CITY OF CAPE TOWN
ELECTRICITY SERVICES DEPARTMENT
(CCTES)

BUSINESS PLAN REVIEW
2013/14

A plan submitted in fulfilment of good business practice

City of Cape Town
Utility Services Directorate

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CITY OF CAPE TOWN UTILITY SERVICES

ABSTRACT

CITY OF CAPE TOWN ELECTRICITY SERVICES DEPARTMENT (CCTES)
BUSINESS PLAN

The business plan should be read in the following context:

- A Strategic Management Plan (SMP) is developed and reviewed annually to ensure implementation of the business plan and as such does not form part of the plan.
- Operational strategies are limited in terms of inclusion in the plan. These strategies are being developed and the impact on the budget determined. The business plan will be updated with the result.
- The Integrated Development Plan (IDP) of the City of Cape Town is updated annually and might have an impact on the Plan, as this business plan is aligned to such.

This is a review of the approved 2012/13-2016/2017 business plan that aligns with the 5 year IDP cycle.

Executive Overview

THE LEGAL FRAMEWORK

The Constitution of South Africa Act 108 of 1996

The Constitution was approved by the Constitutional Court on 4 December 1996 and took effect on 4 February 1997. The Constitution is the supreme law of the land under which all laws are framed and under which the operation of municipalities is governed. Municipal powers and functions are dealt with in Section 156 and Schedules 4B and 5B of the Constitution. Electricity reticulation is a Schedule 4B function and the provision of street light is a Schedule 5B function.

Municipal legislation

There is a series of municipal legislation which establishes the legislative framework for local government to exercise its Constitutional powers and functions. These include the Municipal Demarcation Act 27 of 1998, the Municipal Structures Act 117 of 1998, the Municipal Systems Act 32 of 2000, the Municipal Financial Management Act 56 of 2003, the Municipal Fiscal Powers and Functions Act 12 of 2007. Together, these regulate municipal internal arrangements, systems and financial matters and provide for a service authority – service provider arrangement provided through a service delivery agreement.

Legislation specific to electricity provision

The Electricity Regulation Act 4 of 2006 establishes the National Energy Regulator of South Africa (NERSA) and together with the Electricity Regulation Amendment Act 28 of 2007 (Electricity Regulation Second Amendment Bill was published for comment in Notice 905 of 2011) sets the framework under which electricity service providers are regulated in the provision of an electricity service to electricity end users, having regard to good governance, efficiency, effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic. NERSA exercises its authority through electricity distribution licences which stipulate service standards in terms of NRS 047, Quality of Service, and NRS 048, Quality of Supply,

The Electrical Installation Regulations of 2009 and the Electrical Machinery Regulations of 1988, framed under the Occupational Health & Safety Act 85 of 1993, govern respectively the safe use of electricity by users in electrical installations and the environment in which electrical machinery operates.

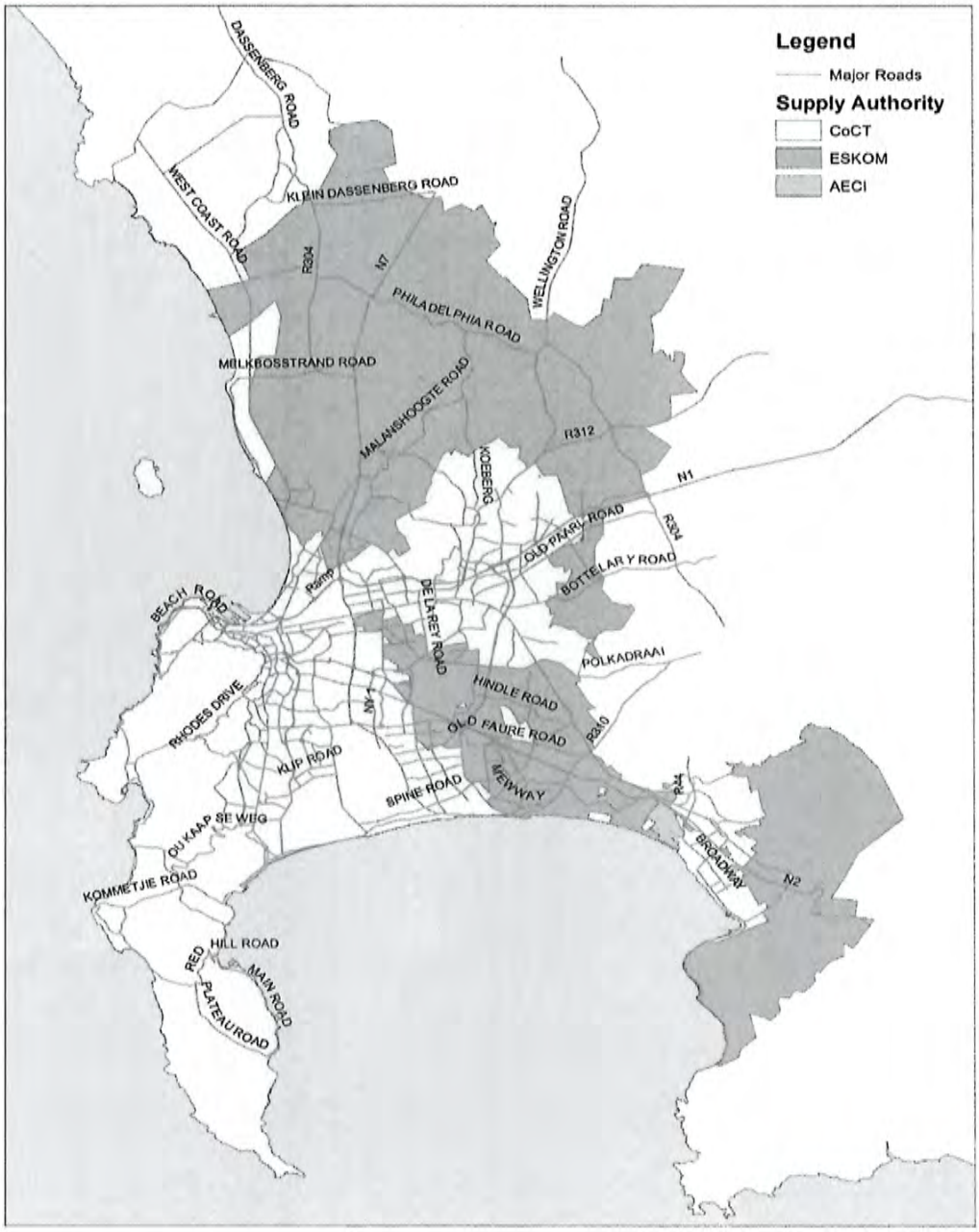
Municipal By-law

Municipalities, in terms of the provisions set out in the Municipal Systems Act, can pass by-laws for promulgation by the Provincial Legislatures. The City of Cape Town passed the City of Cape Town Electricity Supply By-law of 2010 which was promulgated by the Western Cape Provincial Legislature on 16 April 2010. The By-law regulates the relationship with electricity consumers as well as protects and safeguards the integrity of the electricity network infrastructure to ensure a secure supply of electricity. The By-law is only applicable in the Cape Town area of electricity supply (see below).

ELECTRICITY DISTRIBUTION SERVICES ACROSS THE METRO

The City of Cape Town is the Service Authority for the entire Metro. There are three service providers within the metro although there are no formal service delivery agreements with the service authority. The service providers are the City of Cape Town Electricity Services Department (CCTES), ESKOM and AECI, each of which holds an electricity distribution licence for a licenced area of electrical supply issued by NERSA. The licenced areas of electrical supply are shown in Figure 1. In the case of CCTES it is the same legal entity as the City even though it is operated as a financially ring-fenced department within the City. The AECI electricity distribution licence is being transferred piecewise to CCTES as the area is developed. Although there is no formal service delivery agreement with Eskom, an agreement for the provision of Free Basic Electricity (FBE) is in place. It is anticipated that the Electricity Regulation Second Amendment Bill will address the putting in place of service delivery agreements.

Figure 1 ELECTRICITY DISTRIBUTION SUPPLY AREAS



INDUSTRY CHALLENGES

The Electricity Distribution Industry (EDI) faces a number of immediate and medium term threats which have impact on the CCTES. These are:

- Increasing tariffs above CPIX and customer's ability to pay.
- Electricity bulk supply constraints (resulting in lower reserve margin and possibly load shedding).

- Need for investment into infrastructure (in terms of new demand and refurbishment).
- Skills shortage.
- Challenges associated with carbon emissions, climate change, renewable energy and new technologies.

These pose real risks to sustainable service delivery in the medium term.

BRIEF HISTORY OF CITY OF CAPE TOWN ELECTRICITY SERVICES DEPARTMENT

The generation and distribution of electricity in Cape Town started in 1882. In 1932 a generation pooling agreement was reached between the City of Cape Town and Eskom (established in 1923). The first temporary bulk supply from Eskom was only taken in 1965, and converted to a 20 year supply in 1971 marking the City's increasing reliance on Eskom for bulk supply of electricity.

The year 2000 saw the creation of the Unicity after almost a decade of local government restructuring. The consolidation of the CCTES in its current form from five electricity departments occurred in 2005, after a period of interim arrangements.

Since the mid 1990's the electricity distribution industry was the subject of a national restructuring that was aimed at establishing regional electricity distributors (REDs). The City of Cape Town Electricity Services Department was chosen as the pilot project of the national restructuring, and in July 2005 the first regional electricity distributor (RED1) was established as the authorized service provider for the entire metro. For the period July 2005 to December 2006, both ESKOM and the CCTES provided services on behalf of RED1. RED1 was dissolved in October 2009 and the electricity distribution industry restructuring was abandoned in 2011.

