
- Installation of motorized SF6 Gas Insulated Load Break Switch with Remote Control on Nouvelle France feeder at Nouvelle France; and
- Reconstruction of part of 22 kV feeder Ferney – Union Vale at Grand Bel Air.

## Conversion of 6.6 kV feeders to 22 kV

In the context of our line losses reduction targets, the following projects were implemented in 2013:

- Decommissioning of 6.6 kV Feeder Government House at Poudrière Substation;
- Conversion of 6.6 kV to 22 kV at SIFB Building;
- Upgrading of BAT feeder from 6.6 kV to 22 kV and conversion of 14 transformers;
- Conversion of 5 Transformers in the region of Engrais Martial on 6.6 kV Feeder Traffic Centre;
- Conversion of 4 Transformers in the region of Charles Régnault on 6.6 kV Feeder Traffic Centre;
- Conversion of part of Commercial Feeder and upgrading of seven transformers ;
- Upgrading of Stanley Feeder from 6.6 kV to 22 kV and conversion of all transformers (except Tx at Orchard Building) to 22 kV;
- Laying of underground cables i.c.w upgrading of Feeder Berthaud from 6.6 kV to 22 kV;
- Upgrading of part of Beau- Bassin Feeder and upgrading / conversion of 11 transformers; and
- Conversion of 6.6 kV to 22 kV in Quatre-Bornes - main cable was laid from La Louise to St. Jean.

## Inspection of Poles on 66 kV and Distribution Networks

With a view to improving the security of supply and the reliability of the network, the CEB has embarked on a programme which involves the systematic testing and replacement of insecure wooden poles, and the replacement of all round concrete poles which were erected some 40 years ago.

As at the close of 2013, some 1,140 HT and LV poles had been replaced island-wide.

## Removal of Life-threatening Situations

The above-mentioned scheme was introduced in late 2012 with a view to eliminating potential sources of danger associated with houses, erected in close proximity to our HT and LV networks. These situations are usually brought about by factors such as scarcity of land available for construction purposes, and costs involved with the displacement/insulation of network at the site concerned.

In 2013, inspections were carried out island-wide to make an audit of the above-mentioned dangerous situations for appropriate remedial measures. Some ten projects were approved and implemented. In many cases, the applicants concerned were provided with facilities of payment, such as splitting the costs into a number of instalments. It is worth noting that construction files have also been prepared and implemented in 2013 for the displacement and insulation of feeders that cross over houses.

## SYSTEM CONTROL

### Implementation of Recommendation of PB Power

In line with the recommendation of PB Power, bus zone protection schemes have been completed at Anahita and Union Vale Substations. Installation of 66 kV bus zone protection at Dumas Substation is in progress and is scheduled to be completed in 2014. Formalities have also been initiated for the gradual replacement of static protection relays by numerical units on the distribution system. This will improve discrimination and, hence, the reliability of our distribution system. Numerical relays have been procured in 2013 and works are scheduled to be carried out in 2014 at Henrietta Substation.

### Remote Terminal Unit

The SCADA System presently communicates with Remote Terminal Units (RTUs) located at all substations. These RTUs were originally supplied by Microsol, and it is becoming very difficult to get spares because the corresponding cards have gone out of production.

In 2014, the Microsol RTUs were replaced by RTU C264, supplied by Areva, at Roche Brunes, Champagne, Caudan, Chaumière, Henrietta, Dumas and Belle Vue Substations.

### General Breakdown Restoration Procedures

Following the general breakdown of 13 December 2011, where criticism was raised regarding the delay in the restoration of supply, the System Control was assigned the responsibility to develop guidelines that would be used for power restoration in the event of a general breakdown.

These guidelines were released in November 2012 and consist of a comprehensive set of procedures and instructions to be adhered to in case of a general breakdown.

## MAJOR DISTRIBUTION PROJECTS

Major electrical infrastructural works were performed in 2013 to supply electricity to the important consumers mentioned below:

- |  |                                       |
|--|---------------------------------------|
| a) Maurilait (1.65 MVA) – Phoenix                  | h) Hotel Centara - Azuri (1 MVA)      |
| b) Citadelle Mall (1.25 MVA) – Port Louis          | i) Elite Tower (1.5 MVA) - Ebène      |
| c) Narrow Fabrics (1.26 MVA) – Pointe-aux-Sables   | j) Phoenix Commercial Center (1MVA)   |
| d) Fast Food Ltd (1 MVA) – Roche Bois              | k) Les Gaz Industriels (2 MVA) – GRNW |
| e) SIT Business & Knowledge Centre (2 MVA) - Ebène | l) Royal Park – Balaclava (6.5 MVA)   |
| f) Holiday Inn (1 MVA) - Plaisance                 | m) IRS Azuri - Haute Rive             |
| g) Meaders (2MVA) - Riche Terre                    |                                       |

### SAIDI and SAIFI Indices of Distribution Areas

The average SAIDI and SAIFI indices for the year under review for the three geographical areas are given below.

Parameters	Units	Areas	2012	2013
SAIDI *	Hours	North	1.64	2.03
		Centre	3.18	3.28
		South	3.62	4.89
SAIFI **	Index	North	0.72	0.58
		Centre	1.08	1.28
		South	1.68	2.49

**SAIDI (System Average Interruption Duration Index)** is the average duration of interruption of electricity experienced by a customer during the year.

**SAIFI (System Average Interruption Frequency Index)** is the average number of times a customer has experienced interruption of electricity during the year.



## MAINTENANCE WORKS

During the year, regular maintenance works, including tree-logging, were carried out on networks with a view to reducing the risks of power outages. Infrared sensing devices for monitoring specific equipment and network analyser were also used to detect any abnormal performance of equipment and ensure the quality of supply.

## TREE-LOPPING/FELLING

Numerous trees, which were in proximity to the electricity networks, were felled during the year in order to improve the clearance with respect to overhead cables and conductors. The branches of those trees can adversely affect the supply of electricity, especially in windy and cyclonic conditions.

## METER LABORATORY

### Testing, Commissioning and Inspection of Meters

In 2013, more than 1,700 Smart Meters were installed and commissioned at MDI consumer premises. Other important activities of the Meter Laboratory included the:

- Inspection and verification of MDI metering at important consumers premises;
- Inspection and verification of HT metering installation and equipment for HT consumers; and
- Testing and calibration of some 100 numbers of private meters.

### Automatic Meter Reading (AMR)

All HT consumers are metered with Smart Meters that have the Automatic Meter Reading facilities (AMR meters). Approximately 2,570 AMR Meters were installed in 2013, bringing the total number of installed AMR Meters to approximately 3,800.

AMR Meters are being remotely accessed using Mutidrive Software (Meter Management Software) which was commissioned in May 2013. The readings, obtained via GPRS network on a monthly basis, are processed by the Revenue Management Section and thereafter migrated to SAP. Inspections are carried out by the Meter Lab officers on site, if any doubtful readings and alarms are observed. This project enables billing to be carried out on the 1st of every month, thus improving our cash-flow.

### Prepaid Electricity Supply

In line with Government's policy for the eradication of poverty, the CEB has, in collaboration with the Mauritius Telecom, been actively involved in the development and implementation of a pilot project regarding pre-paid metering. Customers, who are supplied through the pre-paid metering system, can recharge their electricity account using e-vouchers which are available at Orange retailers and at CEB Customer Service Centres. A SMS is also sent to the customer whenever his balance is below a certain critical level. The supply is disconnected on week-days whenever the balance becomes negative. A Meter Management Software (Multidrive System) has been commissioned to provide functionalities that will enable the remote configuration and reading of meters, and raise alerts in case of meter tampering. Eventually, it will enable customers to have web-access to their own consumption profiles with a view to better managing their energy consumption. During 2013, five pre-paid meters were installed, and some 50 pre-paid meters were configured for future pre-paid metering customers.

### Energy Audit

The new Energy Audit Scheme involves the installation, on a pilot project basis, of AMR Meters in feeder panels at substation levels on 22 kV feeders in order to monitor feeder loadings, determine losses on the network, and, in some cases, determine cases of fraudulent abstraction of electricity. Smart Meters complete with AMR facilities were installed and commissioned at Port Mathurin, Fort Victoria, Belle Vue and Amaury Substations.

### Calibration of IPP Meters

The following works were undertaken in 2013:

- Calibration, testing and commissioning of a high accuracy (class 0.2) Import and Export meter i.c.w installation and commissioning of a third generator at Mare Chicose by Sotravic Ltd;
- Re-calibration of high accuracy meters at Union Vale (CTSav Meters), Combo (CTDS Meters), CTBV, and Sotravic as per existing Power Purchase Agreements.

## CUSTOMER SERVICES

During the past few years, there has been a real paradigm shift in the management of customer services at the CEB. We have, to a great extent, re-oriented our strategies and re-positioned the utility as a customer-centric business with a view to attaining excellence in customer service delivery.

In the year 2013, various business policies and processes were revisited so as to provide a better service to our customer base which, at the year-end, reached 422,149 customers in Mauritius, representing a 2 % increase on the previous year.

The Customer Services Division is organised along of three main business units namely: Customer Services and Interactions; Revenue Management, and Revenue Protection, all of which work in close collaboration so as to provide a prompt and efficient service to customers.

### CUSTOMER SERVICES AND INTERACTIONS

All customer contacts throughout the island are managed by the Customer Services and Interactions Section, which regroups 15 walk-in Centres, 3 stand-alone Cash Offices, and the 130 Helpdesk.

The following projects were implemented to enhance customer services delivery during the review period:

#### Upgrading of Customer Service Centres

The programme for the complete renovation of our Customer Service Centres (CSCs) island-wide was continued in 2013 with a view to facilitating access to our services by customers, while providing a pleasant working environment for our employees.

During the year, our CSCs at Bramsthan and Mahebourg were totally refurbished. For 2014, it is planned to upgrade the CSC at Goodlands. Other similar projects, including a new eco-friendly office at La Mivoie, are in the pipeline for the coming years.

#### Service Response Time

The response time to the requests of customers is a very important aspect of service delivery and requires close monitoring. Two Key Performance indicators (KPIs) have been set up to that effect. The first KPI (KPI fins) indicates the average number of days between an application being lodged at the CEB and the first site visit to the customer's premises. The second KPI (KPIp2m) indicates the average number of days between payment being made for a new supply and the effective connection to the CEB grid.

The Table below shows the progress of the above KPIs for the year 2013:

Year 2013	No. of Requests for New Connections	Cumulative No. of requests for New Supply	KPI fins	KPI p2m
January	2,054	2,054	4.74	2.93
February	1,902	3,956	4.39	3.50
March	2,036	5,992	5.11	3.72
April	2,032	8,024	4.93	3.47
May	2,037	10,061	4.95	3.36
June	1,989	12,050	4.63	2.98
July	2,266	14,316	3.20	2.86
August	2,052	16,368	3.34	3.22
September	2,051	18,419	3.48	3.01
October	2,221	20,640	3.80	3.16
November	1,839	22,479	3.48	2.23
December	1,815	24,294	3.24	3.39

The average KPIs for the period 2009-2013 are given hereunder:

Year	No. of Requests for New Connections	Average KPI $\bar{r}_{ins}$	Average KPI $\bar{p}_{2m}$
2009	24,148	7.5	7.5
2010	23,126	5.8	5.5
2011	23,298	4.5	4.4
2012	25,923	4.0	4.0
2013	24,294	4.1	3.2

As shown in the table, there has been a marked improvement in response time along both dimensions over the years. The aim is to bring these KPIs still further down in the quest towards service excellence.

### Applications for New Supply

A total of 24,294 applications for new electricity supply were received in 2013 and same were promptly processed.

### CEB 130 Helpdesk

The CEB is one of the few organisations in Mauritius which provide emergency repairs on a 24/7 basis. During the year 2013, the CEB 130 Helpdesk successfully handled some 257,599 in-bound calls in connection with emergency repairs, enquiries and other requests for information.

The business processes of the Helpdesk are also being re-engineered with a view to extending the range of services being provided to our customers.



### Extension of Business Hours on Saturdays

The CEB has extended its operating hours to include Saturdays at a selected number of Customer Service Centres. Henceforth, customers who are not able to undertake their transactions (payment of bills and application for electricity services) during week-days can benefit from the extended operating hours.

CEB Offices	Business Hours - Saturdays	
	Customer Services Centre	Cash Office
Curepipe	8h30 to 12h00	8h30 to 12h00
Port Louis	8h30 to 12h00	8h30 to 12h00
Mahebourg	8h30 to 12h00	8h30 to 12h00
Bambous	8h30 to 12h00	8h30 to 12h00
Flacq	8h30 to 12h00	8h30 to 12h00
Goodlands	8h30 to 12h00	8h30 to 12h00

During 2013, some 40,642 transactions were recorded on Saturdays at these locations.

