i 1p, 18.14

VENDA ELECTRICITY CORPORATION
â\200\230EPORT ON CAPITAL BUDGET FOR THE 9 MONTHS ENDED 31-12-1991

BUDGET |PAYMENTS|BALANCE
. PROJECT BROUGHT FORWARD
Lower Tshituni . 60,000] 56,892 3,108
â\200\231. CONSTRUCTION

2.1. Sundry Minor Extensions & Improvements | 7,500,000 | 6,526,973 973,027
2.2. Mulima/Tshitale Line 780,000 28,931 751,069
_.3. Tshiombo/Maraxwe Line 240,000 9,500 230,500
2.4. Tshikuwi Line 240,000 | 236,607 3,393
2.5. Dzwerani Line 150,000 6,650 143,350
2.6. Haâ\200\224-Mashamba Line 180,000 5,338 | 174,662
2.7. Haâ\200\224Magau Line , 150,000 0 150,000
2.8. Tshikonelo Line 150,000 4,750 145,250
2.9. Upgrading of Sanari-Sub 80,000 0 80,000
2.10. Upgrading of Muledane/Thohoyandou Line | 350,000} 278,639 71,361
2.11. Nwanedi Irrigation Scheme 292,000 | 272,673 19,327
3. BUILDINGS â\200\224- INDUSTRIAL AREA 189,800 47,363 142,437
3.1. Exension to existing offices 120,750 47,363 73,387
.2. Screen wall & paving 54,050 0 54,050
3.3. Control room 15,000 0 15,000
4. OTHER 829,980 | 647,063 182,917
4.1. Office furniture & equipment 173,764 | 191,016 (17,252)
4.2. Vehicles 640,616 | 439,247 201,369
4.3. Construction Equipment 15,600 16,800 (1,200)
5. LOAN REDEMPTION 985,510 | 505,277 480,233
12,177,290 | 8,626,656 | 3,550,634

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5.

VENDA ELECTRICITY CORPORATION

REPORT ON CAPITAL BUDGET FOR THE YEAR ENDED 31 MARCH 1991

	BUDGET	PAYMENTS	BALANCE
Balance from previous year	489 337 422	697 66 640	
Head Office building	44 778 43	552 1 226	
Kutama /Sinthumule			
CONSTRUCTION			
Sundry minor extensions & improvements	6 719 000	7 183 464]	(464 464)
Tshirolwe / Tshikuwi	180 000	166 954	13 046
Maebane /Midoroni	210 000	209 040	960
Esme four / Bali	600 000	329 523	270 477
Rambuda	850 000	565 354	284 646
BUILDINGS			
Regional offices , stores & staff housing	650 000	821 708	(171 708)
VEHICLE,EQUIPMENT & FURNITURE	750 000	204 186	545 814
REDEMPTION OF LOANS	10 493 115	9 946 478	546 637

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VENDA ELECTRICITY CORPORATION
FIVE YEAR PLAN
and
TARIFF STUDY
- 1992 to 1997 -

SEPTEMBER 1991

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CONTENTS

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EXECUTIVE SUMMARY

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findings, conclusions and recommendations resulting

this study are set out in point form hereunder:

VEC started operation in April 1987. It is presently a going concern which employs 304 people and services a total of 10 846 consumers. In 1990/91 the system maximum demand was 21,16 MVA and the energy consumed amounted to 115,66 GWh. All electricity sold by VEC

is purchased from others.

Over the 5-year review period from 1992/93 to 1996/97

VEC will experience average annual growth rates of;

13,94% on energy purchases, and

13,50% on maximum demand.

These growth rates are regarded as being conservative

in the light of present system developments.
System losses amount to 12% of the energy purchased.

The amount of maximum demand recovered through sales is 82,6% of the maximum demand purchased. By 1996/97 VEC will have a total of 21 247 consumers, 18 925 of which will be domestic consumers. By that time the system maximum demand will be 50,5 MVA and the

annual energy consumption will be 261,4 GWh.

The increase in domestic consumers over the review period is attributed in the main to the present Government policy of subsidising supplies to domestic

consumers at a 50% level.