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12/13 Refers to the financial period 1July 2012 to 30 June 2013

AMP Asset Management Plan

BPM Business Process Management

CBD Central Business District

CIP Comprehensive Infrastructure Plan

CoCT City of Cape Town / Council / Municipality

CCTES City of Cape Town Electricity Service

DoE Department of Energy

EDI Electricity Distribution Industry

EDIR Electricity Distribution Industry Restructuring

EE Employment Equity

IET Industry Expert Team

ERP Enterprise Resource Planning

ESC Enterprise Solution Centre

GCAC Grid Code Advisory Committee

GT Gas Turbine

HDI Historically Disadvantaged Individual

HSE Health, Safety and Environment

HV High Voltage

IBT Inclining Block Tariff

IDP Integrated Development Plan

IRM Integrated Risk Management

KPA Key performance areas

KPI Key performance indicators

LV Low Voltage

MV Medium Voltage

NERSA National Energy Regulator of South Africa

NMD National Maximum Demand

NRS National Rationalised Specification

RED Regional Electricity Distributor

RTU Remote Terminal Unit

SAP Systems, Applications and Products

SCADA System Control and Data Acquisition

SDBIP Service Delivery and Budget Implementation Plan

SLA Service Level Agreement

TREC Trans Mediterranean Renewable Energy Cooperation

ULM Utility Load Manager

1.1 Quality of Supply

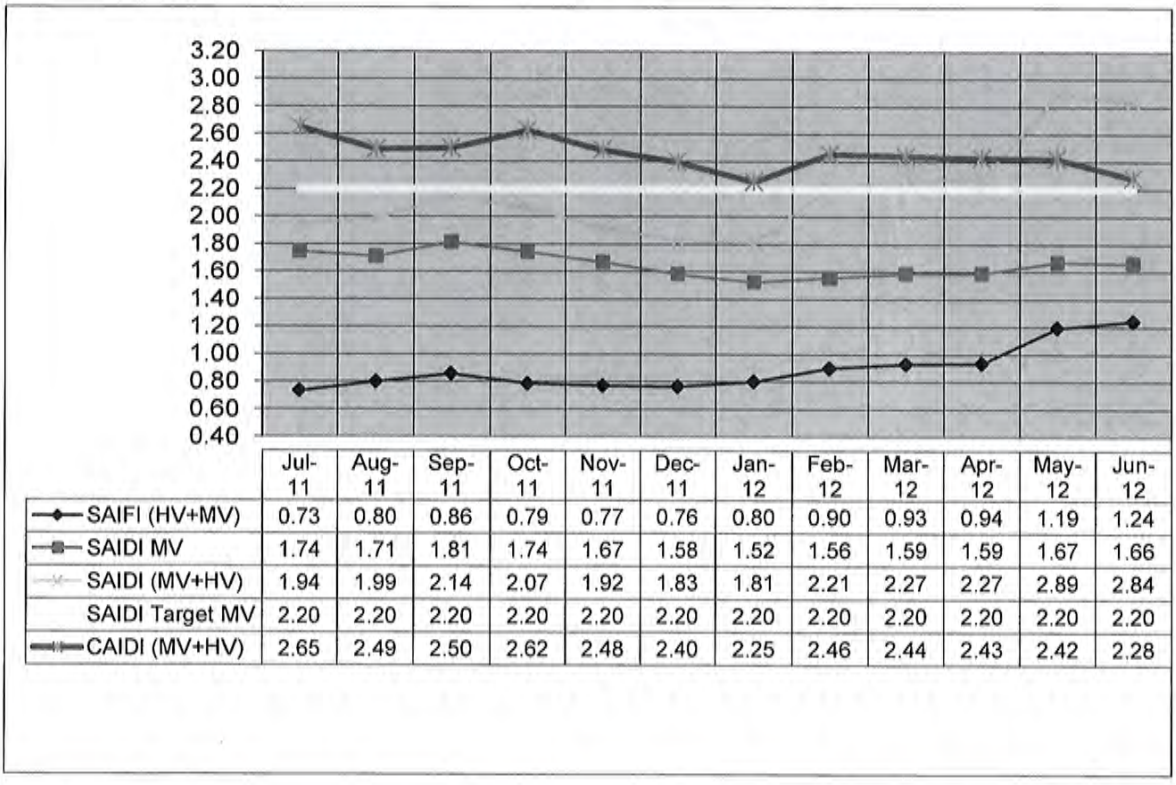
The CCTES core business is to provide reliable electricity supply to customers in the CCTES supply area. To ensure that the quality of electricity supply meets the required regulatory standards, CCTES monitors its performance in terms of NERSA guidelines as set out in the NRS 048 documents.

The measures for network reliability are given below together with the reliability targets:

- CAIDI — customer average interruption duration index, which is the average duration that a customer is without power when affected by an interruption to supply
- SAIFI — system average interruption frequency index, which represents the average number of interruptions that a customer experiences each year
- SAIDI — system average interruption duration index, which is the average duration that customers are without power each year

Measure	Target (limits)	Units
Outage time HV & MV (CAIDI)	3	Hours
Outage frequency HV & MV (SAIFI)	1.3	Number
Outage duration HV & MV (SAIDI)	2.7	Hours
Outage duration MV (SAIDI)	2.2	Hours

Interruption performance SAIDI, CAIDI and SAIFI Graph for the year ending June 2012



	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12
SAIFI (HV+MV)	0.73	0.80	0.86	0.79	0.77	0.76	0.80	0.90	0.93	0.94	1.19	1.24
SAIDI MV	1.74	1.71	1.81	1.74	1.67	1.58	1.52	1.56	1.59	1.59	1.67	1.66
SAIDI (MV+HV)	1.94	1.99	2.14	2.07	1.92	1.83	1.81	2.21	2.27	2.27	2.89	2.84
SAIDI Target MV	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20
CAIDI (MV+HV)	2.65	2.49	2.50	2.62	2.48	2.40	2.25	2.46	2.44	2.43	2.42	2.28

The SAIDI reported is the MV (Medium Voltage) SAIDI and MV plus HV (High Voltage) SAIDI. The Bulk events such as load shedding by Eskom and other Bulk supply in-feed and major events are excluded in these figures above, as the CCTES has little or no control over these.

Voltage dip performance is another important indicator of quality of supply. Below is the HV (high voltage) dip performance table for 12 months. This shows our network performance when compared to the characteristic values as provided by the NRS 048-2:2006 for X1, X2, S, T, Z1 and Z2 type dips. CCTES customers experience significantly less dips than the national average.

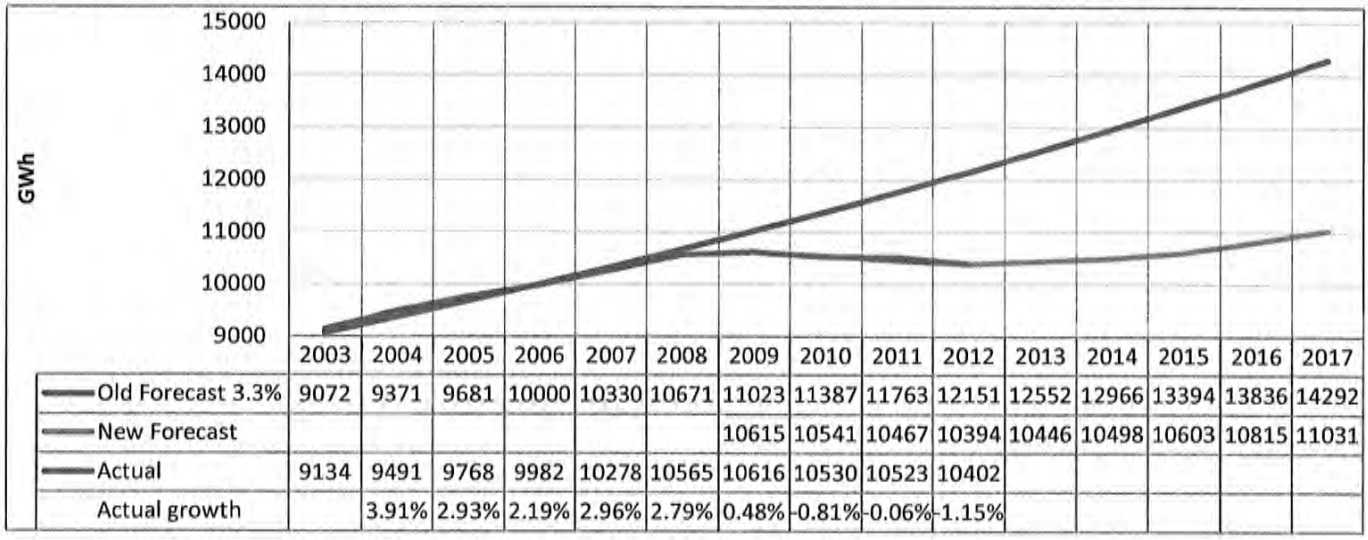
HV Dip performance table for the year ending June 2012

Category	Duration (millisecond)	Depth	National Characteristic values	CoCT Characteristic values
X1	> 20 ms to 150 ms	30 % to 40 %	13	2
X2	> 20 ms to 150 ms	40 % to 60 %	10	2
S	> 150 ms to 600 ms	20 % to 60 %	7	1
T	> 20 ms to 600 ms	60 % to 100 %	5	2
Z1	> 600 ms to 3 s	15 % to 30 %	4	0
Z2	> 600 ms to 3 s	30 % to 100 %	1	0

The table above defines the dip categories in terms of duration, depth and the characteristic values of voltage dips per annum for (50% of sites) per NRS 048-2. For example the above information should be read as follows: 50 % of the sites monitored nationwide experience 13 or less X1 dips.