## Disconnection for Non-payment

The disconnection of outstanding accounts is carried out on specific days on a monthly basis. During 2013, this exercise has enabled the CEB to recover around Rs 78 million of outstanding debts, as compared to Rs 33 million in 2012. The significant increase in debt recovery can be attributed to the increase in the frequency of disconnection, from once to twice monthly as from 2013.

## Customer Satisfaction Survey

As in previous years, a customer satisfaction survey was conducted in 2013 to assess customers' perceptions of the quality of service being offered by the CEB. A sample of 100 customers was targeted in the survey and feedback was sought on critical areas such as contact with employees, office environment, and existing processes for service delivery.

A Customer Satisfaction Index of around 64% was registered. Improvement areas were also identified, and these will be addressed by the CEB with a view to enhancing the service being provided to our customer base.

## Corporate Social Responsibility

The CEB recognises the need to be socially involved and supportive of the wider needs of the community, more specifically of those of less fortunate citizens. During the review period, a number of assistance schemes were maintained to promote access to electricity for low-income customers and support to those with financial difficulties.

### *Low Voltage Network Extension Government Assistance Scheme*

This scheme provides assistance to needy households for the supply of electricity to their first and new residence. It is applicable to households whose income band is less than Rs 17,500.

Since its introduction in 2007, this scheme has provided assistance to some 934 needy households. A total of 95 projects were implemented during 2013, including 9 from Rodrigues.

### *Social Tariff*

Special consideration is given to the social dimension of electricity consumption by households. In this respect, the CEB has in place a Social Tariff (Tariff 110A) which is meant for needy customers. Under this scheme, customers whose monthly consumption does not exceed 75 kWh benefit from concessionary electricity rates.

## REVENUE MANAGEMENT

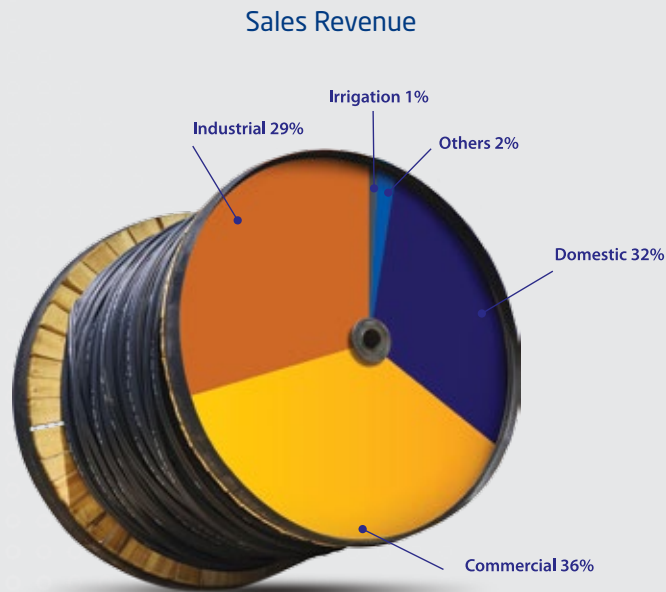
The Revenue Management Unit deals with all customer-related financial functions, namely: Meter Reading, Billing, Cash Collection and Debt Recovery.

The main activities involve ensuring timely billing, invoicing and despatching of invoices, optimising debt collection, and minimising revenue losses.

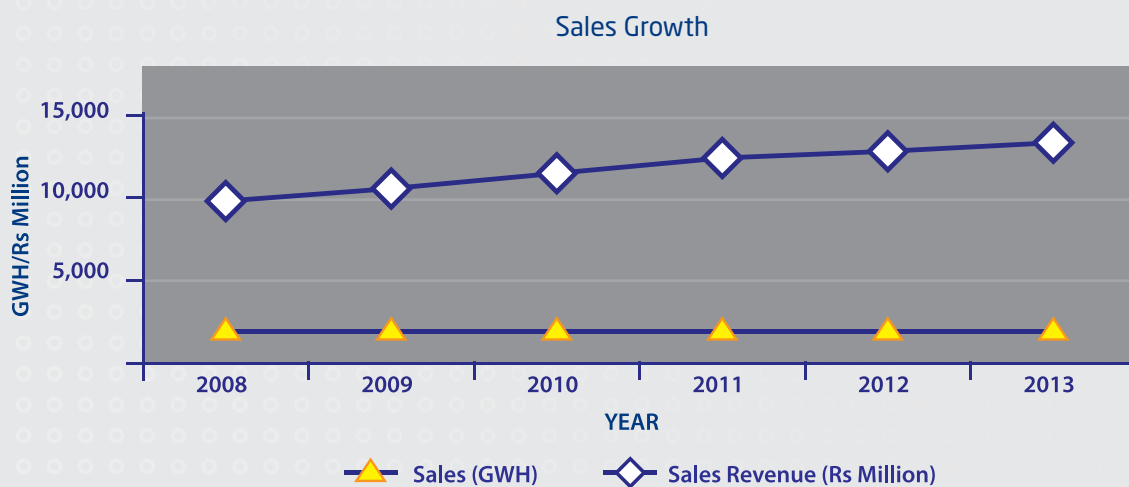
### Revenue Collected

During the year under review, some 5.1 million meter readings were carried out to enable billing of electricity consumption that generated sales revenue of Rs 13.4 billion. This figure represents an increase of 3.6 % on the previous year.

The sales revenue distribution among the different categories of customers is represented in the pie-chart below:



The revenue progression for the period 2008 to 2013 is depicted in the chart below:



### Under-Billing

During 2013, the revenue recovered from under-billing cases, due to technical problems in metering equipment and inappropriate tariff assignments, was of the order of Rs 3.3 million. It is to be noted that the installation of Smart Meters has enabled the prompt detection of technical problems and, consequently, under-billing cases have significantly decreased.

### Projects 2013

The main projects implemented by the Revenue Management Unit during 2013 are listed below:

#### *Replacement of Electro-mechanical Meters for MDI Customers*

The project for the replacement of electro-mechanical meters by electronic ones, which was initiated in 2010 to enhance accurate billing and mitigate risks of loss in revenue, was continued in 2013. An additional 55 electro-mechanical meters were substituted, taking the total to 380 replaced meters since the implementation of the project.

### ***Automatic Meter Reading (AMR)***

The number of customers equipped with AMR Meters reached 2,365 in 2013, representing 47 % of our total sales. It is to be noted that this project has been implemented with in-house capabilities and has contributed to the improvement in cash-flow through the reduction in the time lag between consumption and billing.

### ***Diversifying Payment Channels***

In addition to traditional payment modes at the cash desks of the CEB, the counters of Mauritius Post, and electronic channels such as Internet Banking (SBI and MCB) and SBM Billpay, electricity bills can now be settled by SMS through the Orange Money Platform.

### ***Pre-paid Tariff for Vulnerable Group***

In line with the Government policy to eradicate poverty, the Ministry of Social Integration and Economic Empowerment called upon the CEB and Mauritius Telecom (MT) to investigate and subsequently develop and implement an offering of pre-paid supply of electricity to people belonging to “vulnerable groups”.

The pre-paid metering system consists of the installation of Smart Meters at customers’ premises, which are equipped with a special modem to communicate with a central server using the mobile telephony technology. The customer can purchase electricity credits at retailers’ points of sale as they do for pre-paid mobile telephones.

The project was launched in September 2013 by the Ministry of Social Integration and Economic Empowerment. For the pilot phase, the initial target of 200 “socially vulnerable” customers was extended to 400. This may be extended to a further 1,600 “socially vulnerable” customers, subject to successful implementation of the pilot phase. The project has started its end-to-end testing stage as from 25 October 2013, with 2 beneficiaries in the region of La Valette, Bambous.

The incentives provided for enrolment on the Pre-paid Metering System as per the Budget Speech of 2014 are as follows:

- Waiver of Connection Fee of Rs 750, applicable for fresh applications for electricity supply for the first 400 customers;
- Connection fee of Rs 750 will not apply to existing customers who are already on the post-paid system and would be interested to swap to the pre-paid system;
- Rs 100 worth free electricity offered as a one-off measure for the pilot phase; and
- Meter Rent of Rs 10, applicable to domestic supplies, to remain unchanged.

### **Future Projects**

The following projects have been ear-marked by the Revenue Management Section for 2014:

#### ***Additional Payment Channels***

Discussions are being held with Mauritius Post Ltd for extending the existing facility of payment of electricity bills through Post Office counters in Rodrigues.

Negotiations are also on-going with other local banks and telecommunication companies with a view to extending facilities of electronic payment to all customers.

### ***Automatic Meter Reading (AMR)***

The communication between meters and the CEB server is presently made through MT (Orange). In order to enable wider deployment of this facility, discussions are on-going with other telecommunication companies.

## **REVENUE PROTECTION**

The Revenue Protection Unit deals with the investigation and recovery of the revenue losses due to illegal abstraction and consumption of electricity. Over the past few years, there has been a significant increase in the amount of revenue collected from fraud cases. The CEB has reinforced its policy by resorting to the disconnection of electricity supply, civil law-suits, and police cases against the offenders.

In 2013, around 1,327 confirmed cases of illegal abstraction of electricity were detected and a total amount of Rs 37,352,122 was recovered.

#### Revenue Collected from Fraud Cases

Year	Domestic Tariff (Rs)	Commercial Tariff (Rs)	Industrial Tariff (Rs)	Total (Rs)
2007	2,559,431	4,947,370	10,241,743	17,748,544
2008	3,005,849	5,615,827	2,245,000	10,866,676
2009	2,582,509	6,387,148	314,221	9,283,878
2010	3,853,924	9,246,500	2,448,929	15,549,353
2011	7,782,926	4,722,898	1,664,278	14,170,102
2012	23,201,076	13,813,140	1,459,639	38,473,855
2013	18,749,889	17,186,425	1,415,508	37,352,122

The CEB has also introduced Automatic Meter Reading (AMR) for big customers with a view to enabling faster detection of fraud and deterring the tampering of meters.

#### Customers per Tariff

CATEGORY	CODE	2009	2010	2011	2012	2013
	110/111	124 758	124 612	125 101	125 432	125 683
	120/121	184 700	189 423	195 188	201 673	206 966
	140/141	38 299	39 654	40 942	42 602	44 589
<b>Domestic</b>	<b>S/Total</b>	<b>347 757</b>	<b>353 689</b>	<b>361 231</b>	<b>369 707</b>	<b>377 238</b>
	209/210/215	33 674	34 332	34 888	35 587	36 138
	211/212/213/217	1 295	1 373	1 472	1 560	1 632
	221/223/225/245/250	82	108	116	135	157
<b>Commercial</b>	<b>S/Total</b>	<b>35 051</b>	<b>35 813</b>	<b>36 476</b>	<b>37 282</b>	<b>37 927</b>
	309/310/315	5 567	5 406	5 193	5 080	4 958
	311/313/341	668	681	700	731	751
	312/317	167	149	139	127	123
	320	3	2	2	2	2
	321/323/351	18	18	19	22	26
	322/325	7	7	7	7	7
	330/340	7	7	8	8	8
	350	5	4	5	6	6
	411/421	12	10	9	9	9
	412/422	-	-	-	-	-
<b>Industrial</b>	<b>S/Total</b>	<b>6 454</b>	<b>6 284</b>	<b>6 082</b>	<b>5 992</b>	<b>5 890</b>
<b>Irrigation</b>	511/515	478	493	504	525	553
	<b>S/Total</b>	<b>478</b>	<b>493</b>	<b>504</b>	<b>525</b>	<b>553</b>
<b>St. Lighting</b>	510	396	422	458	499	541
	<b>S/Total</b>	<b>396</b>	<b>422</b>	<b>458</b>	<b>499</b>	<b>541</b>
<b>GRAND TOTAL</b>		<b>390 136</b>	<b>396 701</b>	<b>404 751</b>	<b>414 005</b>	<b>422 149</b>