Expansion of the VEC system over the next five_years will not involve inordinately high capital expenditure

on major system development since a large amount of

the basic electricity supply infrastructure already exists. A sum of R23,4 million spent fairly evenly over the period will be required for that purpose. The costs of new consumer connections have been derived on the basis of current departmental costs and current costs in the private contracting sector and new consumer connections will require a further sum of R43,7 million to be spent over the review period. Capital expenditure on buildings, vehicles and equipment will amount to an estimated R5,2 million. All prices have been

presented at January 1992 price levels.

Only the administrative staffing of VEC will meaningfully increase over the review period to cope with the increasing number of consumer accounts. The present construction staff will gradually be transferred to maintenance duties and new construction work undertaken by private contractors will be correspondingly increased. The manpower requirements of VEC are dealt with in detail in an Annexure to

the report.

VEC will continue to source its capital requirements from Government, the DBSA and own generation through the tariff in roughly equal amounts over the review period. VEC should also be looking for alternative sources of development capital to supplement present

sources.

Provision will be made in the budget for depreciation year on year in an amount not less than the loan redemption commitments for that year. Surplus amounts in the depreciation fund should not be allowed to accumulate excessively, but the spending of same needs to be carefully controlled.
| SEED

Estimated operating expenses for the 92/93 financial

year amount to some R26 million. This figure increases

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to some R39 million at the end of the review period

in 1992 price terms.

There is a modest surplus of revenue over expenditure in 1992/93 and this. surplus will be maintained over the review period. The amount of the surplus expressed as a percentage of turnover is comparable with the accuracy level of the forecasts on which the study is based, and for that reason the surplus should not

be regarded as a reason for VEC to reduce its tariffs.

New tariffs proposed for implementation in April 1992 are in the same basic form as the existing tariffs. In all cases however it is recommended that the monthly service charges be increased to ensure that a greater proportion of the capital charges is recovered from that source. This results in a marginal reduction in the energy charges and makes the VEC tariffs compare more closely with those of Eskom.

Special tariffs which would bring relief to remote rural domestic consumers and to large power users with low load factors (of whom the Agriven water pumping

schemes are typical) have been proposed in the report.

If the Government subsidy of the domestic consumers continues at 50% level it will amount to some R5,8-million in 1992/93 rising to some R10,7 million in 1996/97 in 1992 price terms. The figure of R5,8 million represents approximately 19% of total

revenue from electricity sales in 1992/93.

Various scenarios for reducing the Government subsidy have been examined and the option which would be least onerous to the consumer is to hold the subsidy at a constant amount of money from the start of the review period. However, without the present 50% subsidy

the existing VEC domestic tariff does not compare

L2.

favourably with those in neighbouring Gazankulu and

Lebowa.

The new tariffs will have to be increased year on year to cover inflationary increases in the purchase price of electricity and in operating expenses on

account of inflation.

INTRODUCTION
This five year plan and tariff study was commissioned
by the Venda Electricity Corporation in April 1991

under the auspices of a study team comprising:-â\200\224

The Venda Electricity Corporation.
The Development Bank of Southern Africa
Merz and McLellan (South Africa).

The proposed terms of reference for the study and
the scope and responsibility matrix are given in

Annexure A.

OUTLINE OF EXISTING VEC SYSTEM

Current Situation

The Venda Electricity Corporation was incorporated and started operations on 1 April 1987.

The system growth since that time is shown in Table Zeke

TABLE No. 2.1 – VEC SYSTEM GROWTH

BUDGET ITEM	1988/’89	1989/’90	1990/’91
ENERGY PURCHASED GWh	80,10	96,65	115;,,66
MAXIMUM DEMAND ESKOM POINTS MVA	15,14	17,71	21,16

Electricity is purchased in bulk from Eskom (2 supply points) and Louis Trichardt Municipality, the latter

providing only about 2% of the total energy purchased in. 1990/91.

Supply is transmitted and distributed at voltages of 132, 66, 22, 11 and 0,38/0,22 kV. A single line diagram of the major transmission and distribution

system is included as Appendix Awds

The 1990/91 valuation of the distribution system (at cost) is R40,373 million. A 1991 system inventory

identifying the main components in the network appears as Appendix A.2.

The number of consumers supplied by VEC in 1991/92

is given in Table 2.2.