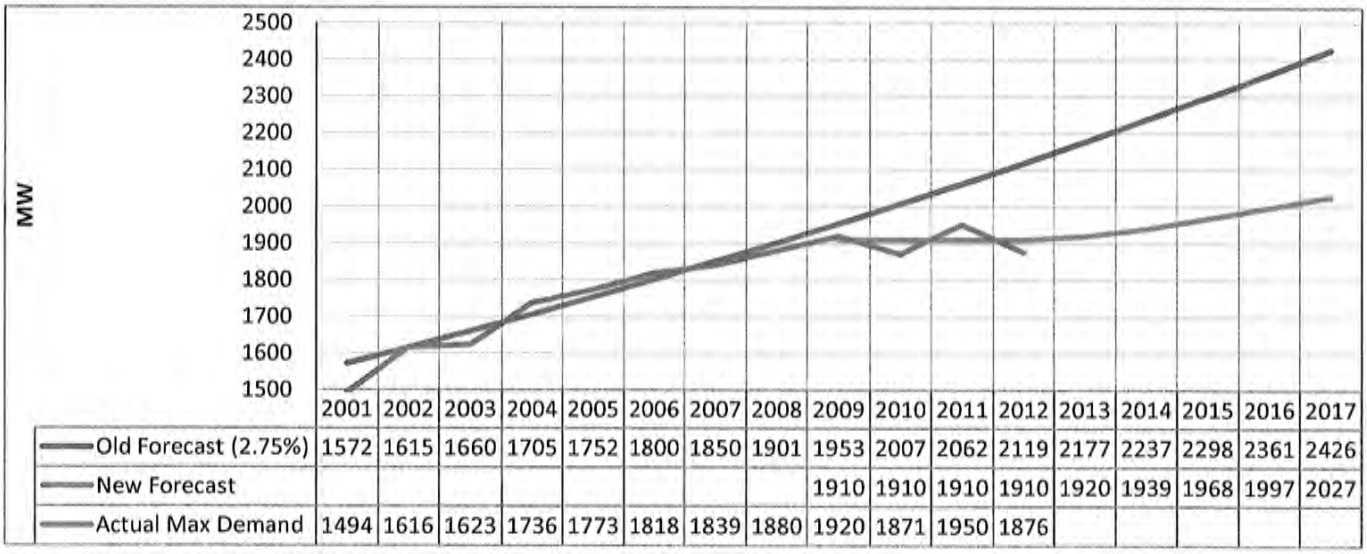
1.2. Electricity consumption and demand growth in the CCTES Supply Area

The Graph below indicates the effects of the energy efficiency programmes, electricity pricing and the recessionary effects in the CCTES area of supply. The old forecast on this graph indicates the energy consumption that the CoCT should be experiencing at a constant growth of 3.3%. The average energy growth experienced in the CCTES for the 6 years July 2000 to June 2006 was 3.3% p.a. Actual growth since 2008/09 was negative and the forecast is based on 0% growth for the years 2012/13 and 2013/14.



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Old Forecast 3.3%	9072	9371	9681	10000	10330	10671	11023	11387	11763	12151	12552	12966	13394	13836	14292
New Forecast							10615	10541	10467	10394	10446	10498	10603	10815	11031
Actual	9134	9491	9768	9982	10278	10565	10616	10530	10523	10402					
Actual growth		3.91%	2.93%	2.19%	2.96%	2.79%	0.48%	-0.81%	-0.06%	-1.15%					

Similar trends to the energy graph above can be seen in the system demand graph. There was a sharp drop in demand in 2008/09 compared to the historic system demand growth of 2.7 %. Demand growth is more weather dependant than energy growth and has greater fluctuations. The demand growth for the years 2012/13 to 2016/17 is expected to fluctuate by 2 % around the green forecast line.

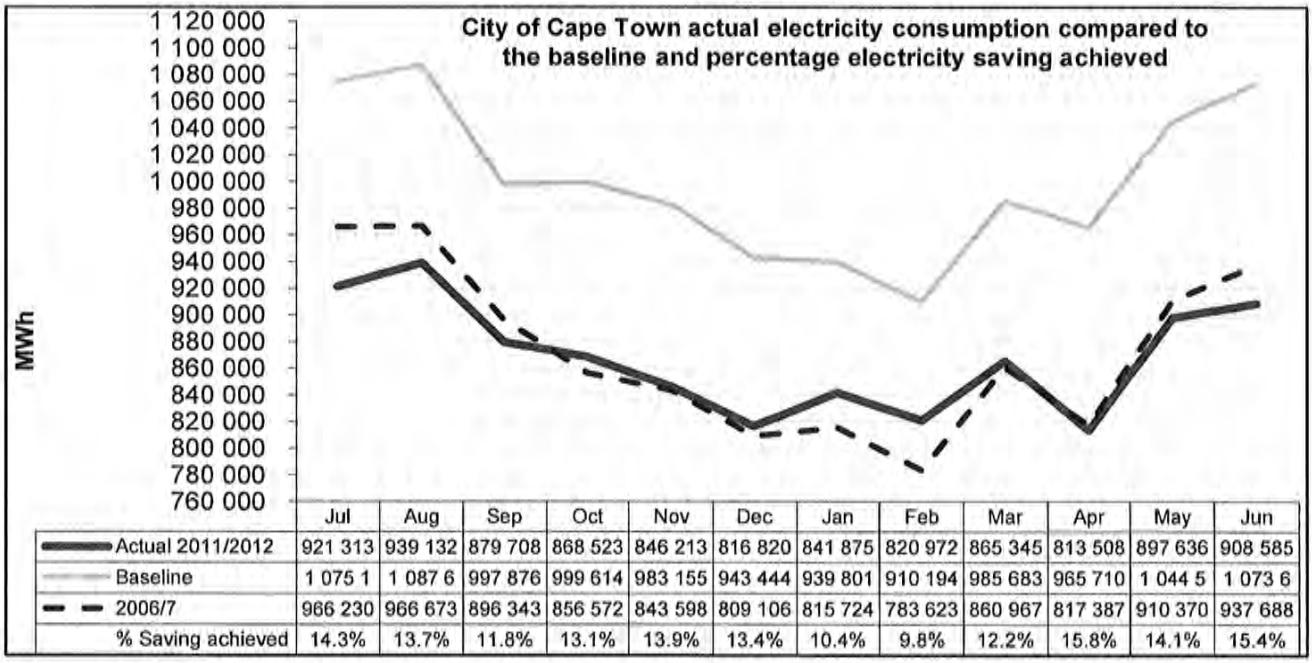


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Old Forecast (2.75%)	1572	1615	1660	1705	1752	1800	1850	1901	1953	2007	2062	2119	2177	2237	2298	2361	2426
New Forecast									1910	1910	1910	1910	1920	1939	1968	1997	2027
Actual Max Demand	1494	1616	1623	1736	1773	1818	1839	1880	1920	1871	1950	1876					

1.3 Electricity Demand and Supply

Electricity Savings

Since the call to save 10% in energy consumption, actual consumption compared to growth forecast has been reported graphically as shown below. The 2008 objectives have been met with the "savings" exceeding 10%.



	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Actual 2011/2012	921 313	939 132	879 708	868 523	846 213	816 820	841 875	820 972	865 345	813 508	897 636	908 585
Baseline	1 075 1	1 087 6	997 876	999 614	983 155	943 444	939 801	910 194	985 683	965 710	1 044 5	1 073 6
2006/7	966 230	966 673	896 343	856 572	843 598	809 106	815 724	783 623	860 967	817 387	910 370	937 688
% Saving achieved	14.3%	13.7%	11.8%	13.1%	13.9%	13.4%	10.4%	9.8%	12.2%	15.8%	14.1%	15.4%

Renewable Energy

In accordance with the City's draft Energy and Climate Change strategy, the Department aims to promote the use of renewable energy as follows:

- Market and sell Green Electricity being purchased by the City of Cape Town from the Darling Wind Farm. The Darling Wind Farm, a national demonstration project, is South Africa's first commercial wind farm, situated in Darling in the Western Cape. This four turbine (1.3MW each) wind farm is a partnership between the Central Energy Fund, the Development Bank of South Africa, the Danish Government, the private Darling Independent Power Producer and the City of Cape Town. It comprises four wind turbines of 1.3MW capacity generating 5.2MW (10 GWh annually). The electricity is 'injected' onto the nearby Eskom electrical network and replaces electricity generated by Eskom. The turbines began generating in May 2008.
- Promote and facilitate the implementation of other renewable generation systems where practical
- Together with the Environmental Resource Management Directorate keep abreast of national and provincial developments regarding renewable energy including the development of feed-in tariffs and Carbon Credits and facilitate the incorporation thereof into City processes
- In the light of proposed Eskom price increases, investigate the practicality of entering into long term PPA's with IPP's to provide electricity at the same price the City purchases electricity from Eskom.
- Promote the finalization of national technical specifications for the connection of small scale renewable generation to utility electrical grids.

Demand Side Management / Energy Efficiency

In partnership with the Environmental Resource Management Directorate, the Department aims to:

- Establish and implement an Energy Efficiency (EE) programme.
- Promote Eskom's Energy program to the City's electricity consumers.
- Establish and maintain an on-line EE and DSM resource

The Department is in the process of establishing a smart meter pilot and a Utility Load Management (ULM) projects to test and assess the appropriateness, uses and availability of technologies for smart meters and improve service delivery. Once completed, the results will be used to inform the decision on whether to deploy these technologies for use in the business.

Load Shedding

CCTES are ready to respond to a national declared emergency and activate load shedding in accordance with the national requirements and the published load shedding schedules. Load shedding in the event of a system emergency is required in order to prevent the power system from sliding into an unstable state which can lead to a national blackout with very serious consequences.