### Sales of Energy (kWh) per Tariff

CATEGORY	CODE	2009	2010	2011	2012	2013
	110/111	188 290 805	194 054 333	196 295 708	200 947 620	204 983 319
	120/121	356 228 479	372 488 661	382 187 780	398 918 764	415 625 836
	140/141	120 818 242	128 769 114	131 512 846	137 130 583	143 404 712
<b>Domestic</b>	<b>S/Total</b>	<b>665 337 526</b>	<b>695 312 108</b>	<b>709 996 334</b>	<b>736 996 967</b>	<b>764 013 867</b>
	209/210/215	156 682 954	165 190 210	171 297 446	169 213 270	170 554 040
	211/212/213/217	345 155 938	351 774 154	354 106 814	358 574 622	361 379 586
	221/223/225	190 535 666	218 429 411	255 369 420	267 829 845	288 936 235
	245	610 405	575 561	485 351	436 123	389 678
	250	2 672 928	3 614 383	5 422 608	13,670,468	21,197,754
<b>Commercial</b>	<b>S/Total</b>	<b>695 657 891</b>	<b>739 583 719</b>	<b>786 681 639</b>	<b>809 724 328</b>	<b>842 457 293</b>
	309/310/315	29 415 788	29 775 877	28 934 729	28 659 044	28 332 994
	311/313/341	221 458 832	242 898 421	247 542 144	253 193 300	247 986 337
	312/317	95 035 081	85 202 457	82 134 103	75 821 359	76 857 704
	320	1 587 638	1 222 407	1 409 209	1 224 998	1 162 027
	321/323/351	78 014 085	85 822 069	92 233 327	97 311 917	110 658 494
	322/325	151 449 328	156 972 316	146 502 036	146 835 785	157 457 768
	330	11 568 086	12 465 746	13 605 445	13 880 448	14 024 715
	340	6 750 914	7 149 621	7 800 242	9 015 075	9 535 247
	350	24 380 449	26 208 116	31 383 875	31 295 847	37 341 829
	411/421	2 930 994	4 096 240	3 361 103	3 280 675	4 274 767
	412/422	894 000				
<b>Industrial</b>	<b>S/Total</b>	<b>623 485 195</b>	<b>651 813 270</b>	<b>654 906 213</b>	<b>660 518 448</b>	<b>687 631 882</b>
	511/515	20 447 412	23 814 590	22 490 994	24 931 090	25 354 250
<b>Irrigation</b>	<b>S/Total</b>	<b>20 447 412</b>	<b>23 814 590</b>	<b>22 490 994</b>	<b>24 931 090</b>	<b>25 354 250</b>
<b>St. Lighting</b>	510	33 303 230	30 901 976	24 359 470	24 760 136	25 648 872
<b>Temporary</b>	610/615	214 987	220 445	220 882	250 550	243 327
<b>Miscellaneous</b>		1 906 534	2 974 888	2 696 359	6 624 873	6 492 097
	<b>S/Total</b>	<b>35 424 751</b>	<b>34 097 310</b>	<b>27 276 711</b>	<b>31 635 559</b>	<b>32 384 296</b>
<b>CEB</b>		2 768 508	2 841 667	2 952 524	2 964 119	3 089 463
<b>GRAND TOTAL</b>		<b>2 043 121 283</b>	<b>2 147 462 664</b>	<b>2 204 304 415</b>	<b>2 266 770 511</b>	<b>2 354 931 051</b>

### kWh per Customer per Category

CATEGORY	2008	2009	2010	2011	2012	2013
<b>Domestic</b>	1 874	1 913	1 966	1 965	1 993	2 025
<b>Commercial</b>	19 189	19 847	20 651	21 567	21 719	22 213
<b>Industrial</b>	99 705	96 604	103 726	107 679	110 233	116 746
<b>Irrigation</b>	55 497	42 777	48 305	44 625	47 488	45 849
<b>St. Lighting</b>	93 867	84 099	73 227	53 187	49 620	47 410
<b>Others</b>	5 395 316	4 890 029	6 037 000	5 869 765	9 839 542	9 824 887
<b>All categories mixed</b>	5 306	5 237	5 413	5 446	5 475	5 578



### Variation of Sales per Category of Customers for the years 2011-2013

CATEGORY OF CONSUMER	kWh Sold			% Increase over previous year	
	2011	2012	2013	2011/2012	2012/2013
Domestic	709 996 334	736 996 967	764 013 867	3.80	3.67
Commercial	786 681 639	809 724 328	842 457 293	2.93	4.04
Industrial	654 906 213	660 518 448	687 631 882	0.86	4.10
Irrigation	22 490 994	24 931 090	25 354 250	10.85	1.70
Others	30 229 235	34 599 678	35 473 759	14.46	2.53
<b>TOTAL</b>	<b>2 204 304 415</b>	<b>2 266 770 511</b>	<b>2 354 931 051</b>	<b>2.83</b>	<b>3.89</b>

### Percentage Sale to each Category

CATEGORY	2008	2009	2010	2011	2012	2013
Domestic	31.43	32.56	32.38	32.21	32.51	32.44
Commercial	32.76	34.05	34.44	35.69	35.72	35.77
Industrial	32.59	30.52	30.35	29.71	29.14	29.20
Irrigation	1.27	1.00	1.11	1.02	1.10	1.08
St.Lighting	1.68	1.63	1.44	1.11	1.09	1.09
CEB + Others	0.27	0.27	0.27	0.27	0.27	0.27
<b>GRAND TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

## HUMAN RESOURCES

Reliable electricity supply is dependent on many factors, but primarily on people with the necessary expertise to provide leadership and to apply strategies, processes, systems and practices in the various functional areas of the business. Indeed, the combined human capital assets of employees constitute the lifeblood of the CEB.

During the period under review, the utility has lived up to its mission of providing an essential service to the nation, amidst growing adversity and economic turbulence. Our people, operating at different levels, have, undoubtedly, been the architect of this performance through their initiative and dedication.

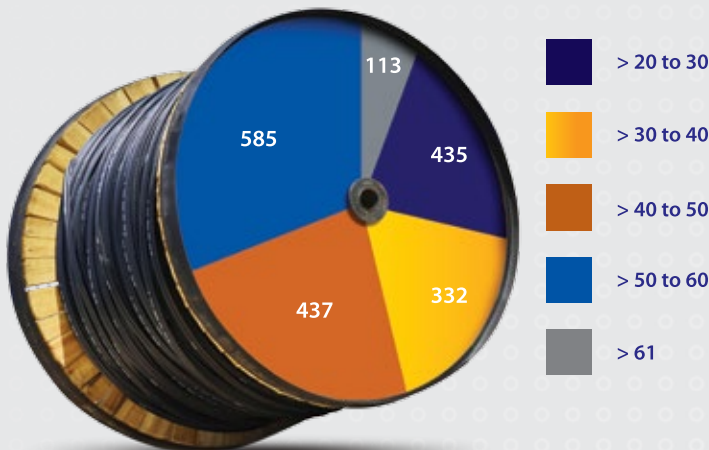
### MANPOWER

85 individuals left the CEB during the year 2013; this is mainly due to normal attrition, including retirements, deaths and resignations. During the same period, 7 new staff members were recruited. The labour force at the end of the year stood at 1,902.

Some key human resource indicators are shown hereunder:

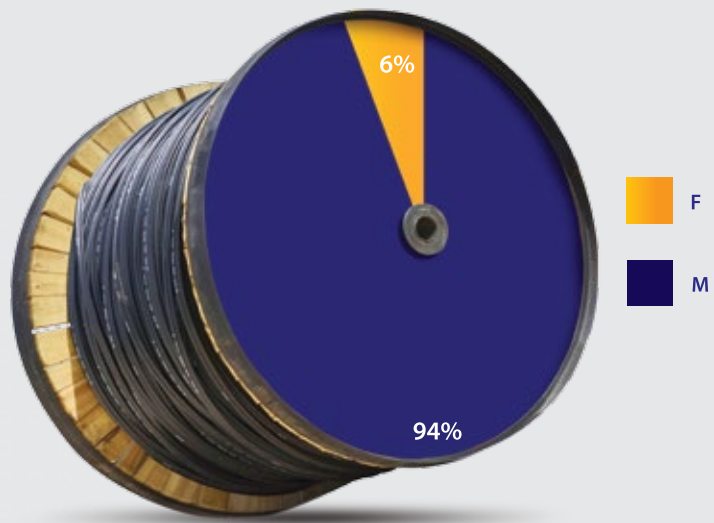
No. of Employees		Year 2013
Administrative & Technical Personnel		814
Other Categories		867
Trainees		128
Cadet Engineers/Technicians		93
<b>TOTAL</b>		<b>1,902</b>

Age Group

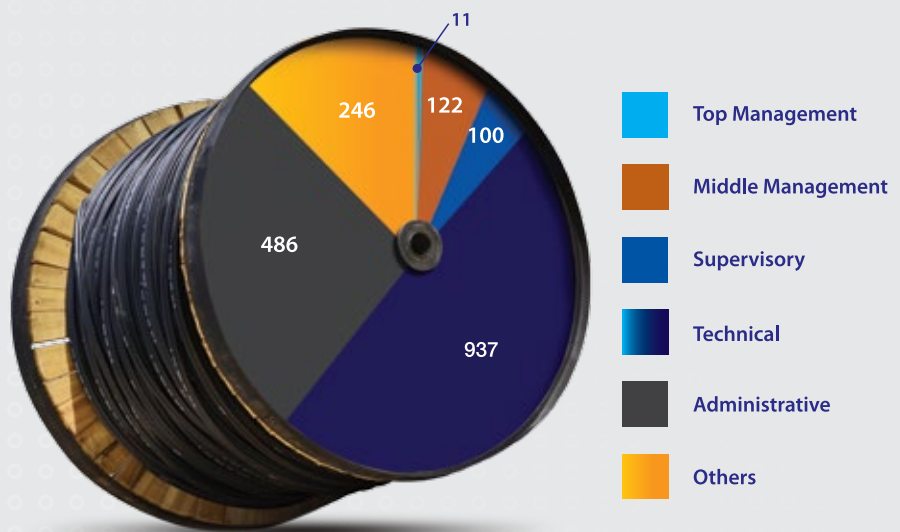




Gender



Grade Category



### Recruitment

As part of its strategy for talent management, the CEB is committed to acquiring, retaining and developing the best talent and skills. After their appointment, new employees are required to undergo an induction programme with a view to equipping them with the skills and knowledge required for their new roles, as well as inculcating in them the organisational culture.

During the year 2013, some eighty-one (81) employees were appointed at various levels of the organisation.

## EMPLOYEE RELATIONS

The Employee Relations Unit provides direction, advice, and support to the Organisation and employees at large on the interpretation and application of collective agreement, internal regulations, employment-related legislation and other employment issues.

### JNC Meetings/ Consultations

Regional and Joint Negotiation Committee meetings were held on a regular basis with the three recognised unions (CEB Workers Union, Union of Employees of CEB and Other Energy Sector, & CEB Staff Association) to address various employee relations issues. These meetings are considered as essential by Management, as the latter firmly believes in building an effective and harmonious working relationship with the unions and employees at large.

Extensive negotiations were also held with the Union of Employees of the CEB and Other Energy Sector (UECEBOES) on the recommendations contained in the Report on the Review of Organisation and Pay Structure and Conditions of Employment (Pay Report) submitted by Consultant B.C. Appanna in October 2009. A number of disputes were referred to Judge Domah, Arbitrator, who was appointed by both parties. The Award of the Arbitrator, after completion of hearing, was delivered in August 2013, following which the CEB and UECEBOES signed a new collective agreement in September 2013 covering the period from July 2009 to June 2013. Subsequently, the recommendations, contained in the Award, were extended to all employees of the CEB, wherever appropriate.

In June 2013, Consultant B. C. Appanna was appointed by the Board to carry out an assignment to review the salary and conditions of service of CEB employees for the period from July 2013 to June 2017. The Consultant submitted a preliminary report in December 2013. Negotiations with the three recognised Unions were initiated with a view to signing a Collective Agreement for the period from July 2013 to June 2017.

The preliminary report consists, inter-alia, of:

- (a) A revised pay structure;
- (b) A review of terms and conditions of employment; and
- (c) A review of Performance Management System and the Productivity Bonus Scheme.

## TRAINING AND DEVELOPMENT

The CEB is putting much emphasis on training and development and spares no effort to give training to its employees in order to achieve its strategic goals. Our learning strategy is geared towards developing employees to perform optimally in their current positions, build an internal pipeline for future skills requirements, and create career opportunities.

### Training Needs Analysis

The Organisation's strategic role of training is to provide an overview of training in terms of:

- Who gets trained;
- How the training itself is organised, structured, delivered; and
- How training can be used to achieve the strategic goals of the Organisation.

During the review period, Alentaris Consulting Ltd was selected to conduct an organisation-wide Training Needs Analysis. This important exercise, the first of its kind at the CEB, will enable the identification of performance gaps at all levels and, subsequently, direct resources to required areas through appropriate training programmes.

### Performance Management System

The Electronic Performance Management System (e-PMS), which was introduced back in January 2011, aims at aligning operational with strategic objectives, producing greater employee engagement and, ultimately, making the CEB a performance-driven organisation.

The e-PMS reviews performance on the basis of Key Performance Indicators and a number of qualitative factors such as Teamwork and Cooperation, Professional Competence and Experience, Sense of Responsibility, Leadership and Loyalty and Reliability.

After operating on a pilot scheme for two years, the e-PMS cycle went live in 2013 and will, henceforth, determine the grant of the yearly increment and the quantum of the productivity bonus to employees.



## Human Capital Development

To meet the challenges of rapid technological advances and changes in customer demands, the CEB continuously upgrades the skills and competencies of its people. In this respect, a total of 57,500 man hours of training were provided during 2013, both locally and overseas.