TABLE No. 2.2 – VEC CONSUMERS IN 1991/1992
CATEGORY : DOMESTIC LARGE 1

NUMBER OF CONSUMERS 9425 116
AVERAGE CONSUMPTION kWh10?/month 0,32 10,7
AVERAGE MAXIMUM DEMAND kVA/month – 47

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The consumer categories and the present (1991/92) electricity tariffs for each category are set out in Appendix A.3.

VEC is presently staffed with 304 persons divided among the departments listed in Table 2.3 hereunder.

TABLE No. 2.3 – VEC MANPOWER STRENGTH IN OCTOBER, 1991

DEPARTMENT	STRENGTH
MANAGEMENT	3
ADMINISTRATION	92
CONSTRUCTION	111
MAINTENANCE	70
PLANNING	28

nearly all of whom are based at the VEC's own office block, stores and workshop in Thohoyandou. There are regional offices cum stores in Siloam and Ha-Ravele,

and part-time offices at Vleyfontein, Mutale and Madombidzha.

The present breakdown of staff categories in each

department is given in the Manpower Study (Annexure B).

A small scale map of Venda is included in the report as Appendix A.1 indicating the physical locations of the major substations and load centres which appear

on the system single line diagram.

Project Development

In considering future development, some kind of norm

had to be developed. The assumptions made were:

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- Taking an average family of seven, some 250 000 people should have electricity in 10 years' time. This would imply that about half the current population of Venda would have electricity in

10 years' time.

In quantitative terms this would mean that some 36 000 new connections would have to be made in this ten-year period, or 18 000 during every

5-year period.

os These new connections would be distributed over Venda in line with population density, economic activity and available major distribution

facilities.

As the figure of 18 000 new connections during this 5-year period was not considered too high for technical execution, provided development capital could be found, some 18 000 new connections were considered as a maximum

scenario. Refer to the maps of Annexure C.

Geographic Considerations:

The geographic spread of new consumer connections for this 5-year period was estimated to follow a pattern outlined below:

1: Dzanani, south of Louis Trichardt 1 000 (500)
2: Vuwani, (southern part) 1 000 (~ 500)
3: Sibasa-Tengwe axis 4 000 (2 500)
4: Thohoyandou-Makhado axis 9 000 (5 000)
5: Vuwani, (northern part) 2 000 (1 000)
6: Gaba Tshaulu 1 000 (500)
Total 18 000 (10 000)

The Makuya area was considered another likely area, while the Shakadza and Musekwa areas were less likely

to receive new connections in this period.

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The above geographic estimates must not be considered as firm and final. A flexible approach will be adopted to meet priorities and opportunities as development

capital becomes available.

As the current development scenario, which has been submitted to the Venda government only permits some 10 000 connections due to capital restraints, a pro rata reduction in each of the above areas would be

aimed for, as indicated in the figures in brackets.

Scenarios Reviewed

In order to keep the statistical data to be presented in this 5-year plan within practical limits for the non-technical reader or the political decision-maker, it has been decided to select a single main scenario, and then to apply a number of sensitivities to the

results obtained.

Prior to taking a decision on the main scenario to be applied to this 5-year plan, however, a range of scenarios were considered. As the development capital likely to be available would eventually prove to be the single most important restraint, the capital

requirements were calculated for the scenarios selected.

The scenarios looked at were:

TABLE No. 2.4 – FUTURE 10-YEAR SCENARIOS CONSIDERED

TOTAL NUMBER OF NEW CONSUMERS DURING THE PERIODS INDICATED

SCENARIO REVIEWED	EXISTING YEAR 1 THIS YEAR ’92/’93	YEAR 2 ’93/’94	YEAR 3 ’94/’95	YR 4+5 ’95/’97	YR 6 to 10 1997/2002
No.1:MAXIMUM TECHN. REALISTIC .	11 000	3600	3600	7200	10 000
No.2: TECHNICALLY RESTRAINED, ONLY CONTRACTOR AVAIL.	11 000	3000	3000	6000	8 000
SELECTED SCENARIO, ALSO THE SCENARIO SUBMITTED TO GOVT.					
AS FOR 2, BUT 25% CAPITAL SHORTFALL					
AS FOR 2, BUT 50% CAPITAL SHORTFALL					
WHAT-IF THE SUBSIDY IS STOPPED 100% THIS YEAR					

Scenario 5, which considers a sudden stop to the subsidy, indicates that the effect technically speaking, will be felt in the later part of the 5-year period. VEC is of the opinion that the backlog is such, that the current waiting lists and customer profile will be maintained during the next three years, even if the subsidy was stopped. Thereafter the effect would be serious. This takes into account a possible loss

in current consumers at the lower end of the income

scales.