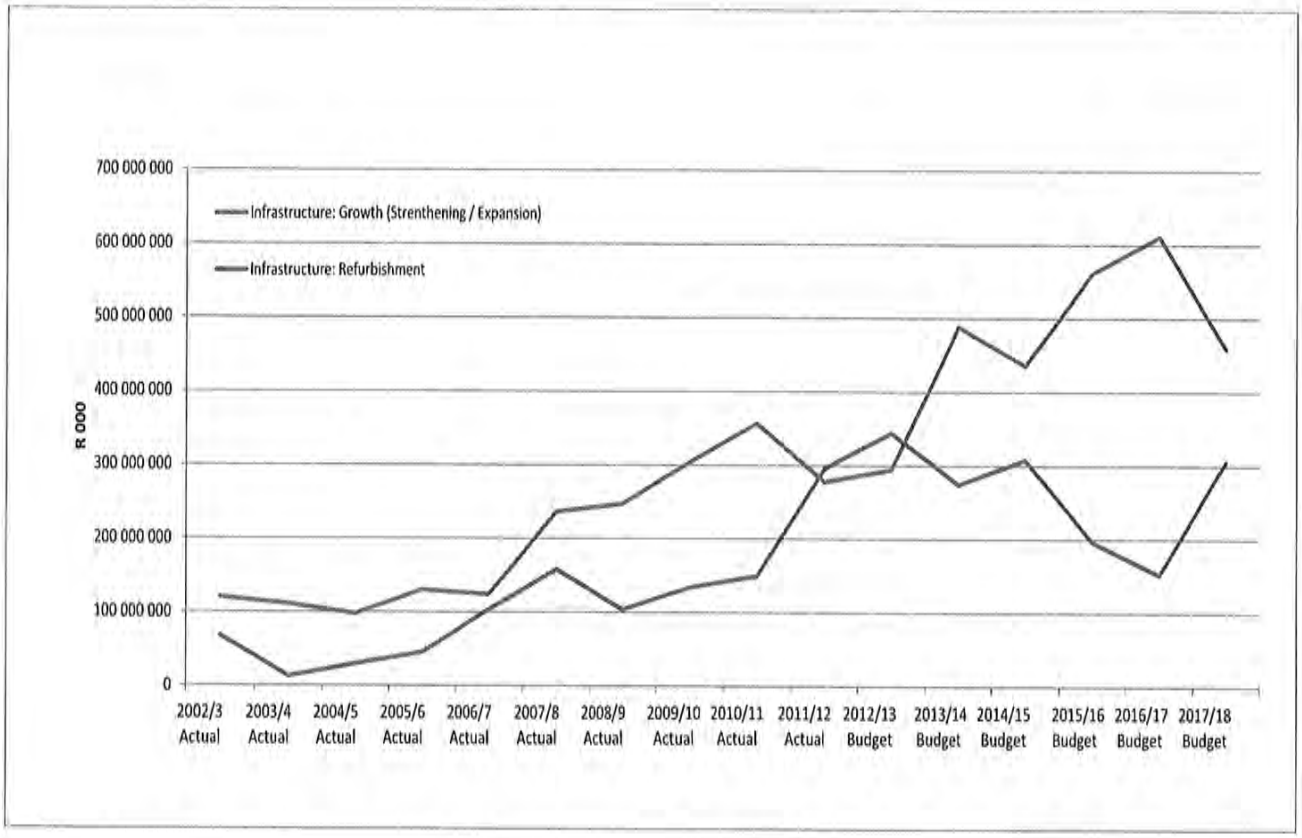
The City's load shedding practices and schedules have been aligned with the national standard NRS048 part 9. Load-shedding schedules are posted on the City of Cape Town official website under Services & Departments– Electricity – Load shedding (http://www.capetown.gov.za/EN/ELECTRICITY/Pages/LoadShedding.aspx). Difficulties that are outside our control do exist with these schedules. For example, some suburb boundaries are not defined on maps available to the general public such as the map-studio maps. In addition substation supply area boundaries do not coincide with map-studio suburb areas, but cut across various suburb areas, creating parts that are scheduled at different times. For these reasons, detailed maps are provided on the website, which should assist customers in identifying their load shedding times.

2.1 Network Infrastructure and Development

The CCTES electricity distribution network is categorized into HV, MV and LV networks. An 18-year HV development plan is maintained. There are currently no, MV and LV development plans, although a medium term (5-year) MV development plan will be developed as part of the Asset Management plan or Comprehensive Infrastructure Plan..

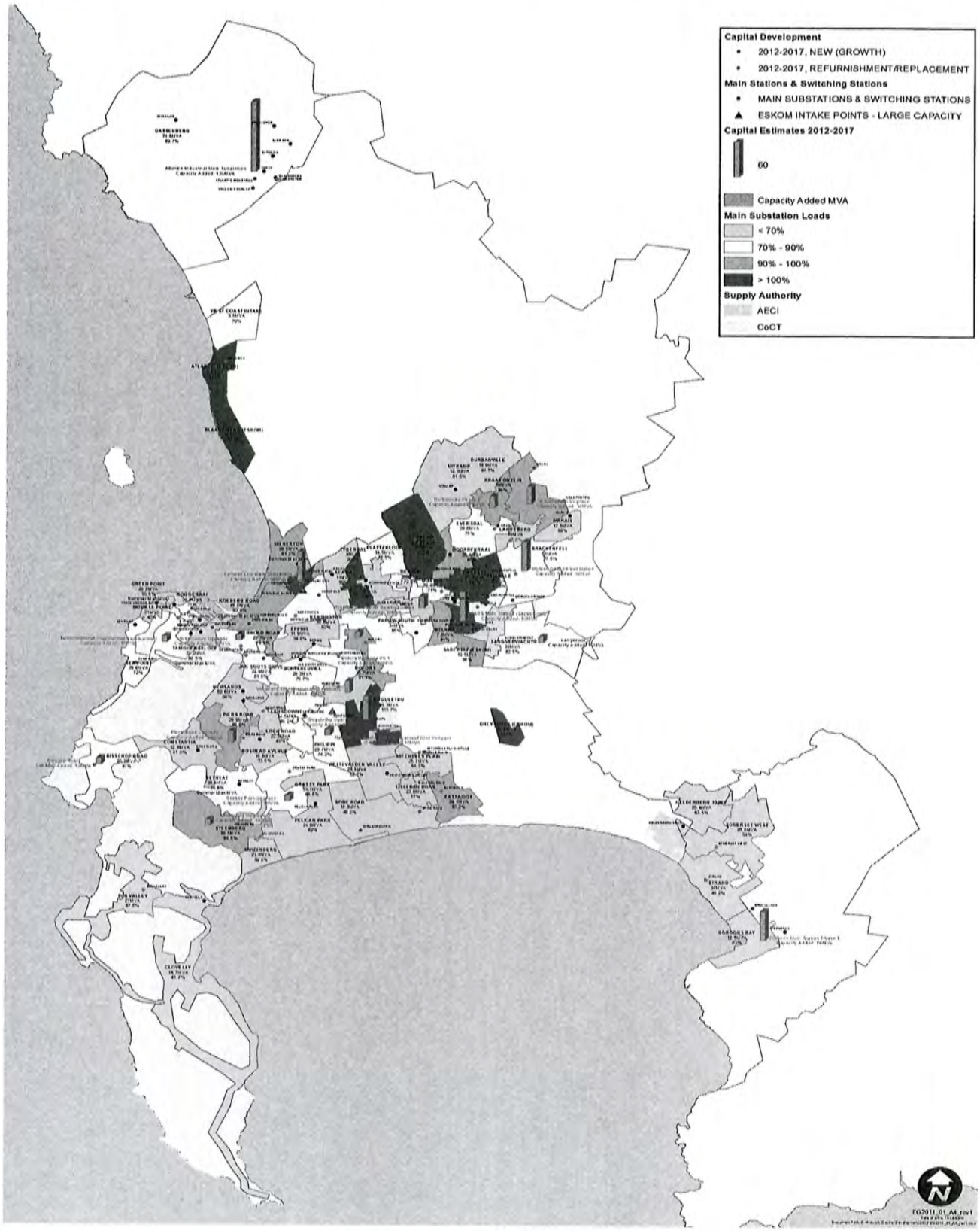
Within the geographical area of Cape Town a backlog exists in refurbishment of infrastructure. The estimated backlog estimated by NERSA is R1.6 billion and will be addressed over the longer term by contributing 5% of assets value towards the eradication of backlogs. Included in this backlog is an estimated R326 million for electrification. The backlog will be financed through internally generated funds and external loans.

The current infrastructure within the geographical area of Cape Town needs to be refurbished and maintained to ensure that the condition of the current networks and infrastructure is improved to meet the business and social challenges in electrification in South Africa. Asset management plans need to be consolidated for implementation of programmes in the interim. This plan will feed into and support the operating and capital budgets. Expenses for refurbishment will be funded through internal working capital generation and borrowings.



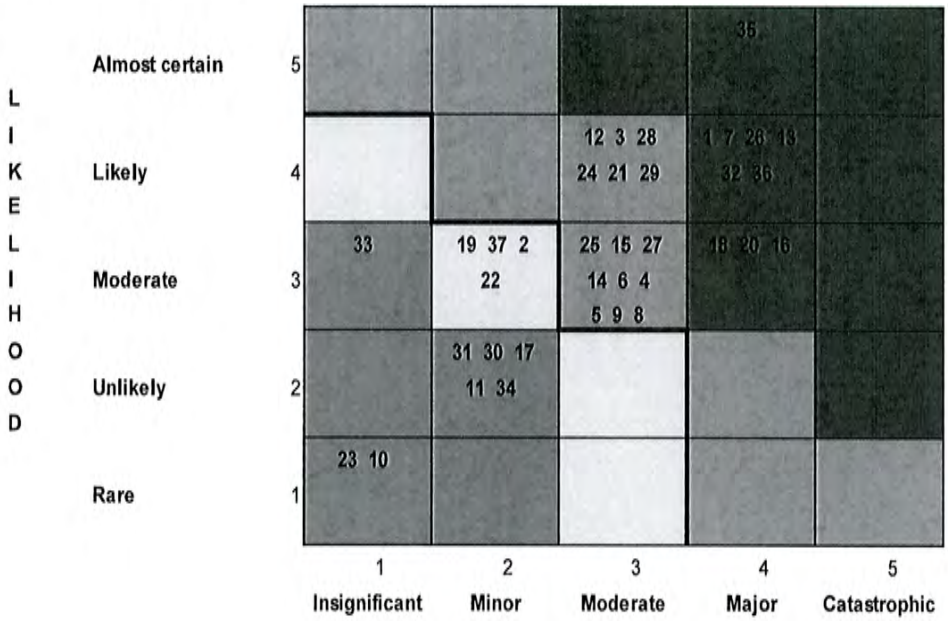
2.2 HV Capacity and Main Sub Station Loading

The loading relative to the design capacity of each main substation, both in the City's and in Eskom's area of supply is shown in the map below. Loading is one of the factors taken into account in prioritising capital projects.



2.3 High Voltage Distribution Network Infrastructure Plan

Capital projects are evaluated and graded on a risk matrix. The likelihood of having an impact and the severity of the impact on the ability to distribute power were evaluated and plotted on the graph below. The numbers on the graph refers to the projects as listed.