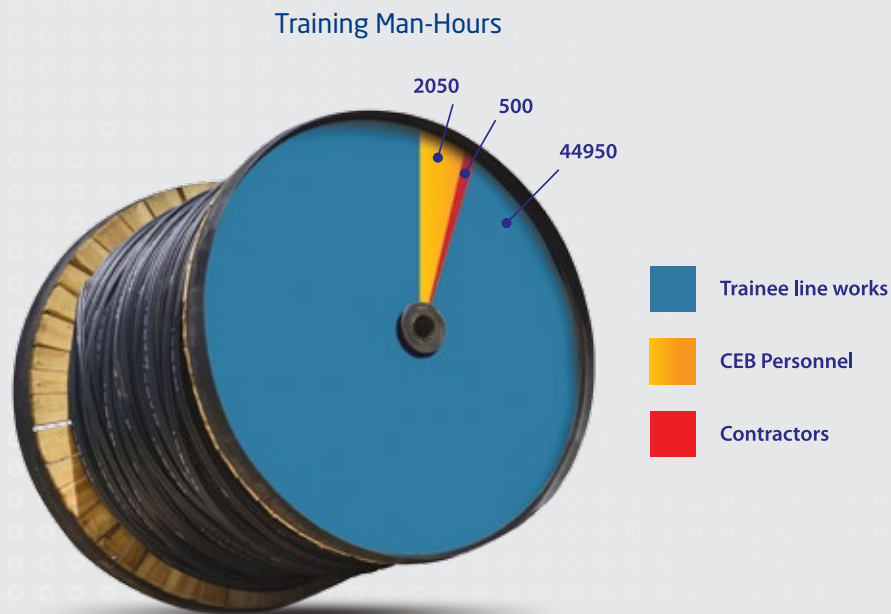
The overseas training consisted of different courses, mainly in the technical field, which was attended by employees from different departments. Our staff have also benefitted from international exposure through the ITEC/SCAAP training programme

The local training was mainly made up of courses conducted at CEB's Training School (CFPP), on-the-job training, seminars, and conferences. Induction training was also imparted to all new recruits to familiarise them with the company's policies and procedures, prior to their placement in the work set-up.

As part of its social responsibility obligation, the CEB also provided short-term work placements to some 200 students from institutions such as the University of Mauritius, University of Technology, Mauritius Institute of Training and Development, and Charles Telfair Institute with a view to offering them the opportunity to gain experience in relation to their respective courses of study.

### CEB Training School

In 2013, the "Centre de Formation et de Perfectionnement Professionnels (CFPP)", which is the Training School of the CEB, provided some 47,500 man-hours of training as detailed hereunder:



## SAFETY AND HEALTH MANAGEMENT

The management of Occupational Safety and Health is a primary concern of the CEB, given that the operational activities of the utility encompass multiple types of hazards, such as electrical, mechanical, civil, high structures, underground networks, and flammables. The CEB is highly committed to providing a safe and healthy working environment to all its employees and contractors. The "zero-rate accident" remains a focal point of the utility's safety improvement drive.

A wide range of activities were carried out in 2013 to promote safety and health at the workplace. Recommendations, made by the Main and Regional Safety and Health Committees, were implemented, and several measures were taken to uplift the health and safety status at CEB sites.

## **Promotion of Safety and Health**

During the period under review, the following activities were organised to promote safety and health at work:

### ***World Day for Safety and Health at Work***

The World Day for Safety and Health at Work was celebrated on 30 April 2013. The theme was “The prevention of occupational diseases”. To mark this occasion, an exhibition on “Safe and Unsafe use of Electricity” was held at the Rose Hill Customer Service Centre.

### ***Safety Awareness Campaign***

In line with the requirements of OSHA 2005, and with a view to creating awareness, educating, informing, and training our employees in the field of safety and health, some 55 talks were held in various sections island-wide and in Rodrigues. The resource persons were officers from the Police Road Safety Unit, Mauritius Fire and Rescue Services, and our in-house Safety and Health Officers. The areas covered included Defensive Driving, Penalty Points, Fire Safety, and Safety and Health Legislation. Some 1,425 employees attended the sessions.

### ***Safety Rules (Production Department)***

The Safety Rules for Production Department have been finalised and are due to be launched in 2014.

### ***Safety Inspection and Enforcement***

During the year, more than 500 safety inspections were carried out in Mauritius and Rodrigues. Emphasis was laid on safe systems of work and the use of personal protective equipment. Competency tests, trade tests and fire drills were also carried out to certify the aptitude of competent personnel regarding safety and safe systems of work.

### ***Safety, Health and Environment Audit***

The above audit was carried out in all CEB sections in Mauritius as well as in Rodrigues, with a view to identifying all hazardous conditions. Based on the findings, corrective actions would be taken to make the workplace safer and healthier.

### ***Risk Assessment***

In line with the provisions of OSHA 2005, a risk assessment exercise was conducted at all the concerned sections of the CEB, both in Mauritius and Rodrigues. The objective of the exercise was to assess safety and health risks in the workplace and take remedial measures.

### ***Health Surveillance***

Employees based at our power stations and those working on electricity networks were subjected to medical examinations by our Occupational Health Consultant. The objective was to ensure that they were medically fit to perform their assigned tasks.

### ***Exhibitions***

Four exhibitions on the “Safe Use of Electricity” were held at different locations island-wide during the year under review. In-depth explanations and advice were provided to school children and the public at large. Flyers, depicting safe and unsafe situations, were distributed. A presentation was also made on “Electrical Danger and Safety” to sensitise all those who attended the exhibitions.

### ***Training on Safety and Health***

Regular training was provided to in-house employees and employees of CEB contractors at the Training School (CFPP) to further develop their safety awareness and competencies. On-the-job safety training was also delivered island-wide.

A group of 69 employees from different sections also received training in First Aid. The aim is to have a maximum number of first-aiders at our different sites of work.

## Accident Statistics

During 2013, fifty-six work-related accidents, requiring more than a 3-day absence from work were recorded. It is unfortunate to note that one fatal accident occurred during the year, causing the death of a CEB engineer. The corporate goal of “zero accident” still remains our priority target.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Accidents</b>	73	86	55	79	73	41	38	37	42	56
<b>Man-Days Lost</b>	1,077	1,486	1,103	1,380	1,462	633	922	925	956	982
<b>Frequency Rate</b>	22.40	25.98	15.8	25.05	17.03	13	10.14	9.9	9.54	13.16
<b>Severity Rate</b>	0.33	0.45	0.35	0.44	0.34	0.26	0.25	0.24	0.22	0.23
<b>Fatal Accidents</b>	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1

## WELFARE AND BENEFITS

The CEB prides itself highly in looking after the welfare of its work-force. In this respect, the necessary mechanism has been put in place for the provision of a wide range of benefits to employees. The organisation of sporting activities is also a regular feature.

Welfare and sporting activities, by and large, lead to the following benefits:

- Promotion of better physical and mental health for employees;
- Facilities, such as car loan schemes, medical benefits, education loans, passage benefits and recreational facilities for workers and their families, help in raising their standards of living and ultimately their productivity levels;
- Promotion of a sense of belonging to the Organisation and active interest in work activities;
- Promotion of healthy industrial relations; and
- Reduction of social evils prevalent among employees, such as substance abuse.



During the year, our employees participated in various sporting and recreational activities, including:

- Regional football tournaments;
- Football match between the winners of CEB Inter-zone Football Championship and CEB Rodrigues;
- Badminton Inter-Firms Competition; and
- Bowl Tournament organised by the Federation Mauricienne des Sports Corporatifs (FMSC).

These activities have greatly helped in enhancing the team spirit within the Organisation.

## INFORMATION TECHNOLOGY

The CEB recognises that Information Technology (IT) is clearly shifting away from a traditional support function to a more mainstream and strategic function. Our vision is to create a “Connected Organisation” in which the different departments/sections communicate and work together more effectively, and where services are delivered to customers in a more accessible and timely manner.

During the course of the year 2013, the CEB pursued the development of its IT landscape in order to optimise its operations, control, and decision-making functions and to achieve its vision and business objectives.

Following the successful upgrade of SAP 4.7 to SAP ECC 6.0 and the acquisition of new servers for SAP ECC 6.0, many outstanding issues were resolved. A number of new functionalities, owing to new capabilities of SAP ECC 6.0 and pertaining to modules such as Material Management (MM), Project Systems (PS), IS-Utilities, were implemented.

During 2013, the IT/MIS Department, in conjunction with the Customer Services Department and the Meter Laboratory, successfully implemented the EDM Multi-Drive Automated Meter Reading (AMR) Application for the remote meter reading and pre-paid electricity projects.

The upgrading of IT infrastructure at CEB sub-offices was pursued with the revamping of the Local Area Network (LAN) of CEB Sub-Offices at Bramsthan, Mahebourg and Rodrigues. Other major developments included the implementation of LAN at the new Ebène Corporate Office and the provision of connectivity at the Vacoas New Office. WiFi access was also deployed at the Curepipe Head-Office and provision made for the deployment of same at Ebène.

A Network Management System (NMS) was implemented in 2013 to enable a more efficient administration of the CEB Network through increased visibility of the network behaviour, rapid identification of performance bottle-necks, and being more proactive with regard to critical links in the Network.

Finally, additional blade servers and storage capacity were purchased to cater for the above-mentioned applications/services.

The ultimate objectives of the above initiatives are to enable the CEB to operate in a more efficient and effective manner, provide a quality service to customers, and improve the financial baseline.

## SUPPLY CHAIN

The Supply Chain Division is responsible for the procurement of all goods and services required by the CEB and which have to be sourced from external suppliers or organisations.

While ensuring the supply of goods and services, the focus is always on the following parameters:

- Satisfaction of user departments’ needs;
- Best value for money;
- Building relationships with reputable suppliers;
- Continuous sourcing of suppliers; and
- Contribution to the strategic objectives of the CEB.

It is to be noted that, in all its actions and dealings with external suppliers, the Supply Chain team has to exhibit the highest standards of ethics and uphold CEB values.



## Major Activities

The year 2013 was a busy one in terms of procurement activities for the CEB. Some 156 tenders and 2,330 requests for quotations were issued during the year. The major bidding exercises concerned the:

- Construction of a 5,000 m<sup>3</sup> heavy fuel oil tank at Fort William;
- Consultancy services for the re-development of the Saint Louis Power Station;
- Installation of 1x350 kW hydro unit at Midlands;
- Purchase of a new corporate building at Ebène; and
- Extension of Pointe Monnier Power Station in Rodrigues.

A summary of the procurement activities during the year 2013 is given hereunder:

### YEAR 2013

*Annual Spend (Overseas)	Rs. 898 M
*Annual Spend (Local)	Rs. 534 M
No of Requests for Quotation Launched	2,330
Total No of Tenders Opened	156
Category of Tenders Opened	
Works	28
Goods	95
Services	17
Consultancy	16
Total No of Bids Received	709

*\*Note: Excluding spend for Heavy Fuel Oil and Payment to Independent Power Producers*

It is to be noted that in spite of the bulky procurement activities, the CEB did not encounter any major problems with aggrieved bidders, including cases filed at the level of the Independent Review Panel (IRP). We were able to clear a number of misunderstandings and avoid frivolous cases filed at the IRP thanks to effective communication with bidders regarding issues such as non-responsiveness and non-competitiveness of offers.

On-line vendor registration was introduced to allow registration of potential bidders via the CEB's website, thereby promoting fairness and greater access to do business with the utility.

## Training and Development

The different communications (directives, circulars, regulations) received from the Procurement Policy Office (PPO) and the Procurement Law and accompanying regulations, as well as our internal manuals, were posted on the CEB's intranet. The aim is to build the skills and knowledge of our employees, in particular for the evaluation of bids. During the review period, the Supply Chain documents SCM 01 & SCM 02 were also revised to conform to the existing law and regulations.

The Supply Chain being a dynamic sector, it is imperative to provide continuous training to our staff. In this respect, a number of employees attended training courses or seminars offered by the Procurement Policy Office. An in-house training course was also organised at the CEB Training School for a group of 30 Bid Evaluators to familiarize them with the new Bid Evaluation Guidelines of the PPO.

## Challenges Ahead

The inflationary tendency on the worldwide market will force small entities like the CEB to review their sourcing methodologies with a view to tapping reliable suppliers and attracting bidders from competitive markets. In the recent past, we have been able to obtain competitive offers for our procurement needs thanks to the worldwide slump which has forced big players to participate in our relatively modest bidding exercises. Now that the worldwide market is on the recovering path, we must think about new ways to attract competitive bidders. New legislations have recently made provision for Framework Agreements, which is an avenue to consider. In a similar vein, the CEB is planning to initiate procedures for engaging in long-term and medium-term contracts with suppliers.