The capital implications of the above scenarios were

calculated to be as follows:

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TABLE No.2.5–DEVELOPMENT CAPITAL REQUIRED FOR THE ABOVE SCENARIOS R–million

BUDGET ITEM	’92/’93	’93/’94	’94/’95	’95/’96	’96/’97
SCENARIO 1	17,8	17,8	17,8	17,8	17,8
SCENARIO 2	15,0	15,0	15,0	15,0	15,0
SELECTED SCENARIO	12,5	14,0	12,0	1335	12,0
SCENARIO 3	7,3	7,3	es 7,9		7,0
SCENARIO 4	Â§,2	4,5	3,5	2,8	2,4
SCENARIO 5	143	1,3	1,3	5,5	5,5

Sensitivities:

The sensitivities selected have been influenced by the 50% subsidy and the expressed views by development agencies, that the subsidy should be phased out over

a reasonable period of time.

The sensitivities selected for this 5–year planning

period, therefore, have been as follows:

) The subsidy remains at 50% and grows every year,

as the consumer base grows.

2) The subsidy is pegged at, and kept constant at the 1991/92 Rand–value over the 5–year period.

>} The subsidy is phased out over the 5–year period

in equal portions of 20 percent.

36 LOAD FORECAST
3.1 Electricity Purchases

The projected growth of electricity purchases for the review period is as follows:-

Year	Energy GWh	Maximum Demand (on Eskom Supply Points)
91/92	136,10	26 810
92/93	162,30	a. 770
93/94	185,98	36 350
94/95	209,43	40 810
: 95/96	233,88	45 390
, 96/97	261,40	50 490

The energy and maximum demand trends are illustrated in Graphs 1 and 2 respectively. The average annual

growth rates over the review period are:

energy purchases = 13,943

maximum demand = 13,50%
These system growth rates are regarded as realistic, and even conservative for the purposes of this study

for the following reasons:-

L. a in the 4,5 years since VEC has been in existence,

: the compounded growth rate has been 21% per annum.

in the past 12 months the growth rate has been

ooo

22%, of which the private sector accounts for

28% and the Government sector for 6% per annum.

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in October 1991 a total of 264 new consumers

Fr were connected to the VEC system, 85% ofâ\200\224kom be were rural domestic consumers outside the urban ; areas.

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for every 11 new domestic consumers connected

there is one new small power user connected.

Growth at these levels can be expected to persist

in the short term because;

a) the Government subsidy of domestic consumers

is an inducement to make use of electricity.

b) the Venda Government has indicated a willingness
to continue to subsidize electricity consumption

and to provide capital for electricity supply.

c) most of the more densely populated areas of Venda
are already well provided with electricity supply
infrastructure and the capital costs of connecting
new consumers are therefore likely to remain

relatively low over the review period.

Electricity Sales
The forecast sales of electrical energy are given

in Appendix B.1l.

In the case of maximum demand sales, two possible

scenarios have been identified vizer-

the case where sales growth matches the growth
of purchases at 13,5% pa and the 1991/92 recovery
ratio of 82% (sales as a percentage of purchases)

is maintained over the review period.

the case where the proportion of demand recovered
is not constant. This would occur if recoverable
demand was based on the annual increase in. the
number of large power users, and the annual natural
growth of existing consumer maximum demand. We

calculate that this growth would be equivalent

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300

260

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VEC LOAD FORECAST
GRAPH Nol :ELECTRICTY in GWh

ELECTRICITY GWA

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0

GWh â\200\224â\200\224

80.1 | 96.7 | U7

136.1

162.3

186

209.4 | 233.9

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FINANCIAL YEAR ENDING MARCH

VEC LOAD FORECAST
GRAPH No.2 MAXIMUM DEMAND MVA

60

50

40

30

0

0

MAXIMUM DEMAND MVA

93

94

95 9S

[DEMAND â\200\224

15.1 17.7 31.2

31.8

36.4

40.8 45.4

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FINANCIAL YEAR ENDING MARCH

3.3

to 6% per annum and is more realistic than 13,5%

per annum in the case of demand sales.