5 YEAR TRANSMISSION SYSTEM IMPLEMENTATION PLAN

NOTE: Projects should be implemented before the risk profile exceeds a moderate risk as indicated by the solid line

Key to Risk Assessment:

Extreme risk | High risk | Moderate risk | Low risk

35 Mitchells Plain Intake Integration	27 SANS Main Substation
1 Athlone - Philippi OHL Line Undergrounding	14 Koeberg Road Switching Station Phase 2
7 Dassenberg 33kV Switchgear Replacement	6 Broad Road Phase 3
26 Roggebaai 33kV Switchgear Replacement	4 Bisschop Road
13 HV Switchgear Replacement	5 Bofors Upgrade
32 Vanguard Transformer Replacement	9 Eversdal - Durbanville OH Line Upgrade
36 Grassy Park HV Rearrangement	8 Durbanville Phase 2
18 MV Circuit Breaker Replacement	19 Newfields Transformer Replacement
20 Oakdale - Boston: Replace 33 kV Cables	37 Langverwacht Upgrade
16 Main Substation MV Switchgear Replacement	2 Atlantis Industrial Main Substation
12 Gugulethu Upgrade	22 Observatory Upgrade
3 Atlantis Substation 5 Transformer Replacement	31 Tygerberg Hospital Reinforcement
28 Steenberg Upgrade	30 Tamboerskloof Transformer Replacement
24 Piers Road Upgrade	17 Muizenberg Ph3
21 Oakdale Upgrade Phase 2	11 Grassy Park Upgrade
29 Stikland Main Substation	34 Stikland Hospital Switching Station
25 Plattekloof - N1 Reinforcement	33 Philippi Farms Ph 1
15 Kraaifontein Upgrade	23 Pelican Park Upgrade
	10 Firlands Main Substation Phase 1

2.4 Management of Legacy MV Switchgear

The City faces serious challenges in the management and maintenance of equipment on the medium voltage (MV) distribution system due mainly to ageing infrastructure. These challenges are put in stark relief by the increasingly rigorous international standards in distribution switchgear design and safety. This applies to all forms of MV switchgear on the system.

This discussion focuses specifically on the indoor "Metal-clad" primary switchgear and does not consider secondary and outdoor switchgear. Due to the more focused maintenance and replacement programmes, the MV switchgear in main substations is not included in this analysis. Legacy switchgear does not comply with current international safety standards (IEC 62271-200) & system fault levels exceed switchgear capability in many cases. Approx. 6 300 switch panels in service & majority are obsolescent (25% more than 50 years old, 50% more than 30 years old).There is a substantial risk to operating personnel and system reliability.

Cost of total replacement is R860 m (excl. building alteration costs). Remediation options include full replacement, circuit breaker replacement and various measures to improve safety & reliability. A remediation programme based on addressing assessed highest risk has been compiled. The proposed remediation programme extends over 20 years and the estimated cost of the programme is R307 m (excl. building costs).

2.5 Electricity Enterprise Asset Management (EAM)

In 2006 NERSA conducted technical audits of major electricity distributors including the CCTES in which maintenance was highlighted as a major area of concern. Subsequent to this CCTES has embarked on a multi-year program to implement enterprise asset management using the SAP platform and conforming to PAS55 standards (program objectives and deliverables are given in Table 1). Through the systematization, standardization and centralization of functions asset management will form an integral part of day to day activities to create an efficient, predictable operational environment.

With the transfer of assets from the legacy systems to SAP, not enough time was spent on implementing a comprehensive asset management plan. The main focus was on financial systems which resulted in a lack of operational focus. Physical asset master data was extremely limited and of poor quality. This lead to the need for a total rebuild of SAP EAM (SAP PM and related modules). This rebuild work has commenced in the PM and MM modules and is due for completion in the short term. Full operationalization will take place in the medium term.

As a result of these historic system deficiencies the organizational deficiencies and behaviours have been perpetuated. The operationalization will require fundamental changes to the way business is currently conducted and a significant effort in organizational realignment and change management will be required to achieve success in Enterprise Asset Management. Organizational culture change will be one of the biggest challenges to smooth implementation.

As CCTES is leading the EAM initiative with the other infrastructure driven departments following, partnering with Enterprise Solution Centre (ESC), HR and other Directorates for a successful implementation of EAM is of corporate importance.

Table 1: Objectives and Deliverables of EAM

Objectives:

- Standardize master data
- Systematize & streamline maintenance business processes
- Up to date master data and maintenance records on maintenance significant assets.
- Build organizational capacity to centralize core system processes and functions.
- Elimination of wasteful or non-value adding practices
- Establish and foster an Enterprise Asset Management culture
- Invest in human capital to sustain the Enterprise Asset Management culture
- Move from unplanned/emergency work towards planned and scheduled work
- ERP system-supported EAM measures framework for continual improvement
- Zero-based budgeting
- ERP EAM system used and trusted by all
- Expand the SAP EAM footprint to all asset owners/operators
- Financial/operational asset integration (master data and process)

Deliverables:

- Cross-department integrated process for inception of assets and associated master data take on
- Establish core master data processes (low volume, complex, infrequent changes)
- Formal feedback process for correcting inaccurate master data
- Codification framework defining all significant maintenance personnel activities to be recorded & reflected in the system as a basis for capacity optimization and reduction of wasted time.
- On-line quick reference guide (knowledge base) for translating work scenarios to system actions.
- Blog for knowledge sharing and organizational EAM culture change
- Establishment and staffing of central asset management org structure
- Practical set of EAM metrics for routine management meetings at different organization levels to drive continual improvement
- Second generation mobile platform as simple field user interface

2.6 Distribution Grid Code Compliance

In 2012 CTES undertook a self-assessment of Distribution Grid Code compliance. Cape Town is the second metro after Ethekwini to have conducted the assessment. The assessment was reviewed by the NERSA Grid Code Advisory Committee (GCAC) on 4 October 2012. According to NERSA the responses given by Cape Town under the code were satisfactory and although there can be improvements on some of the clauses, the minimum requirements are met.

A number of exemptions were applied for and the GCAC recommended them for approval by NERSA. A few were referred to the Industry Expert Team (IET) for further interrogation. The IET convened on the 10 October 2012, where these applications were discussed. One was recommended for exemption by NERSA, while for others the IET recommended a revision of the specifications governing them. One of the exemptions was deemed unnecessary as the clause that prompted it requires interrogation at a policy level. The IET recommended that this be referred to the DoE for policy formulation. These decisions are set out in Table 2.

Table 2: GC Exemptions submitted to the GCAC for NERSA approval

NERSA Ref. No.	Code	GCAC Decision
1. 2012DCEX002	Metering code	Accepted for NERSA approval
2. 2012DCEX003	Metering code 4.2.1 & 4.3.1	Accepted for NERSA approval
3. 2012DCEX004	Metering code 4.3.2	Accepted for NERSA approval provided a. It is a temporary 5 year exemption b. Remedial of action plans be outlined and attached with the exemptions directly to NERSA before end of October 2012
4. 2012DCEX005	Metering code 4.5.4	Suggested that this be an amendment and not exemption (Action Secretariat & NERSA)
5. 2012DCEX006	Metering code 4.8.1	Accepted for NERSA approval with exemption period extended from 6 months to 1 year. Cape Town to change the exemption period and submit directly to NERSA before end of October 2012
6. 2012DCEX007	Metering code 4.1.1	The GCAC suggested a revision of the clause. No need for Cape Town to apply for an exemption (Action Secretariat, IET & NERSA)
7. 2012DCEX008	Network Code 3.2(6)	Accepted for NERSA approval
8. 2012DCEX009	Network code 4(2)l	Accepted for NERSA approval
10. 2012DCEX011	Network Code Clause 6.4(3)	Proposed that Cape Town explain in detail this deviation from SANS, why and how has it deviated etc. Submission referred to the Indutry Expert Team (IET) for more deliberation and interrogation.
11. 2012DCEX012	Network code 7.1	Accepted for NERSA approval
12. 2012DCEX013	Network Code Clause 7.2.1(4)	Agreed with the exemption for large investments but was unclear for smaller investments. Application referred to the IET, where City of Cape Town has to present their practices on smaller investments.
13. 2012DCEX014	Network code 7.2.1(6)	The GCAC agreed that in the absence of NERSA's process for determining either (a) the discount rate or (b) the customer interruption cost (CoUE), there is no need for exemption. NERSA to develop the framework for CoUE and communicate accordingly with the industry
14. 2012DCEX015	System Ops Code 5.2	Accepted for NERSA approval
15. 2012DCEX016	System Ops Code 6.3	Accepted for NERSA approval
16. 2012DCEX017	Tariff Code 9(3)	Mr B. Magoro of the DoE raised that this is a policy issue and needs to be tackled at that level. No need for excemption.

Chapter 3 Operations

3.1 Access to Electricity Service

Access to electricity service is achieved through the demand driven capital programme funded through developer's contributions for non-subsidized housing. Subsidized housing is funded through the electrification plan. The expenditure and budget for Developers Contribution, Private Sector is given in the Table below:

Developers Contributions & Private Sector - Actual and Budget												
Year	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
Budget	R 38,8m	R 55,9m	R149,7m	R 125,5m	R 83,3m	R 68,0m	R 79,0m	R 76,8m	R 80,8m	R 84,6m	R 86,9m	R 92,8m
Actual	R 36,0m	R 54,8m	R 146,5m	R 115,2m	R80,3m	R 65,7m	-	-	-	-	-	-

3.2 Electricity Distribution / Service Areas

The Cape Town Supply Area is divided into three Distribution or Service Areas based on the number of substations. Each of the three Distribution Areas South, North and East are serviced by four districts as shown below. Each district is responsible for the maintenance and safe operation of the MV and LV network, and new customer connections in its area. Electricity took a decision not to have mixed depots shared with other departments for strategic reasons, leasing of buildings is not considered the most economical way to administer the service. This is specifically the case in the Eastern region, where mixed depots were in use. A program is in place to upgrade the facilities (Oostenberg, Helderberg and Parow depots). Facilities are to be created at the 3 Area Complexes to stock the bulk of Procurement's material and equipment. Space is to be made available at Bloemhof to start the building of the new Head Office – a 3 year construction period where after the lease agreement at ENS House will be cancelled.

3.3 Customer Services

This section is responsible for customer services and customer prepayment vending services. Although not the only area of focus, this section falls within the scope of the Customer Programme of the SMP.

Electricity has re-aligned its Customer Support Section to provide a stronger back-office support by having a 24 x 7 Technical Operational Centre, dedicated sections responsible for notifications, correspondence, public awareness and liaison in order to improve customer responsiveness.