Electronic Bidding will also soon become a reality for public bodies, including the CEB. In this respect and for this project to be successful, we need to equip ourselves in terms of capacity- building, logistics and internal control.

## CORPORATE PLANNING

The year 2013 was, indeed, a very important one for the CEB as far as strategic planning is concerned. The CEB Integrated Electricity Plan (IEP) 2013-2022, which details the strategic orientation of the utility, was released and was the subject of much debate in several quarters. The Plan aims at ensuring the reliability, quality and continuity of electricity supply for the coming 10 years, and demonstrates the commitment of the CEB to all stakeholders and the country at large.

### MAJOR ACTIVITIES IN 2013

#### ELECTRICITY DEMAND ASSESSMENT

The electricity demand, though continuing to show an upward trend, is growing at a slower rate. Factors, such as economic conditions, energy efficiency management and substitutes, may explain the decreasing rate of growth. The mid-year review expected growth in energy sales, peak demands and sales revenue for the year 2013 was indeed materialized. The table below summarises the CEB's demand forecast accuracy for the year 2013:

Demand Forecast 2013 - Accuracy

	MARKET	ENERGY (kWh)	REVENUE (Rs)	PEAK DEMAND (MW)
Forecast	Mauritius	2,370,170,406	13,685,900,692	447.00
	Rodrigues	28,955,440	189,119,840	6.98
Actual	Mauritius	2,354,931,051	13,443,629,645	441.13
	Rodrigues	29,208,318	190,011,568	6.85
Variance (%)	Mauritius	0.65%	1.80%	1.33%
	Rodrigues	-0.87%	-0.47%	1.90%

To meet the future demand, while moving ahead with the objective of ensuring secure, reliable, quality and affordable electricity supply for the country, the CEB will continue to formulate and evaluate alternative energy supply strategies based on assumptions related to fuel availability and prices, market penetration rates of new technologies, new investment limits, environmental emissions, structure of energy/electricity markets and the global economic concerns.

#### HOUSEHOLD ELECTRICITY UTILISATION SURVEY

After the successful execution of the household electricity utilisation survey, conducted in 2012, the official report on the findings of the survey was submitted to the Board. The research confirms the growing penetration of air-conditioners in households, the rapid substitution of electric water heaters by solar water heaters, and the marked replacement of old television sets with more efficient ones. The survey results also provided useful primary information for assessment of demand, definition of demand-side management initiatives, and tariff and revenue planning.

#### ELECTRICITY GENERATION PROJECTS – POWER GENERATION EXPANSION PLAN

With regard to sustaining power generation expansion, the CEB worked on the following projects during the year 2013:

##### Signing of Power Purchase Agreement (PPA) with MCTP

Following the Environment Appeal Tribunal's judgement in favour of the Mauritius CT Power (MCTP) and after having secured the mandatory EIA license, a new round of negotiations to review and finalise the Power Purchase Agreement (PPA) between the MCTP and the CEB was held during 2013. On 27 December 2013, a major milestone in the project development was reached, whereby the PPA was agreed upon and signed. Other key elements of the project, such as the Coal Supply Agreement, Shareholder's Agreement and Land Lease Agreement, are expected to be finalised in 2014. The plant is expected to be operational by 2017, hence assuring the short- to medium-term supply capacity.

## Re-development of Saint Louis Power Station

The redevelopment of Saint Louis Power Station forms part of the contingency plan of the CEB. The power station has all the required amenities which can be used to augment its generation capacity. The proposed re-development consists of retiring the six old less-efficient Pielstick engines and the commissioning of new 60 MW medium-speed diesel engines in two phases of 30 MW each. The services of Consultant Mott MacDonald were engaged in 2013 to start the preparation of tender documents for hiring a contractor for the execution of the Phase 1 re-development. The consultant will also assist the CEB in bid evaluation, negotiations with the Preferred Bidder, award of contract to the Successful Bidder, and technical advisory services during the implementation phase.

## Aerowatt Wind Farm (Plaines des Roches) Project

Upon its commissioning, the Aerowatt Wind Farm will be the third largest renewable energy project in Mauritius, after the Sarako 15 MW Solar PV Farm and the Padgreen-Suzlon 29.4 MW Wind Farm. In June 2013, the CEB finalised and signed the Energy Supply & Purchase Agreement (ESPA) with the company EOLE Plaine des Roches Limitée, the promoter of the Aerowatt Wind Farm. With the installation of 11 Wind Turbine Generators (WTG) of 850 kW each, the Wind Farm will generate around 17 GWh annually. It will inject power at CEB's Amaury Substation through a dedicated 22 kV feeder.

## Setting Up of 10 MW Grid-Connected Photovoltaic Farms

After a successful bidding process, this project, which is in line with the national objective to encourage the penetration of renewable resources so as to reduce our dependency on fossil fuel, has made significant progress. Three promoters for a total of 10 MW capacity were selected. The CEB has successfully negotiated the energy purchase price based on market conditions and has, accordingly, agreed ESPAs with the promoters in December 2013. The promoters are expected to sign the contractual agreements in early 2014. As per schedule, the five Solar PV Farms of 2 MW each will, in combination, supply some 18 GWh of energy. The coming into operation of the solar farms is planned for 2014 and 2015.

## Pre-feasibility Study for the Use of Liquefied Natural Gas (LNG) in Electricity Generation in Mauritius

This project falls within the energy diversification strategy of the CEB and the Government. Consultant Worley Parsons of South Africa was awarded the contract to conduct a pre-feasibility study so as to determine whether Mauritius has the necessary facilities to venture into this technology. The Consultant carried out its first mission in December 2013. In order to have a critical mass for the use of LNG, the study's scope has been broadened to include the highly energy-dependent transport sector, in addition to the conversion of existing diesel energy generating engines and the setting up of a 100 MW combine-cycle gas turbine. The study is expected to be completed by May 2014.

## Identification of Potential Sites for Mini/Micro Hydro Power Plants

As a first step, this project involves the identification of potential sites for the construction of new mini/micro hydropower plants. This study is in line with the Government Policy to optimise renewable energy sources under the Maurice Ile Durable (MID) action plan and with the cost reduction strategy for fuel purchase. The RFP will be launched in early 2014.

## Construction of a Coal Jetty at Pointes aux Caves

To comply with one condition of the EIA permit, the coal power plant at Point aux Caves will be supplied with coal by sea route. In this respect, the construction of a coal jetty is necessary. An expression of interest (EOI) was launched in 2013 to shortlist consultancy firms which are willing to provide assistance to the CEB for this project. Subsequently, a RFP was floated in November 2013. The consultancy exercise will involve:

- a) A feasibility Study;
- b) Preliminary Planning and Designs;
- c) Detailed Engineering Designs and Tender Services; and
- d) Overall Project Management and Site Supervision Works.

### **Sarako 15 MW Solar PV Farm**

The Sarako project is the first major Solar PV Farm that will be erected in Mauritius. It constitutes a major stride in the national energy-mix diversification strategy and the national renewable energy strategy. After the signing of an ESPA on 21 May 2013 between the CEB and Sarako PVP Co. Ltd, the project implementation started in November of the same year. The coming into operation is scheduled for February 2014 and the power plant will generate some 24 GWh of electricity annually.

### **THE NETWORK PLANNING - POWER TRANSPORTATION PLAN**

As part of integrated development, the CEB has to ensure that the expansion of the Transmission and Distribution network is perfectly aligned with the power generation projects and the load demand. In 2013, the following in-house key system planning studies have been carried out:

#### **Power Injection following the Re-development of the Saint Louis Power Plant**

To ensure safe power injection, a system impact study was carried out for the integration of the new 60 MW generation output at the Saint Louis Power Plant, with the constraint of accommodating the upcoming 110 MW power plant at Pointe aux Caves and the upgrading of the transmission network voltage to 132 kV. As per the findings of the study, the existing transmission network will be able to transmit the generated power from both the Saint Louis Power Plant and the Coal Power Plant without endangering the security of supply.

#### **System Impact Study for the Five 2 MW Solar PV Farms**

The CEB launched an RFP in 2012 for the setting up of a dispersed grid-connected solar photovoltaic (PV) plant with a capacity ranging between 1 to 2 MW inclusive. The total capacity for this project was limited to 10 MW. To ensure safe integration of the proposed renewable energy systems, system impact studies were carried out, whereby power quality analysis was the main focus. The technical studies confirmed that the present network would be able to accommodate the new five 2 MW Solar PV Farms with minor upgrades.

#### **DigSILENT Power Factory Software Implementation and Training**

In order to extend the use of the power-system simulation software, a decision was taken in 2012 to upgrade the platform from a stand-alone to a server-based application and to impart fully-fledged training to a larger pool of CEB engineers. The upgrading of the software was completed in 2013 and, accordingly, 17 engineers from the T&D, CPR, Production, and NUG Departments, respectively, attended the training.



## Development of the Medium-Scale Distributed Generation Grid Code

The launching of Small-Scale Distributed Generation (SSDG) project in 2010 was an important measure taken by the CEB, with the collaboration of the Government, to democratise access to the national electricity grid. The SSDG project, however, entertains only low-voltage connection of Renewable Energy (RE) systems with capacities of up to 50 kW. The 50-kW technical limit was determined following a consultancy exercise funded by the UNDP.

To further open access to the grid for RE systems with capacities greater than 50 kW at a higher voltage level (for instance at the 22 kV medium-voltage level, while satisfying technical requirements, the CEB, using its in-house expertise, has established two new grid codes for the integration of Medium-Scale Distributed Generation (MSDG) projects. The latter will comprise larger photovoltaic, wind turbine, mini-hydro, and biomass electricity generation systems. The two new grid codes, which are downloadable from CEB's website <http://ceb.intnet.mu>, are the Grid Code for capacities greater than 50kW, but less than 200kW, and the Grid Code for capacities greater than 200kW, but less than 2 MW.

Following the establishment of the MSDG Grid Codes, the CEB has officially opened access to the grid for consideration of MSDG projects.

## The Integrated Electricity Plan (IEP) 2013-2022

The IEP 2013-2022, more than a guiding plan, formalises CEB's already in-action tactical programme, which has the key lasting aim of supporting the smooth development of the local power sector. As our country is not endowed with an abundant supply of natural energy resources, it is incumbent upon the CEB, as per the CEB Act 1964, to plan carefully the national power system so as to ensure reliable and quality electricity supply that is also affordable and sustainable for the country. The IEP 2013-2022 was officially released on 19 February 2013.

The IEP 2013-2022, which is downloadable from the CEB's website <http://ceb.intnet.mu>, is a 10-year strategic master plan outlining the power generation plan, and the transmission and distribution plan of the CEB. The IEP has been prepared to guide the power system development in both Mauritius and Rodrigues while, by extension, ensuring a sustainable and reliable electricity future.

The cornerstones of the IEP 2013-2022 are to optimise the use of the existing power system, to keep electricity prices as low as possible through least-cost capacity expansion, to encourage electricity consumers to participate in Demand-Side Management (DSM), and to provide for continued Private Sector opportunities in the electricity sector. These objectives shall be met while giving due consideration to emerging challenges, such as protection of the environment and maintaining grid stability with an increasing share of renewable energy sources.

## ENVIRONMENTAL MANAGEMENT

As well as planning for future electricity generation expansion, due attention has to be given to protection of the environment and to compliance with environmental regulations. In this regard, several studies were conducted to ensure that new projects conform to the existing environmental regulations and adhere to good environmental practices.

It is to be noted that national legislation, with regard to the mitigation of environmental impact, has been reinforced to bring in the concept of sustainability and environment stewardship. In this respect, the CEB will continue to oversee the implementation of necessary measures to ensure that all its power generation activities are operating within the limits of the environmental standards and guidelines.

The main activities and projects of the Environment Unit in 2013 are detailed hereunder :

### Environmental Monitoring Exercise

Air quality monitoring was carried out in all thermal power stations in Mauritius and Rodrigues. It was observed that the emissions of the power stations are in compliance with the Mauritian Standards. In Rodrigues Island, noise surveys and waste audits were also carried out as part of the Comprehensive Study of Rodrigues Power System.

## EIA Studies

In line with requirements of the Environment Protection Act, EIA studies were carried out for the following projects in the year 2103:

### *New Tank Farm at Bain des Dames for the Storage of Heavy Fuel Oil*

This new tank farm will comprise six tanks with a capacity 6,500 m<sup>3</sup> each and will be used for the storage of Heavy Fuel Oil. The EIA study considered the potential impact on the surroundings and the local population. Public consultation meetings were held with the inhabitants and all the clearances were obtained. Subsequently, the EIA license was granted in September 2013. It is planned to start implementation of the project in 2014. This new tank farm will increase our storage capacity for HFO and will also supply Rodrigues Island.