Both cases are shown in Table 3.1

Year

91/92
92/93
93/94
94/95
95/96
96/97

System Losses

Table 3.1

Forecast of Maximum Demand Sales

Average Monthly MD Sold â\200\224 KVA

13,5% pa 6% pa
21 940 21 940
25 998 23-256
29 754 24 652
33 399 26 131
37 149 ZT 699
41 318 29Â° 361

System energy losses presently run at 12% per annum.

Figures for the losses experienced by other electricity

supply authorities have been extracted for comparison

purposes and are given below:-

Uitenhage Municipality 3,40%
Botswana Power Corporation 5,433
City of Durban 5,683
City of Cape Town 5,76%
City of East London 6,07%
Becor 8,463
Swaziland Electricity Board 11,24%

The VEC loss figure of 12% must therefore be regarded

as high

in relation to other similar undertakings,

and could be the result of

i) low consumer density
ii) inaccurate meter reading
iii) unmetered supplies
iv) network overloading
v) theft of electricity

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all of which could be present to some degree on the

â\200\234VEC system, and should be the subject of investigation

by VEC.

New Consumers

The numbers of new consumers predicted over the review period is shown in Table 3.2 and pictorially in Graph 3. These figures have been used as the base on which capital costs of new consumer connections are calculated

in Section 5 of this report.

Table 3.2
Forecast of New Consumers

Year	New Domestic Consumers	New Small Power Users	New Large Power Users
91/92	1 900	175	6
92/93	1 900	175	9
93/94	1 900	175	4
94/95	1 900	175	4
95/96	1 900	175	3
96/97 ws:			
Total New	9 500	875	26
Total 91/92	9 425	1 280	141
Total 96/97	18 925	2 155	167

Table 3.2 shows that over the review period the increase

in the number of VEC consumers will be as follows:

Domestic Consumers 100,83 aes
Small Power Users 68,4%
Large Power Users 18,4%

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VEC CONSUMER GROWTH
GRAPH No.3 :CUMULATIVE CURVES

CATEGORY OF CONSUMERS

TOTAL CONSUMERS 21200
20 19200
<a L
17100 a
15000, ,
ee,
eee,
10 8600 aN
i i fs * :
6500 \ DOMESTIC CONSUMERS
- 5000
5 [340 5 2
es SMALL POWER
i
ALL FIGURES 1 7 ff LARGE PDWER
IN THOUSANDS 88 89 90 91 92 93 94 95 96 97
LARGE â\200\224â\200\2241 9105 | 0.124 | 0129 | 0125 | 0.141 | 0.147 | 0.156 | O16 | 01
64 | 0.167
SMALL â\200\224-| 0.407 | 0.767 | 0.923 | 1.086 | 1.28 | 1455 | 163 | 1805 | 1.98 | 215
5
DOMESTIC â\200\224Â¥-| 3.303 | 4.144 | 5.453 | 7.425 | 9.425 | 11.325 | 19.225 | 15.125
 | 17.025 | 16.925
TOTAL ˜a-| 3.415 | 5.034 | 6.505 | 8.636 | 10.841 | 12.927 | 15.011 | 17.09 | 19.169 |
21.247

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FINANCIAL YEAR ENDING MARCH

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It is important to note that the numbers of new consumers each year (Table 3.2) are those numbers which the study group and VEC believe can be connected into the system using the existing VEC construction teams and with reasonable assistance from private

contractors over the review period.

Present indications are that applications for electricity supply from prospective consumers will exceed the numbers of connections which can be given in terms of Table 3.2

The results of a more detailed analysis of the following

aspects of new consumers, i.e.

energy apportionment between consumer categories;

average consumption ranges for consumer categories;

projected energy consumption over the review

period;

are given in Appendices B.2, B.3 and B.4 respectively.

It must be noted that the figures for the large power users designated (2) in Appendix B.3 have been obtained by taking the first 25 consumers in the present large power group, being those with the highest consumptions and in a category with consumptions which are approximately 10 times greater than those of the

remaining large power users.