A new centralized Technical Operations Centre (TOC) was established in 2007 with a single 0800 220 440 number. Currently electricity related calls are received from customers and works notifications are generated for First Line Response Teams to be dispatched within each Distribution Area. The City Of Cape Town's Corporate Call Centre handles calls of a financial (back office) nature. The City's Call Centre Optimisation Project has established a one contact telephone number for the City (0860 103 089) which by way of a selection menu on an automatic call distribution system attached to this one number, electricity fault and power outage complaints are now directed to the Electricity Technical Operations Centre for recording of the fault complaints and the dispatching of Response Teams to rectify complaints. Electricity's Technical Operational Centre (TOC) operates 24 hours, 7 days a week. Besides being able to contact the TOC via the normal telephonic exchange, we are also contactable via:

- SMS: 31220; and
- Email: power@capetown.gov.za

Electricity is also busy appraising the various options of implementing a fully integrated Outage Management System. The system will provide customers instant feedback on fault conditions, status reports and timeframes. The establishment of an Outage Management System (OMS) has been elevated as a key project under the SMP review.

The existing four prepayment vending systems inherited from the previous municipal administrations in the Cape Town metropolitan area have been replaced with a new single vending system for all CCTES customers. The single vending system became fully operational during the second quarter of 2009 and enhancement to the new system to improve performance are now being implemented

The Minimum Standards and Reporting Lines for the Quality of Service of Electricity Supply to customers were published as a standard document, namely the NRS 047 Part 1 and Part 2. These specifications cover a number of services including customer driven Complaints, Enquiries, Requests, Quotations and Forums. The standard response times and satisfaction indices for counter services, telephonic replies and written replies are stipulated in those documents.

3.4 Energy Supply

The branch of Electricity Supply consists of Network Control, SCADA Services and Generation and Green Energy.

Network Control manages the operations of the network and the supply of energy to the end consumer. They also assist maintenance crews on planned and unplanned maintenance functions. SCADA Services provides the tools required by Network Control staff to perform their function.

Generation manages maintenance and operations of the City's generating facilities and dispatch these as required by Network Control.

Green Energy researches emerging technologies in the area of renewable energy.

3.5 Health, Safety and Environment (HSE)

Electricity Services is committed to conducting its operations in a manner that is without undue risk to, the health and safety of its employees, visitors, public and contractors as well as, the environment. As part of this commitment Electricity Services established a central Occupational Health and Safety division, within the Technical Support Services Branch, to provide a support service to operations. The division has been instrumental in rolling out a OHSAS 18001 pilot project. In order to provide on-going support to accredited sites and to facilitate further roll-out, a devolution of the HSE function into the business is being considered.

The services currently rendered are primarily that of Occupational Health and Safety, Occupational Medicine and Occupational Hygiene, in accordance with the following areas objectives:

Objectives:

- Advice on compliance to pertinent legislation, standards, policies and procedures
- Monitor occupational exposure, injuries, environmental impacts and losses that occur as a result of a failure in the area of risk control
- Assist Line Management in identifying and evaluating Safety, Health and Environmental risks facing Electricity Services
- Develop various risk control strategies based on Risk Profile
- Research and recommend appropriate systems of control

3.6 Restructuring of Public Lighting Branch

A restructuring of the Public Lighting Branch was commenced in 2009 and the Public Lighting function was reintegrated with LV operations within the 3 service areas.

The festive lighting function was moved into the Technical Support Services Branch, and design and engineering was moved into the Engineering Division of the Infrastructure Management Branch.

Within the Eskom supply area, the Public Lighting function is being performed by Public Lighting Support section, which also handles the function of high-mast lighting within the Metro.

3.7 Electrification Plan

The electrification plan aligns with the Integrated Human Settlement Theme of the City Of Cape Town's IDP.

New housing developments are normally serviced, including the provision of electricity, by the developer with these service costs being recovered from the homeowner. In the case of housing developments which consist of dwellings for which the beneficiaries are eligible for Government housing subsidies, the provision of electricity is subsidized via INEP or USDG grant funding with the remainder being sourced internally by the Electricity Service. The result is that the City achieves a 100% electrification rate for formal housing developments.

A backlog in service connections however exists in the electrification of informal settlements in some areas and in the electrification of backyard dwellers in formal areas. Certain informal areas are excluded from the electrification programme for inter alia, the following reasons:

- Dwellings are below the 50 year flood line
- Dwellings are in road, rail and power line reserves
- Dwellings are on private property

At this stage the bulk of the backlog of electrical connections in informal areas are found in the portion of the Metro which is in the Eskom area of supply. With a change in the DoE policy, Eskom have embarked on the electrification of informal areas which comply in terms of the City's electrification policy utilizing INEP grant funding. The City has also allocated USDG grant funding aid funds sourced internally by the Electricity Services to fund electrification in informal settlements.

Electrification is an on-going process which follows on the creation of homes for the homeless and will therefore continue over the medium to long-term.

Chapter 4 Support

4.1 Strategic Management Plan and Integrated Risk Management

A strategic management plan is developed to ensure implementation of the business plan and is reviewed on an annual basis.

Key issues identified in the 2012/13 SMP review include:

- Implementation of EAM structure
- Centralizing of asset creation within Engineering
- Implementation of Outage Management System
- Development of strategy for "future business operations"

The City is obliged to implement risk management in terms of the MFMA and the King II Code on Corporate Governance. In terms of the MFMA, section 62(1)(c)(i) the accounting officer is responsible to maintain effective, efficient and transparent systems of financial and risk management and internal control. The Department participates in the City's Integrated Risk Management (IRM).

4.2 Human Resource Plan

Staffing Strategy

The CCTES is working in the context of a local, national and international environment where there is a shortage of technical skills that appears to have been exacerbated (in South Africa at least) by a decrease in investment in education, training and development, despite considerable access to capital and in the face of constant pressures of growing populations, increased technology, poverty and unemployment.

This is compounded within the City of Cape Town by ten years of rigid attrition, which has brought staff numbers down, but left critical gaps within our workforce as the attrition was untargeted across Departments – i.e. the City did not use the attrition process to shift resources, but rather allowed a slow decline in numbers wherever the vacancies occurred. This meant that areas where the external market was favourable, lost a higher percentage of staff than the less competitive areas.

Due to the inability to fill posts, which meant the under-spending of the staff budget, it was considered inappropriate to budget for these unfilled posts, while the apprenticeship programme has been altered to fill vacancies that exist or alternatively interchange posts so as to create vacancies of a technical nature.

Apprentice Training

In order to address the immediate needs within Electricity Services and to address the above issues on a sustainable basis, apprenticeship training has been re- introduced to target strategic engineering areas. The training is run in-house to allow for in-house training skills development to ensure repeatability. The project is staffed with 2 facilitators and a project leader

It has also been mooted by EMT that all future apprentice training be managed by Electricity Services training who have subsequently managed the first intake of the Mayors Apprentices in December 2011. Three more intakes are planned between April 2012 and December 2013

Learner Technicians' Training

A Learner Technicians' Training program has also been established and has commenced in January 2009 with 9 out of the possible 10 candidates found to be employable as technicians in the business during March 2010. Further details around the structure of this program have now been worked out and will be implemented in the second round of the project aimed at commencing in February 2011. This intake yielded 8 technicians which were placed into the business. The same assessment system will be applied at the

conclusion of the training period to assist with the selection of employable candidates for the business.

The program is in its final cycle and a third cycle with 10 candidates that is due for completion in March 2013. It is envisaged that the funding of the project will be part subsidized by the SETA which is in the process of securing incentive grants from the National Skills Fund for organizations who implement apprenticeship training schemes.

Graduate Internship Program (GIP)

While other spheres of engineering skills training have been addressed in the business, there has been a marked absence of training future engineers within Electricity Services. This area of skills development has now been identified and we have registered with ECSA under Commitment and Undertaking Number CU2011006P to train pupil engineers. The (GIP) program model used corporately has been adapted to suit the needs of Electricity Services and was launched within Electricity Services in 2012. We have planned to accommodate 3 graduates as per the model guidelines. Students were recruited from the university graduate pool for the first intake and subsequent intakes will include BSc bursary holders from within Electricity Services.

Learnership and Skills Programme Training

The Learnship program which commences at AET level 3 and continues through to NQF 4 where after the students undergo a trade test has been functions since 2003 and have yielded significant results thus far. The primary source of students for the learnership programs are drawn from the permanent staff compliment. Currently there are 206 learners in the program across various levels of which 38 have passed their trade test in between October 2012 and a further 7 will attempt their trade test by March 2013.

Skills Programmed training are linked primarily to the Work Place Skills Plans and SAJD program where the throughput of learners on these various programs average 2500 interventions per year

Training & Skills Development

Due to the technical nature of CCTES business, the aim is for a staff compliment with all posts at grade T5 or above (in terms of the CoCT grading schedule). Existing staff will be trained through the CCTES Training Centre's leadership program to fill this level of posts. The Training Centre is accredited by both the Energy SETA and the Local Government SETA. An initiative is also underway to encourage relevant staff to obtain the Government Ticket of Competency and to prepare for the implementation of the pending legislation governing the engineering profession in South Africa. The payment of Public Drivers Permits (PrDP) fees on behalf of staff is also supported.

An employee orientation program is being developed which is aimed at ensuring that all new employees have the necessary safety awareness and skills before becoming productive. This program will be introduced within the first quarter of 2011 if there is no restriction on the employing of staff to perform this function. Similarly all current employees will also be streamed into this employee orientation program, thus ensuring workplace safety and compliance.

A Skills Development to Job Description (SAJD) model has been developed for all the job designations within Electricity Services with the core elements of the model being that employees are able to perform their job functions competently and safely. Skills bouquets' have been developed with the assistance of line managers for each job designation and training and the development of the Work Place Skills Plans are done according to the indicators and priority of the SAJD model. This system allows us to structure our training in a focused and organized manner, prioritizing the areas where the most need is identified. The SAJD bouquets are currently in review and line management will recommend adjustments to the SAJD bouquets of their staff members for future training.

The learning materials used for the training of electrical courses underwent re-development and is now more aligned to current technologies, methodologies and practices. This was done with the view of the im-

plementation of the new electrical qualification scheduled to commence in April 2013.