### *Relocation of HFO Pipeline*

The Mauritius Ports Authority has requested the CEB to relocate the HFO pipeline that supplies HFO to Fort George Power Station. This activity required the submission of an EIA report. A consultant was hired to carry out the study. The EIA report was submitted to the Ministry of Environment and Sustainable Development to obtain the EIA license.

### *Preparation of a Grid Emission Factor for Mauritius*

The Ministry of Environment and Sustainable Development has commissioned a consultancy for the preparation of a Grid Emission Factor (GEF) for Mauritius. The GEF represents the average emissions of Green House Gas from electricity generation. The CEB is providing the necessary support in the preparation of this parameter. The Ministry of Environment and Sustainable Development will, thereafter, validate the GEF to allow its use in electricity generation projects.

### *Participation of the Environment Section in National Projects*

#### *Third National Communication (TNC)*

TNC is the national reporting document of the Government of Mauritius that is submitted as part of the obligation of the United Nations Framework Convention on Climate Change (UNFCCC). This activity is chaired by the Ministry of Environment and Sustainable Development, with the CEB being a major stakeholder in this project. The work started in 2013 and is scheduled for completion in 2015.

#### *Preparation of MID Policy, Strategy and Action Plans*

The CEB was actively involved in the preparation of the MID Policy, Strategy and Action Plan. The energy sector has been chosen as one of the pillars of sustainable development. Areas that will be of main concern are renewable energy, energy efficiency and energy security. The role of the CEB will be to diversify its energy portfolio to promote renewable energies as far as practicable, taking into account its financial risks.

#### *Development of Technology Needs Assessment (TNA)*

The Ministry of Environment and Sustainable Development has sought the assistance of the CEB in the preparation of the TNA document that will be used as a resource for future projects and for the leveraging of funds where technical assistance are required. The TNA list and prioritise technologies in which Mauritius should invest in so as to mitigate the impact of Climate Change.





## DEMAND SIDE MANAGEMENT

As a forward-looking utility, the CEB attaches great importance to Demand Side Management (DSM). Various policies and measures are being implemented to control, influence and generally reduce electricity demand, while also helping the country in the fight against climate change and greenhouse gas emissions.

The main DSM initiatives for the year 2013 were as follows:

### Feasibility Study for Replacement of Fluorescent Tubes T8 by T5

Following the successful implementation of the Compact Fluorescent Lamp Project in 2008–2009, a feasibility study was undertaken for the replacement of Conventional Fluorescent tubes (T8) by Linear Fluorescent tubes (T5). To this effect, one CEB building was selected and 150 T8 tubes were replaced by T5 ones. The results of the study have showed that the T5 tube consumes around 40% less energy than the T8 type. It is to be noted that, although the cost of the T5 tube is higher as compared to the T8 type, this high initial cost is compensated by its long life-span and energy efficiency properties. It is envisaged to replace all T8 lamps by T5 on all CEB premises.

Moreover, and in line with the findings of the Household Electricity Utilisation Survey conducted in 2012, a national campaign will be devised for the penetration of T5 tubes into households.

### Sensitisation Campaigns

Several talks and exhibitions were organised by CEB resource persons in schools and colleges in order to sensitise the youths on the importance of saving energy as they can act as effective ambassadors for this laudable initiative.

The presentations were mainly based on the production of electricity from various sources of energy available in Mauritius. Emphasis was also laid on practical solutions for the judicious use of electricity at home and within schooling institutions.

### Energy Saving Tips

Messages with energy saving tips were disseminated through the PABX of CEB Head Office during call waiting time with a view to informing customers of the various means to save energy. This measure will be extended to other sections in the near future, including Rodrigues and the CEB 130 Helpdesk.

In a similar vein, clips on energy saving tips were broadcasted on TV and radio channels of the MBC to sensitise the population at large on energy saving. It is also planned to display a series of new corporate clips in the waiting-room of our Customer Service Centres and on our website.

### Energy Audit in CEB Buildings

Energy Audit is an important component of Government's project 'Removal of Barriers to Energy Efficiency in Buildings' and is in line with the MID vision.

During 2013, energy audits were carried out to determine the performance of CEB buildings in terms of energy consumption. The consumption patterns of a number of CEB buildings were captured and electronic meters were also fixed in the administrative blocks of power stations. This program will be continued in 2014.

## RODRIGUES

### PRODUCTION

#### Demand Pattern (Energy and Power)

The total energy generated in 2013 was 35.58 GWh, representing a rise of 5.89 % over 2012. The bulk of energy (89.86 %) was produced from fuel-oil-based power stations, while the wind turbines (both Grenade and Trèfles Wind Parks) contributed the remaining 10.14%.

POWER STATION	ENERGY SOURCE	OUTPUT (kWh)	%
Port Mathurin	Fuel Oil and Diesel Oil	7,072,018	19.87
Pointe Monnier	Fuel Oil and Diesel Oil	24,904,775	69.99
Trèfles	Wind	324,490	0.91
Grenade	Wind	3,282,900	9.23
<b>TOTAL</b>		<b>35,584,183</b>	<b>100</b>

The maximum power demand was 6.85 MW and was recorded on 31 December. This represents an increase of 5% over the year 2012 (6.55 MW).

### OPERATION AND MAINTENANCE

#### *Pointe Monnier*

A new Wartsila engine with a capacity of 2.5 MW was put on grid on 27 September 2012. During 2013, the two MAN engines performed satisfactorily, clocking 61,696 and 62,499 running hours respectively, whereas the Wartsila G4 clocked 9,363 hours. The total energy generated was 24.9 GWh, representing 70 % of the total energy generated.

#### *Port Mathurin*

The MAN Engines (G7, G8 & G9) cumulated 103,237; 98,672 and 87,542 running hours respectively. The total energy generated was 6.97 GWh, representing 19.58% of the overall production.

Major overhaul maintenance was carried out on engines G8 and G7 in March and July respectively. A major breakdown occurred on engine G7 on 02 December whereby the crankshaft was severely damaged.

The MWM engines were utilised as back-up in case of emergencies and, during 2013, they clocked 394 hours. The total units generated by the six MWM engines was 0.10 GWh, representing 0.3 % of the total production.

#### *Grenade*

The four units installed at Grenade generated a total of 3.3 GWh in 2013, representing 9.23% of the overall production. Since their commissioning, Units 1, 2, 3 and 4 have cumulated a total running hours of 32,803; 29,936; 22,420 and 24,367 respectively. Scheduled maintenance on all four units was carried out during the review period.

#### *Trèfles*

The three units at Trèfles have clocked an average of 60,185 running hours since their commissioning. The total energy produced was 0.32 GWh, representing 1 % of the overall production.

Scheduled maintenance was carried out on all three wind turbines in March and November.

### DISTRIBUTION

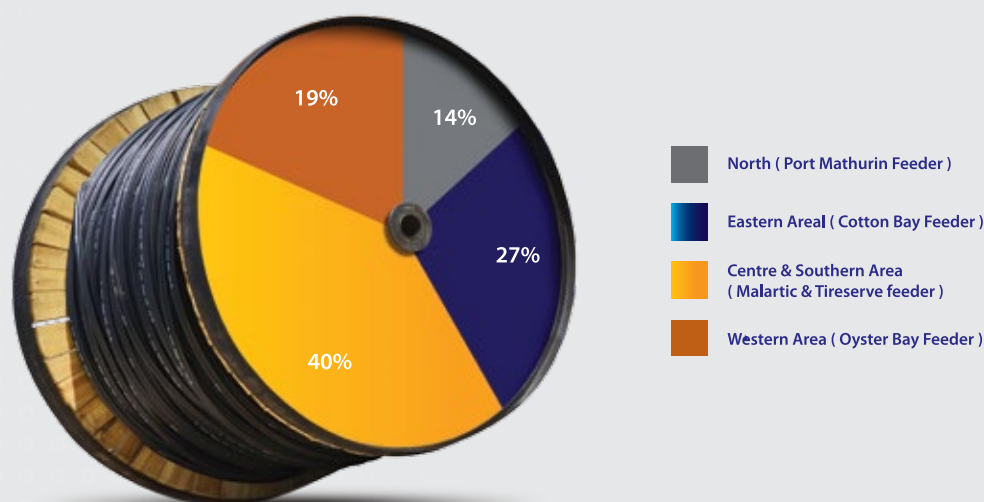
#### **System Demand**

The maximum power demand for the year under review was 6.85 MW and was recorded on 31 December, representing a total increase of 5 % over 2012. The average load factor of the system for the year was 35%.



The load distribution, on a regional basis, at the time of the highest demand on 31 December is shown hereunder:

Load Distribution Islandwide for 31 December 2013



## System Performance

The general performance in respect of the Transmission and Distribution System was satisfactory for the year under review, except for the last weeks of December when the island was visited by tropical cyclone Amara. Numerous trees and branches fell on our conductors due to strong winds, thereby affecting our network. The gusts were most severe in the eastern areas, hence causing some damage to our distribution network. Post-cyclone reinstatement works were initiated once cyclone warnings were removed, and the supply was restored to all customers readily.

### HV Network

The 22 kV distribution network was extended by 0.26 km to reach 150.1 km.

The programme for the gradual replacement of 22 kV pin-type insulators by 33kV insulators was continued in 2013. The aim was to reduce the number of faults caused by burnt cross-arms and poles in areas exposed to a high degree of salinity in the atmosphere. In a similar vein, HT rotten poles, more than 20 years old, were also replaced.

With a view to reducing line losses, one Capacitor Bank with a capacity of 50/100 kVAR was installed and commissioned on Oyster Bay Feeder at Grand La Fouche Corail in March. Another Capacitor Bank with a capacity of 150/300 kVAR was installed and commissioned on Malartic Feeder at Bigarade in July.

### LV Network

The low-voltage network was extended by 2.77 km to reach a total length of 347.27 km.

## Installed Transformer Capacity

The total number of distribution transformers at the year-end totalled 153, with an installed capacity of 13,375 kVA.

FEEDER	Installed Transformer Capacity /kVA					TOTAL
	25	50	100	150	250	
Port Mathurin	0	1	9	3	4	17
Oyster Bay	12	12	6	4	3	37
Cotton Bay	6	22	9	3	2	42
Malartic	6	19	10	6	2	43
Ti Reserve	1	3	3	7		14
<b>Total No.</b>	<b>25</b>	<b>57</b>	<b>37</b>	<b>23</b>	<b>11</b>	<b>153</b>
<b>Total kVA</b>	<b>625</b>	<b>2,850</b>	<b>3,700</b>	<b>3,450</b>	<b>2,750</b>	<b>13,375</b>

## Losses

The overall system losses were brought down from 12.8% in 2011 to 11.5% in 2012 and to 11.39% in 2013, through a better control of reactive power flows. During the review period, capacitor banks of 100 KVAR capacity were installed and commissioned on Oyster Bay and Malartic feeders, respectively.

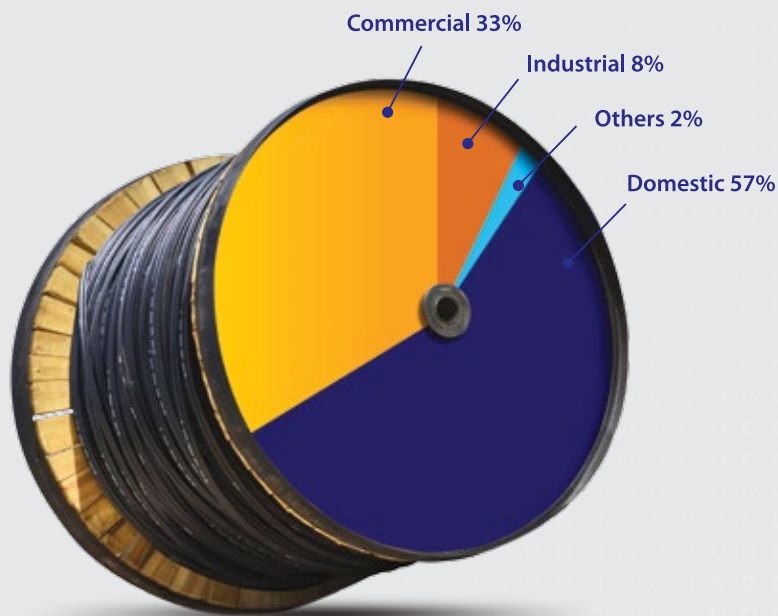
## CUSTOMER SERVICES

### Customers and Sales

The total number of customers, as at 31 December 2013, amounted to 13,162 compared to 12,818 in 2012, representing an increase of approximately 3%.

The sales of electricity totalled 29,202,952 kWh for the same period, equivalent to an increase of 6% as compared to the year 2012.

Sales by category (kWh) 2013



## FINANCIAL PERFORMANCE

At the end of Financial Year 2013, the Rodrigues Branch made a deficit of Rs 127 million, compared to a deficit of Rs 104 million for 2012.