SYSTEM DEVELOPMENT

Major System Development

Present planning by VEC has identified (and in some cases set in motion) various capital projects to upgrade the main transmission and distribution networks in

order to meet the forecast growth in system load.

This work is confined to new transmission lines (generally at the higher voltages) and substations, and reinforcement of existing installations of that nature. It also includes a new Eskom point of supply

at Wylliespoort.
This work is itemised in Appendix C.1.

Having discussed the basis on which VEC estimated the costs of the work in Appendix C.1, the specific costs of various elements were established (as shown in Appendix C.2) and we concur that the capital required (as tabled in Section 5) is a reasonable estimate

for what has to be done.

New Consumer Connections.
New consumers connected to the VEC system over the review period have been identified according to number

and geographical area where possible.

Appendix C.3 gives the number increases in domestic consumer expected in the main residential areas of Thohoyandou, â\200\230Shayandima and Makwarela. These account for about 30% of the total VEC domestic consumers at the end of the period, compared with 25% at the beginning of the period. |

Appendix C.4 gives the present distribution of the large consumers in the system. The relatively small number of additional consumers in this category, the

diverse nature of the business and the indeterminacy

of location makes the prediction of new large power user incidence and connection cost dirflficult to determine with any accuracy.

Suffice to say at this stage that about 30% of new consumer development is expected to take place along the Shayandima-Thohoyandou-Makwarela axis. The remaining 70% of the development will take place in other areas, probably those already served by the major network and those to which it is intended to extend the network.

Organisational Capacity

The organisational capacity of VEC to cope with the system development until 1997 has been the subject of a separate 5 year manpower plan. Aspects such as the manpower increase during the period and the corresponding manpower budget are dealt with in that study which has been included herein as Annexure B.

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CAPITAL COST OF SYSTEM DEVELOPMENT

Major System Development

The capital cost of expanding and reinforcing the main transmission and distribution networks (as

discussed in Section 4.1) is shown in Table 5.1 below.

TABLE No. 5.1 – CAPITAL EXPENDITURE ON MAJOR SYSTEM UPGRADING

(January 1992 price level)

YEAR	"91/’92	"92/"Â°93	’93/’94	’94/’95	’95/’96	’96/’97
ESTIMATE in R–million	2,609	3,953	5,422	3,486	4,737	3,162

New Consumer Connections

The. capital costs of the new consumer connections calculated on the numbers set out in Section 3 have been arrived at using the average costs set out in Table 5.2.

TABLE No. 5.2 – AVERAGE COST OF SUPPLYING A NEW CONSUMER

CONSUMER CATEGORY COST RANGE (JAN.’92 LEVEL)
DOMESTIC (VEC DEPARTMENTAL CONSTRUCTION) R 3600
DOMESTIC (PRIVATE CONTRACTOR) ; R 4150
SMALL POWER USER R 7000 to R 9000
LARGE POWER USER R 15000 to R 21000

The capital costs which appear in Appendix D.1l have

been calculated assuming that;

for domestic supply the VEC cost of R3 600 will
apply for the first 3 years and the private
contractor’s cost of R4 150 will apply for the
last 2 years of the review period.

â\200\224â\200\224â\200\224
new supplies for small and large power users
have been costed at rates of R8 000/consumer

and R18 000/consumer respectively. It must be

noted that in the case of the large power

the prediction and use of an average cost must

be viewed with reservations.

5.3 Other Capital Costs

Other capital costs which VEC will have to meet over

the review period comprise;

buildings, where an estimated RO,35 million will

have to be spent each year.

vehicles, an estimated sum of RO,59 million per annum being required for replacement purposes

> rather than fleet expansion.

office equipment, an estimated R0,048 million

being allowed to cover expansion and replacement of existing facilities.

construction equipment, for which a sum. of

RO,050 million has been allowed each year.

Appendix D.2 summarises these costs for each year in question.

The totals projected capital requirements appear in

Appendix D.3, the total from which are reflected in Table 5.3 below.

TABLE No. 5.3 - TOTAL CAPITAL EXPENDITURE FORECAST (JAN. ’92 LEVELS)

YEAR ’91/’92 *92/Â°93 | ’93/’94 | "94/’95 *95/’96 | *96/’97

=== =
TOTAL CAPITAL REQUIRED 11,885 13,303 14,852 12,836 Â£5,132 13,539

This is the estimated amount of capital which VEC will need to raise each year to support system

development and operation.