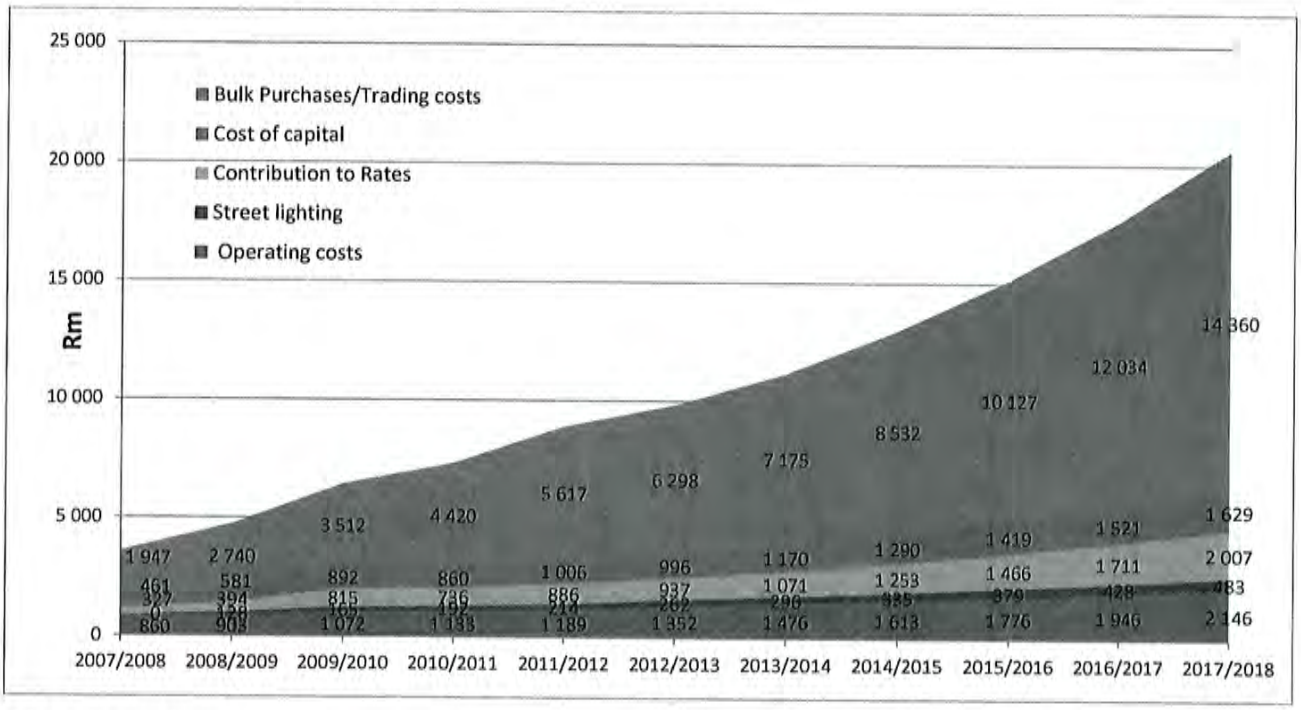
Technical Training Centre

A decision was made by the director senior management of Electricity Services to construct a new training centre on Electricity Services owned land in Brackenfell. It is envisaged that the building will be completed in 2014. This will alleviate the current accommodation problems that we are experiencing tin the hired premises currently being utilized by the training centre.

4.3 Financial Plan

The budget presented is based on a combination of zero as well as parameter based budgetary methods. The planned change is premised on the framework that will allow the Finance function to add value to the business it serves.

The financial plan is cognitive of the following key cost drivers:



Key Assumptions

Unless otherwise stated, financial modelling will be based on the assumptions as listed below:

- Contribution to Rates Account - basis of calculation = 10% of Electricity Sales (excl FBE)
- System energy growth calculation based on recent and current energy consumptive patterns
- CPIX as determined by Corporate Finance for the next three years
- *Effective Eskom increase of 13.26%, 18.65%, and 18.7% respectively for the next three years (including clawback)
- Collection ratio of 98% for the next three years as determined by Corporate Finance

The Eskom MYPD has not been approved by NERSA and changes will impact on the required tariff increases.

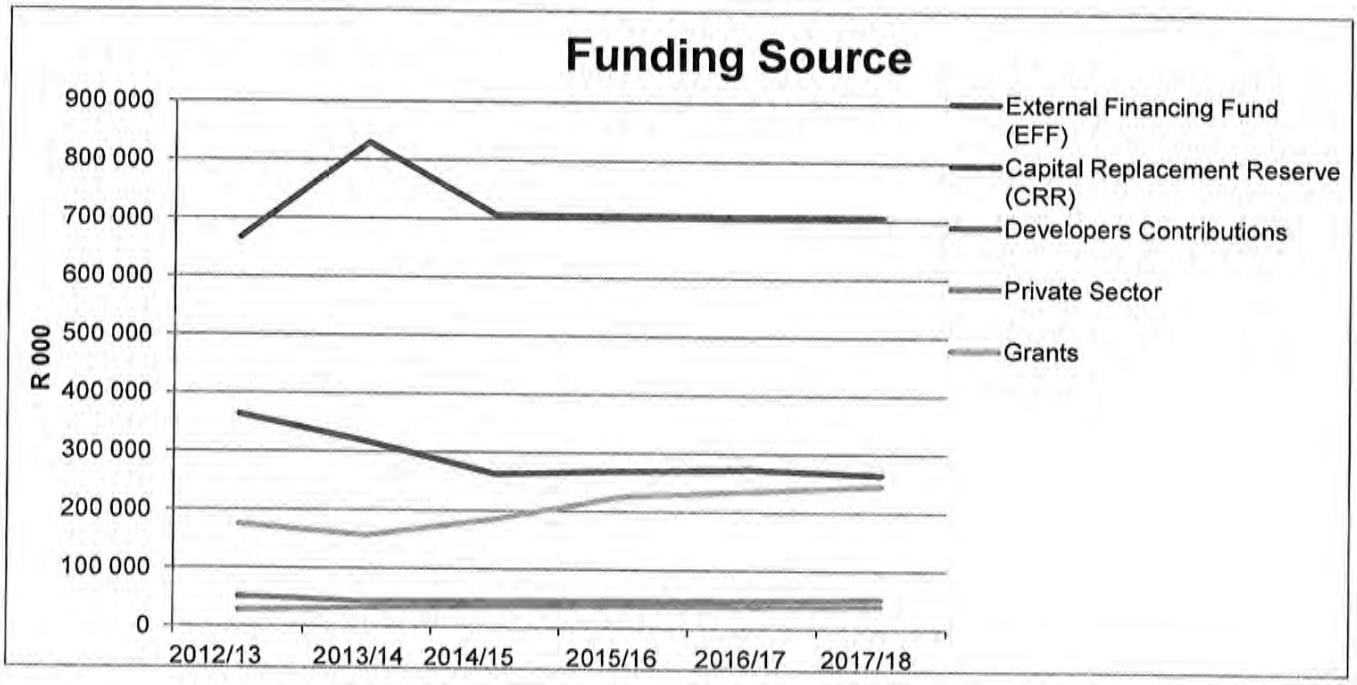
CAPEX EFF envelopes are set by Corporate Finance.

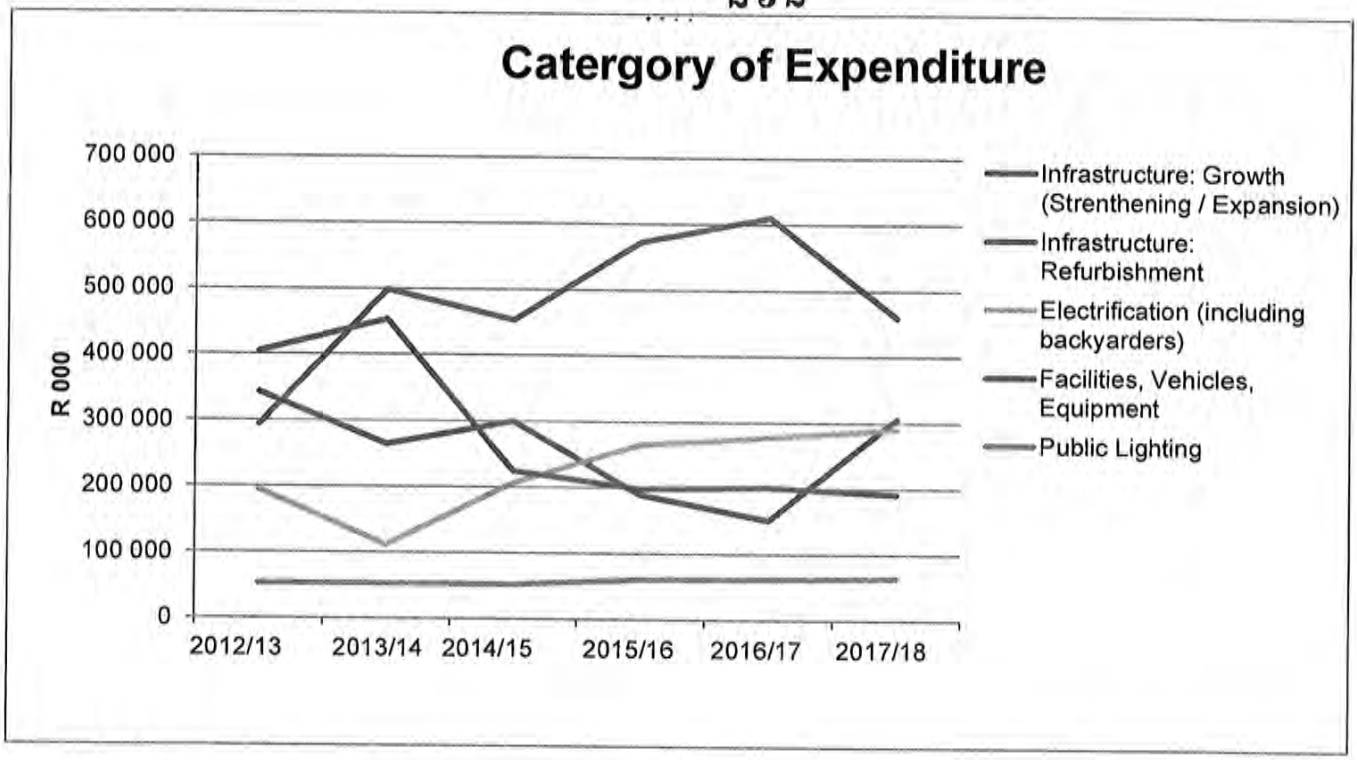
The City of Cape Town was assigned a National scale issuer rating of Aa2.za long – term credit rating with a stable outlook by Moody's Investment Services on 23 July 2010. A National scale short –term debt Issuer rating of P-1.za was also assigned on this date.