## FUTURE PROJECTS

Several projects have been earmarked for the near future with a view to meeting the increasing demand and ensuring the reliability of supply. They include the:

- Construction of a new 22 kV Indoor Substation at Port Mathurin;
- Installation of two auto-reclosers;
- Refurbishment of Malartic Feeder;
- Re-conductoring of Oyster Bay Feeder;
- Ring Port Mathurin Feeder with Cotton Bay at Baladirou;
- Ring Cotton Bay Feeder with Malartic at Mourouk; and
- Construction of new HFO Storage tank of 2,000 m<sup>3</sup> at Pointe Monnier Power Station.





*MANAGEMENT  
DISCUSSION AND  
**ANALYSIS***



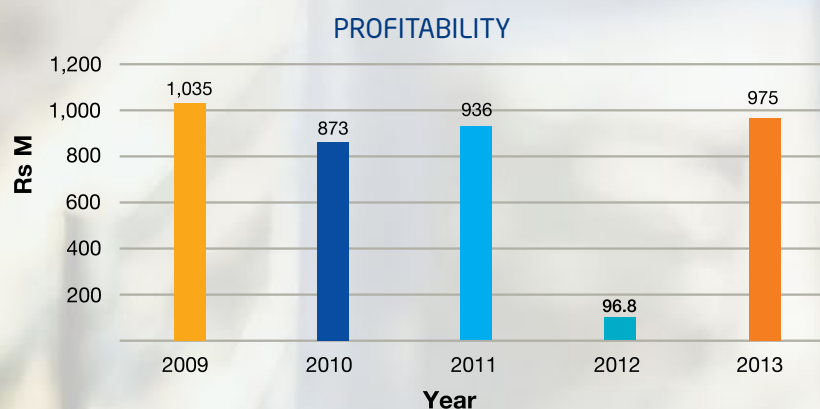
## MANAGEMENT DISCUSSION AND ANALYSIS

The audited financial statements for the year ended 31 December 2013 are presented hereafter, and have been prepared in accordance with the International Public Sector Accounting Standards.

### OVERVIEW

The financial results for the year 2013 were better than expected on account of favourable macro-economic conditions prevailing on the international market. Indeed, while CEB's total revenue is almost exclusively derived from the sales of electricity, most of its cost drivers are exogenous and beyond its control. The utility is, thus, exposed to external factors such as prices of fossil fuels and fluctuation of the Mauritian Rupee against major foreign currencies, as well as movements in interest rates. Due to a combination of factors during the year 2013, most of these cost drivers have fluctuated in favour of the CEB.

For the year ended 31 December 2013, the profit amounted to Rs 975 M and was mainly attributable to the falling prices of fossil fuels. The profits for the past five years are shown below.



The total revenue for 2013 amounted to Rs 14.4 billion, representing an increase of 2.95% over the previous accounting period. Some 95% of the revenue was derived from the sales of electricity. For its part, the demand of electricity increased by 3.91%, indicating a variation in the sales mix.

The total expenditure for the period amounted to Rs 13.4 billion and was made up of:

- Supplies and consumables, in the form of fuel oils used to generate electricity and purchase of electricity from Independent Power Producers (71%);
- Employment costs (12%);
- Depreciation (9%); and
- Other costs (8%).

The total expenditure shrunk by 3.34% as compared to the financial year 2012, mainly on account of reduced disbursements on supplies and consumables, as well as lower finance costs. In comparison to 2012, the average CIF price of heavy fuel oil decreased by around 7% per metric ton while the average price per metric ton of coal fell by 15%.

The risks associated with movements in exchange rate were mitigated by focusing on financial risk management through forward purchases of foreign currencies by way of competitive bidding process.

The lower prices of CEB's cost drivers, coupled with cautious cash flow management and financial discipline had a significant contribution in turning the overdraft balance of Rs 928.26 M recorded in 2012 into a positive balance of Rs 396.08 M as at the end of 2013.



## TOTAL REVENUE

Around 95% of the revenue of the CEB is generated from the sales of electricity and meter rent. For the year 2013, the total revenue stood at Rs 14,396 M, compared to Rs 13,299 M for the previous year, representing an increase of around 2.96%. The total number of kWh sold during 2013 was 2,384 GWh and represented an increase of 3.9% over the preceding year. The overall average selling price per unit has remained almost constant at Rs 5.70/kWh (Rs 5.71/kWh for 2012).

The details of the different customer categories and the sales mix are given hereunder.

### INCOME FROM SALE OF ELECTRICITY YEAR 2013

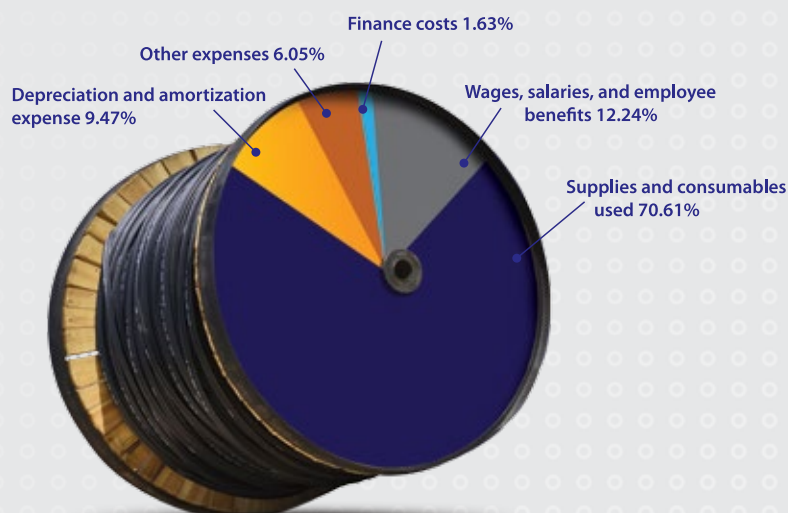
CUSTOMER CATEGORY	NO. OF CUSTOMERS	UNIT SOLD kWh	REVENUE RS	AVERAGE PRICE PER UNIT
DOMESTIC	387,179	780,777,765	4,476,753,178	5.73
COMMERCIAL	39,013	852,013,231	6,299,642,781	7.39
GENERAL INDUSTRIES (315/313/323)	5,947	389,172,574	1,516,028,998	3.90
E.P.Z (317/320/325/330)	133	249,502,214	740,332,961	2.97
FREPORT LICENCEES (340/350)	12	46,877,076	187,146,395	3.99
SUGAR FACTORIES (421/422)	8	4,274,767	22,532,927	5.27
IRRIGATION (515)	559	25,390,993	72,167,751	2.84
STREET LIGHTING (510)	554	26,300,496	206,138,570	7.84
OTHERS (Temp. Supply)	112	248,694	3,112,770	12.52
SPECIAL AND NON-CLASSIFIED	-	9,581,560	67,602,660	7.06
<b>TOTAL</b>	<b>433,517</b>	<b>2,384,139,369</b>	<b>13,591,458,990</b>	<b>5.70</b>

The three main categories of customers of the CEB are Domestic, Commercial and General Industries. It is to be highlighted that though the commercial category accounted for 9% of the total number of customers, they contributed to some 46.35% of the total revenue. This is due to the fact that commercial customers are charged a higher average selling price of Rs 7.39, compared to the respective price of Rs 5.73 and Rs 3.90 for Domestic and General Industries.

## TOTAL EXPENDITURE

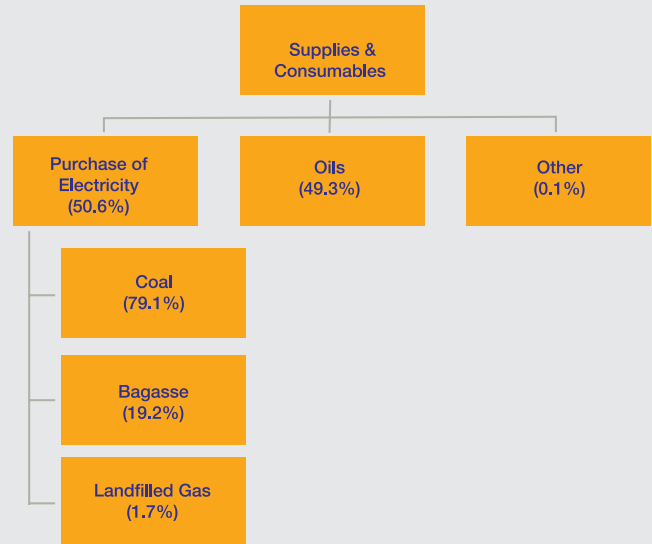
The total expenditure incurred by the CEB during 2013 stood at Rs 13.42 billion and accounted for 93.23% of the total revenue generated. The major component, namely supplies and consumables, amounted to Rs 9.48 billion and represented 70.61% of the total expenditure.

The breakdown of total expenditure is shown below:



Supplies and consumables comprise almost exclusively of purchase of heavy fuel oil and purchase of electricity from Independent Power Producers (IPPs). For the year under review, expenditure on electricity purchased from IPPs and purchase of heavy fuel oil each accounted for around 50% of the supplies and consumables.

It is also worth noting that 78.5% of the total cost incurred for the purchase of electricity is coal-based, with the remainder being from bagasse and landfill gas.



### MAIN COST DRIVERS

The main costs of the CEB are driven by fuel oil prices, coal price, exchange rates, interest rates and inflation. These are all external factors over which the utility has little control.

### Fuel Oil Prices

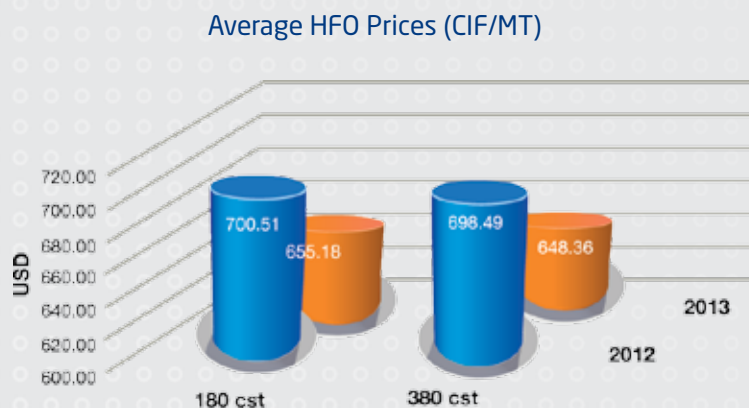
During the year 2013, the CIF prices of the two types of fuel oil utilised by the CEB for generating electricity, namely 180 CST and 380 CST, have shown more stability as compared to the previous year.

The movements of the prices of fuel oils for the year under review were as follows:



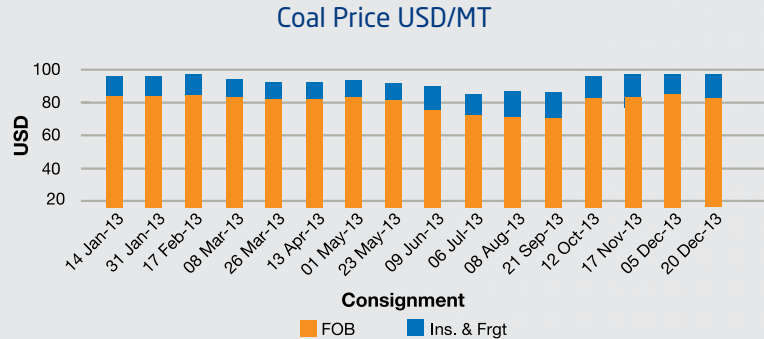
The CIF prices per metric ton for both 180 CST and 380 CST attained their highest level in February 2013 and amounted to USD 684.44 and USD 682.21 respectively, which were still lower than the prices paid in 2012. For its part, the lowest prices per metric ton paid for 180 CST and 380 CST were USD 639.53 (August 2013) and USD 629.15 (July 2013) respectively.

A comparison with the previous year revealed that there was a decrease of some 6.7% and 7.18% in the average CIF price per metric ton of 180 CST and 380 CST respectively. In absolute terms, the average price paid in 2013 decreased from USD 700.51 to USD 655.18 for 180 CST, and from USD 698.49 to USD 648.36 for 380 CST.