The method of sourcing the capital will be discussed

in Section 6.

SOURCING OF CAPITAL

At the present time VEC obtains its capital requirements from three sources, viz

-a) the Venda Government in the form of â\200\230shares'. These are in effect interest-free, indefinite period, non-redeemable loans.

b) loans, which are obtained either from the Development Bank of Southern Africa, or from the commercial sector.

c) own capital generated from the operation of VEC.

Each source presently contributes roughly one-third of VEC's total capital requirements, and that ratio should preferably be maintained during the 5 years covered by this study.

A schedule of current VEC loans from the DBSA is included in Appendix E.1. Appendix E.2 gives details of VEC loans from the commercial sector.

The interest and redemption over the review period on the 5 DBSA loans which VEC has already negotiated with the DBSA is given in Appendix E.3.

Appendix E.4 gives similar details for the commercial loan and Appendix E.5 for the loans from the Industrial Development Corporation.

On the subject of new loans to VEC, the DBSA have made the following stipulations;

loans will only be granted if they can be linked to economic activity, and if they are likely to promote economic growth in Venda.

Corporation and the Independent Development Trust.

VEC could also consider issuing stock as a means of raising capital for development purposes.

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the scheme which the loan funds must be viable, i.e. it must show a positive return or must be

associated with an affordable service.

there must be a high degree of confidence in

the projects for which the loans are requested.

the DBSA wishes to ensure that existing infrastructure is being fully utilised and that the maximum benefit is being derived from capital

already spent before new loans are requested.

On this basis the DBSA has indicated that it would prefer not to grant VEC new loans in excess of

R4,00 million per annum at the present time.

Table 6.1 has been drawn up on the basis that this will be the case i.e. R4,00 million per annum of new capital from the DBSA with the balance of the amount identified in Section 5 (Table 5.3) obtained in roughly equal amounts from the Venda Government (in the form

of shares) and from the operating account i.e. through the tariff.

TABLE No. 6.1 – PROPOSED SOURCING OF CAPITAL R – million

SOURCE	"91/'92	"92/'93	"93/'94	'94/'95	"95/'96	'96/'97
GOVERNMENT SHARES	4,350	4,500	5,500	4,500	5,500	4,500
DBSA LOANS	4,000	4,000	4,000	4,000	4,000	4,000
OWN CAPITAL	3,535	4,803	5,352	4,336	5,632	5,039
TOTAL CAPITAL SOURCED	11,885	13,303	14,852	12,836	15,332	13,539

The point must be made that VEC should avail itself of all the sources of capital which are currently available as an alternative to depending solely on the DBSA as it does to a large extent at the present time. Outside sources which should be investigated

in this regard are Eskom, the Industrial Development

6.2

ESTIMATED OPERATING EXPENDITURE

Purchase of Electricity

Purchase of electricity will cost VEC an amount of R12,44-million in 1991/92 on the Eskom January 1991 Tariff A. For the 136,1 GWh purchased this gives

an effective unit purchase price of R0,0914/kWh, i.e. 9,14 cents per unit.

Purchases for each subsequent year in the review period have been based on that unit cost, i.e. the unit cost

associated with the Eskom 1991 tariff.

Operating Expenses
The operating expenses for each year of the review

period have been estimated as follows:

salaries and allowances as per the manpower plan

in Section 2;

vehicle running costs, rentals and system operation and maintenance as per VEC internal figures and

budgets;

administration and sundry costs under the heading of miscellaneous based on VEC budgets and growing at an average rate of 13,6% per annum to match

the system growth rate.

Interest

The estimate of interest payments each year is extracted from Appendix E.7.

Depreciation

The predicted growth in the asset values of:-

Â°

land and buildings;

motor vehicles, office equipment and construction

equipment.

the VEC electricity distribution system as a

whole;

is given in Appendix F.1, this being based on the

projected capital expenditure on each category as

outlined in Section 5.

Appendix F.2 has been prepared to show the amounts of money which should be allowed for depreciation each year if

i) land and buildings are not depreciated;

motor vehicles, office equipment and construction equipment are written down at 20% per annum on

a straight line basis.

the electricity distribution system is depreciated

at 5% per annum on a straight line basis.