These ratings reflect the City's buoyant budgetary performance and its comfortable liquidity position. However, financial sustainability is heavily dependent on maintaining and improving the collection of accounts receivable.

The following graph indicates the planned capital expenditure. It is critically important that a benchmark for the investment in refurbishment is established in accordance with international best practice to ensure good quality of supply and excellent customer and delivery service.

Draft capital budgets (5 year):





Revenue Management

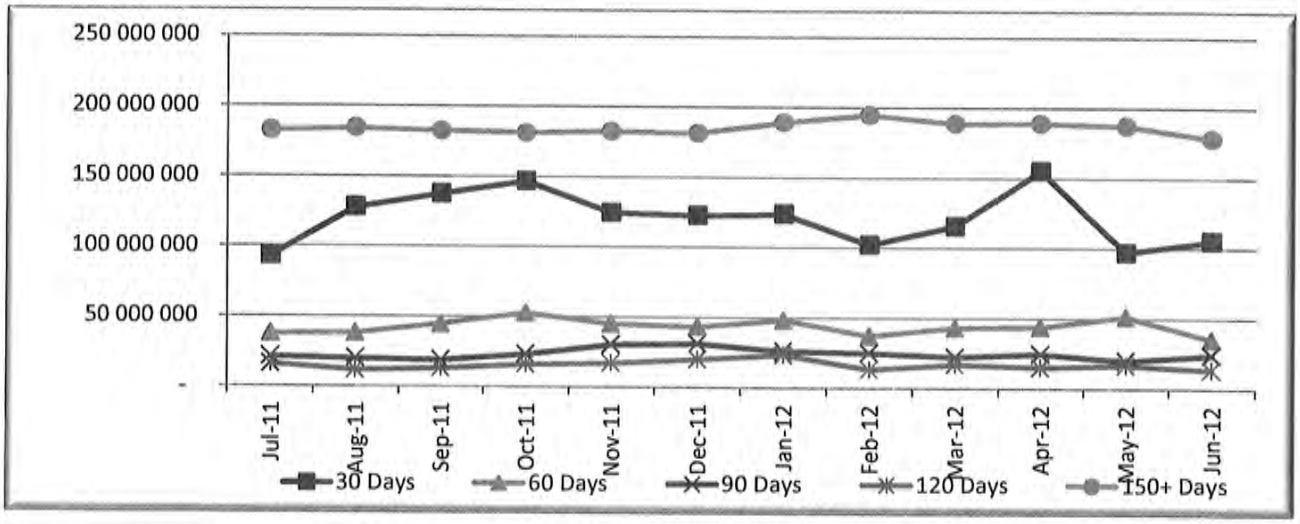
The City as well as the Electricity Department has come under tremendous pressure to perform in the areas of cash collection for services rendered as well as the number of meter reading estimates performed on a monthly basis.

The Electricity Regulation Act No. 4 of 2006 and its Regulations govern the electricity supply industry. Compliance with SANS 474:2006 (NRS 057:2005) "Code of practice for electricity metering" has been a license condition of the NERSA for the distribution of electricity since December 2005.

Bad Debt Electricity Perspective

We have divided our debtors into categories like Top 1000 debtors, staff and councillor accounts, Government accounts, disputed accounts, and have different sections dealing with the debt collection. We are also focusing the highest debtors first. The City has also gone on an extensive campaign to encourage debtors to register as indigent, in which case they may have all their arrears, except those relating to tampering and bypassing of meters, written off. As can be seen in the graph below the bad debts for all conventionally metered electricity consumers have been increasing steadily for the +150 days line for the period July 2008 to February 2011.

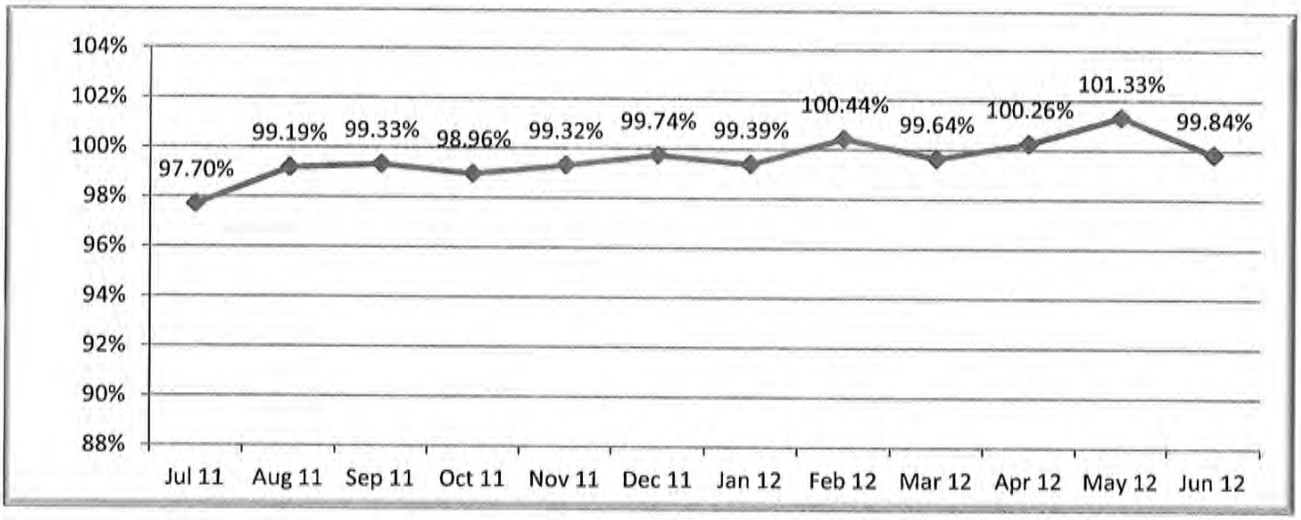
2011 / 2012



Collection Ratio

The 12 monthly average collection ratio is also on a decline in line with the bad debts amounts for the period July 2008 to February 2011.

2011 /2012



Meter Reading Efficiency.

Electricity has 169,200 conventional meters of which 72,500 (42%) are read In-house and 96,700 (58%) are read by Contractors

NRS requirement is that meters are read 3 monthly on average. The City of Cape Town is closed to this requirement. There is a move to prepaid meters for domestic customers and AMI – SAP for large commercial and industrial customers. All meters are scheduled to be read on a monthly basis. Electricity service has had a steady progress to improve this indicator for the period July 2008 to February 2011.

Electricity Tariffs

NERSA, on an annual basis calculates an appropriate tariff guideline increase which is then sent to municipal distributors as a guide in determining their annual electricity tariffs. This guideline does not preclude a distributor from the legal obligation to apply to the Energy Regulator for tariff increases before implementation. When annually determining the percentage tariff increase guidelines, the following issues are considered:

- The proposed Eskom price increases applicable to municipal distributors;
- The economic outlook and inflation;
- The analysis of other municipal costs besides purchase costs such as operating and maintenance costs and;
- NERSA's regulatory objectives.

NERSA is currently in the process of introducing a new system of regulation, namely the Rate of Return Regulation (ROR), which will replace the current "benchmarking" system whereby tariffs within the former proposed RED boundaries are compared directly with each other. ROR will have the benefit that each Utility will be treated as an individual case, and their tariffs regulated according to those specifics. This will have some impact on the levels at which Cape Town Electricity's Tariffs is set, but it is not envisaged to have too significant an impact at this point. It will likely also take a couple more years before any impact at all is seen from this change in regulatory methodology, as the system will take some time to be set up and become fully functional.

The following principles, which are in the long-term interests of the electricity consumer in South Africa, will inform the annual tariff adjustment process:

- Electricity tariffs will, in the long-term, reflect as closely as possible the underlying costs of supply for the majority of the customers. This will ensure that customers make rational decisions on electricity consumption, and that the correct levels of resources are, over time, dedicated to electricity supply in South Africa. Considerations of affordability of electricity should be taken into account, in both the short and longer-terms. Tariff structure adjustments will be introduced in a phased manner, in order to give customers the opportunity to respond and adjust behaviour accordingly.
- Electricity supply to substantially low-income households will need to be held below full cost-reflective levels in the medium to long term, for social development reasons. This is a critical element of government policy, and the City will be placed under an explicit regulatory obligation to offer "electricity basic services support tariffs" to poor households.
- Any levies or cross-subsidies will be transparent and the City should provide sufficient information to customers in order that they may understand its purpose.

Future estimated average tariff increases in the graph and table below are based on the City MTREF process and on the MYPD 2 and 3 periods.

Residential Tariffs

The structure of the current and medium term future residential tariffs has multiple objectives:

- To provide protection to the poor through a cross subsidy from the larger customers;
- To discourage bulk buying;
- To encourage efficient use of electricity, and;
- To meet NERSA's regulatory objective of having IBT's for all residential customers.

Medium Term Tariff Outlook

In terms of the MTREF (based on the assumptions as forecast by Eskom's MYPD), the medium term outlook for tariffs would entail overall increases for the next 5 years of 13.3%, 18.7%, 18.7%, 18.9% and 19%. Note that these are the overall average increases, and will not be specific to all tariffs. It is likely that in the three higher increase years that the smaller consuming residential customers would continue to be subsidised by the higher consuming customers, with no increase in cross subsidy from the Com-

mercial sector. Once we return to the lower increases in the outer 2 years, it becomes somewhat more likely that an average increase will be applied across the board.

Tariffs throughout this period may however come under increasing pressure from a loss of sales as a result of the mass adoption of alternative technologies. The impacts of this are being investigated.

Although from the MTREF and MYPD data as shown in the table above overall it would appear as if the gap between City tariffs and Eskom tariffs is narrowing this will likely not be the case in all areas as a result of the different philosophies surrounding tariff design and cross subsidies.