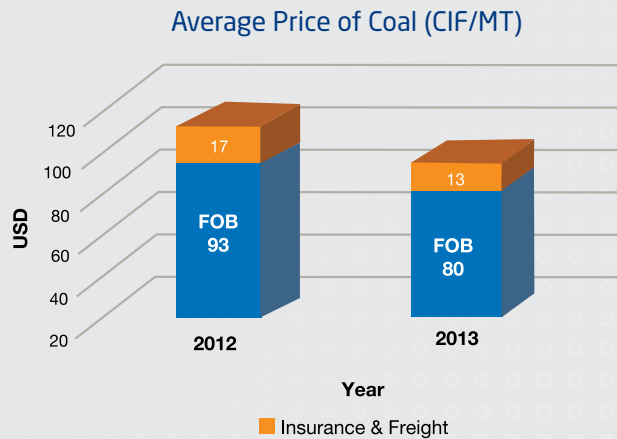
## Coal Prices

As mentioned earlier, 78.5% of the electricity purchased by the CEB from IPPs in 2013 was derived from coal. Thus, movements in coal prices were reflected in the purchase price of electricity. The evolution of coal prices over the year was as follows:



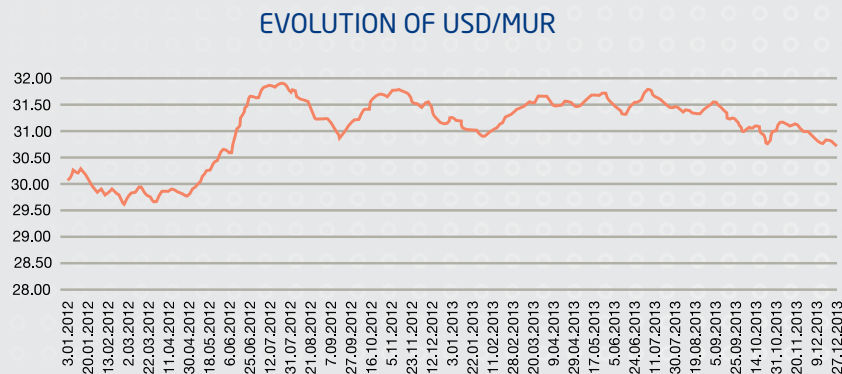
The average CIF price per metric ton of coal for the year under review went down by 15.25%, as compared to the previous year. The price of coal dropped to its lowest point at USD 84.16 in July 2013 and picked up again in the following month.

The lower price of coal was, no doubt, beneficial for the finances of the CEB. But the same time, it shows the vulnerability of the utility to the price volatility of its major inputs, over which it has little control.



## Foreign Exchange

The major foreign currencies in which the CEB conducts its transactions are the USD and the EURO. The movement in the rates of these currencies during the years 2012 and 2013 is shown below:

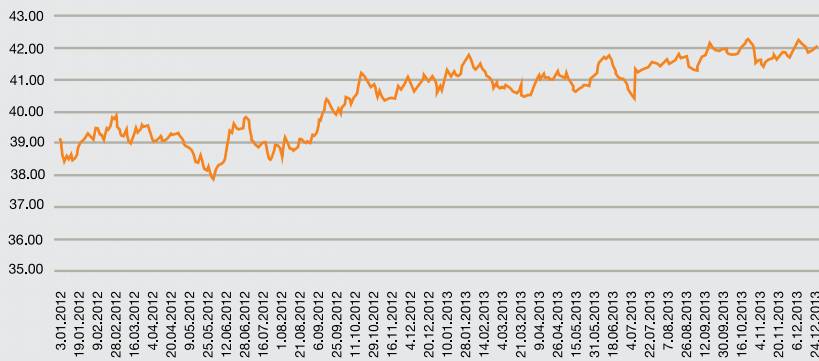


Source: Bank of Mauritius

The average USD/MUR rate was lower by 1.5% in the year 2012 as compared to the year 2013. During the year under review, the USD peaked at MUR 31.64 on 10 July 2013 whereas it reached its lowest point at MUR 30.59 on 31 December 2013.



### EVOLUTION OF EURO/MUR



Source: Bank of Mauritius

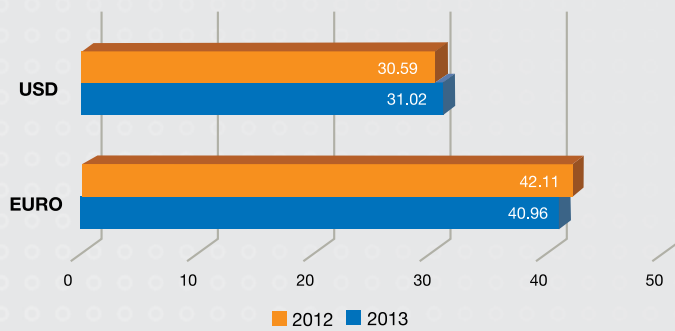
The EURO/MUR rate registered a slightly rising trend in the year 2013 as compared to the previous year, with the average rate in 2013 being 4.8% higher than in 2012. The lowest rate of MUR 40.28 was recorded on 28 March whilst a peak of MUR 42.24 was recorded on 12 December.

As a result of the fluctuations in the foreign currencies, particularly the EURO and the USD, the CEB made a gain of Rs 40 million on foreign exchange transactions during 2013.

Moreover, the EURO and USD exchange rates at the close of a given financial year are used for translating CEB loans in foreign currency. The denominated amount is compared to the closing balance of the previous year, with the result being either an unrealised profit or loss. For the year 2013, an unrealised gain of Rs 78.02 M was recorded.

The chart below depicts the evolution of the EURO and the USD at the close of 2012 and 2013 respectively. As shown, the EURO appreciated by some 2.81%, while the USD depreciated by around 1.37%.

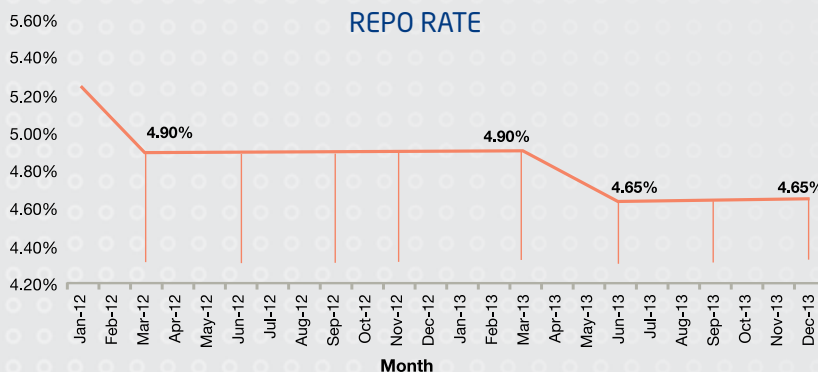
### EURO/MUR and USD/MUR at end of accounting period



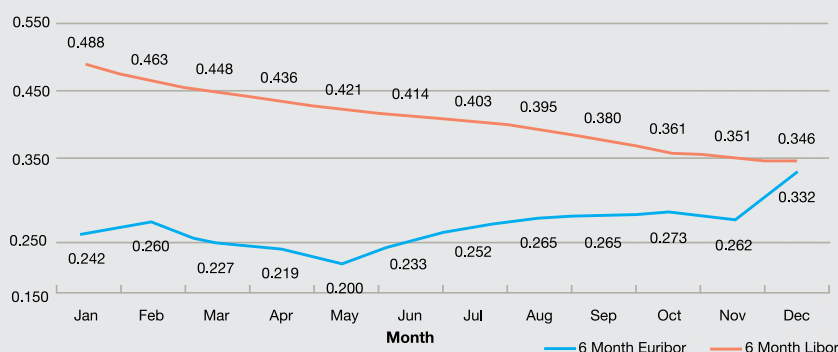
### Finance Costs

The CEB has short and long term borrowings, and the related finance costs are sensitive to movements in the Repo Rate, the Euribor, and the Libor. An amount of Rs 218.19 M related to finance costs was recorded for the financial year 2013, as compared to Rs 379.39 M for the previous year. This was mainly due to the falling Repo Rate and the lower interest rate of the LIBOR, as shown below.

### REPO RATE



## INTEREST RATES (%)



## Inflation

The costs of operations were fairly stable as the local inflation rate for the calendar year 2013 was 3.5%. In Europe, prices increased by an average of 1.35%.

## FINANCIAL RISK MANAGEMENT

The risk management programme applied by the CEB during the recent years was maintained with a view to mitigating risks, in particular regarding risks associated with interest rates, exchange rates, cash flows, and procurement of goods and services. The aim of risk management was also to take advantage of any favourable macroeconomic indicators.

### Interest Rate Risk

82% of CEB's loan portfolio bears variable interest rates; any change in interest rate, therefore, has a direct impact on the interest costs. In view of its sizable proportion of foreign loans which are subject to floating interest rates, the CEB is highly sensitive to movements in interest rates at the international level.

During the year 2013, interest rates have continued their downward trend started in earlier years, both on the local and foreign markets. The CEB continued to reap the benefits from extremely low interest rates on a significant proportion of its loan portfolio. As far as possible, the CEB arranged for a balanced mix of fixed and variable interest rates with a view to mitigating interest rate risk.

### Exchange Rate Risk

Exchange rate risk results from fluctuations in the exchange rate of one currency against other foreign currencies. The CEB is highly exposed to exchange rate risk due to the following factors:

- Imports of fuel oils are priced in USD;
- 60% of CEB's Long Term Debt is denominated in EURO and USD;
- Import of machinery, equipment and other materials from abroad; and
- Purchase of electricity from IPPs, with the indexation formula for determination of price paid comprising an exchange rate element.

To mitigate foreign exchange risks, purchases of foreign currencies were undertaken on a regular basis through bidding processes. This yielded positive results, particularly as the local market for foreign exchange proved to be quite favourable. In addition, the forward purchases ensured that foreign currencies commitments are met as and when they fall due.

### Liquidity Risk

Liquidity risk refers to the possibility of default by the CEB arising from unavailability of funds to meet both its operational and capital requirements. In order to manage this risk, short-term and medium-term cash flow forecasts are regularly prepared and proactive actions are taken to ensure that funds are always available to meet the organisation's obligations. This was achieved through the efficient maintenance and management of various credit line facilities made available to the CEB as and when required.

## Commodity Risk

The CEB generates around 50% of the total electricity consumed in Mauritius and Rodrigues by using primarily imported heavy fuel oil (HFO 180 CST and HFO 380 CST). The remaining 50% is purchased from Independent Power Producers (IPPs) which generate electricity mainly from a combination of coal and bagasse. Fuel oil and coal prices, which constitute major costs to the CEB, are dependent on many exogenous factors such as geopolitical tensions, and global demand and supply conditions. The CEB is therefore exposed to risks associated with the availability of fossil fuels as well as fluctuations in their prices which have been very erratic during recent years. With a view to mitigating the major commodities risks, the CEB has contractual agreements with the State Trading Corporation and IPPs. In addition, the CEB is in the process of increasing its storage capacity by the construction of additional storage tanks, both in Mauritius and Rodrigues.

## Procurement Risk

The procurement framework lays emphasis on transparency, fairness and impartiality, competitiveness, security, and confidentiality. There also exist an efficient stock system which ensures that materials are available for use and are procured when they attain the stock reorder level.

In 2013, the CEB procurement policy and procedures were further streamlined to be in compliance with the new Public Procurement Act and other relevant regulations. To that effect, training was provided to the staff of the Procurement Section on provisions of the Act, with a view to further improving their ability and performance.

## MEDIUM TERM OUTLOOK

According to the International Monetary Fund World Economic Outlook dated July 2015, global growth is projected at 3.3 percent in 2015, marginally lower than in 2014, with a gradual pickup in advanced economies and a slowdown in emerging markets and developing economies. In 2016, growth is expected to strengthen to 3.8 percent. These figures have been repeatedly revised downwards from original forecasts and demonstrate the uncertainty surrounding worldwide economic growth and difficulties faced by major economies to pick up, despite a number of measures taken to trigger renewed dynamism.

The worldwide global slowdown has also affected the Mauritian economy. The economic growth achieved in 2014 was 3.2%, the same as in 2013. According to the African Development Bank, it is expected that the growth will strengthen to 3.5% in 2015 and 3.6% in 2016. The economic downturn, coupled with the uncertainty shrouding commodity prices, is quite problematic for the CEB, in particular for forecasting future demand and planning for additional generating capacity. This is compounded by the fact that the setting up and commissioning of a power plant generally requires a time span of at least 2 years.

During the past few years, the prevailing macro-economic conditions have been favourable to the CEB on two fronts. Firstly, the financial performance of the utility has been strengthened due to lower commodity prices. Secondly, due to falling demand, the security of supply has been maintained even if massive investments in generating plants could not proceed as planned.

In line with the national objective for a greener environment and with a view to mitigating the risk associated with the volatility of fossil fuels prices, the drive towards the adoption of renewable energy sources is being accelerated. In addition to a number of Power Purchase Agreements signed with big promoters for the generation of electricity from renewable energy sources, the CEB has implemented the Small Scale Distributed Generation (SSDG) scheme for small scale projects. However, in view of limited degree to which renewable energy can be entirely relied upon for firm power, fossil fuels are likely to remain an important source of energy supply, albeit with a lower share.

From the financial viewpoint, it is expected that the CEB will continue to benefit from favourable macroeconomic conditions in terms of lower commodity prices and falling interest rates, at least in the short to medium term. The reserves so created will be utilised to finance the massive capital investments in the near future.







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