If VEC were to set aside the amounts of money appearing in Appendix F.2 i.e. R3,994 million in 1992/93 rising to R6,682 million in 1996/97 two issues would arise

vizs-

should the tariff be increased appropriately to earn the amounts required for depreciation,

and

how would the accumulated depreciation fund be

used.

The second issue supposes that the fund amount would either be invested or it would be used to fund new

capital development, i.e. it would in effect be in

the same category as â\200\234own capital" raised through

the tariff for system development purposes.

Seen in that light we do not think it would be correct to burden the tariff to raise large sums in the name of provision for depreciation. Discussions with VEC have revealed that they require a sum of about R1,5 million to be readily available to meet emergencies or unforeseen situations which could arise and that a so-called depreciation fund could be fixed at that

level for the review period.

Discussions with the DBSA on the subject of depreciation in an organisation like VEC have led to the suggestion that the amount of money set aside on the operating account each year for depreciation should not be less than the annual commitment for loan redemption. Appendix F.3 has been drawn up to show the latter amount over the review period, and it can be seen that a regular annual amount of R1,5 million would be adequate to

cover loan redemption.

We therefore propose that allowance for depreciation be limited to R1,5 million each year and that the depreciation fund be used at the discretion of the Board of VEC, who should be the only body empowered to authorise expenditure from that fund, after annual

loan redemption payments have been met.

Total Operating Expenses

Total operating expenses over the review period are given in Table 7.1 and the apportionment of expenses in each category at the beginning (91/92) and end

(96/97) of the period is shown in pie chart form below:

VEC OPERATING EXPENSES APPORTIONMENT
1991/’92 versus 1996/’97

ELECTRICITY PURCHASE

DEPRECIATION

6.8
INTEREST
8.8
OPERATING EXPENSES
28
1991/’92 in PERCENT
VECSYRIS

ELECTRICTY PURCHASE
616 <

DEPRECIATION

3.9

â\200\230 S SAN AY : WS \ .
REA :
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\\\S \\\ ASSâ\200\235 .
\\ sy
OPERATING EXPENSES

25.6

1996/’97 in PERCENT

VECSYRI4

Table 7.1

Estimated Operating Expenses – R million

	91/92	92/93	93/94	94/95	95/96	96/97
Purchase of Electricity	12,440	14,834	16,999	19,142	2izpsli	23,892
Operational Costs:						
Salaries and Allowances	37250	3,700	3,700	4,000	4,000	4,300
Vehicle Running costs	0,438	0,481	0,505	0,535	0,556	0,585
Rent	0,077	0,077	0,077	0,077	0,077	0,077
System Operations Maintenance	0,431	0,928	0,831	0,948	1,081	1,233
Miscellaneous	1,966	2,165	2,481	2,841	3,252	3,721
Sub-total	6,162	77352	7,594	8,401	8,966	9,916
Interest	1,944	2,089	2,448	2295	3,133	3,455
Depreciation	1,500	1,500	1,500	1,500	1,500	1,500
Total	22,046	25,774	28,541	31,838	34,976.	38,763

8.1

ESTIMATED OPERATING REVENUE

We have considered the following sources of revenue for the review period in question

r Sundry income

7 Sales of electricity and associated revenue.

Sundry Income
The 1991/92 budget

following sources,

lists

and which would

the

be of a recurrent

sundry income from

nature;
Rand

1. Dividends 1 150
2. income from retesting,

reconnection and meter

reading charges 408 500
3. Interest from:-

i) investments 166 750

ii) consumer deposits 368 800

iii) housing loans 26 810
4. Rentals received 90 180

Total 1 062 190
Of these items, we would expect only Items 2 and 3: tii) to change significantly over the review period. If,

for the sake of simplicity, both are assumed to increase

at the system growth rate of 13,5% per annum, the resulting sundry income at January 1992 price and interest levels would be as shown in Table 8.1;
TABLE No. 8.1 - ESTIMATED SUNDRY INCOME R - million
YEAR *91/'92 "92/Â°93 193/'94 | '94/'95 95/'96 | '96/'97
ESTIMATED SUNDRY INCOME 1,062 1,206 1,368 1,553 a, 763 2,001

8.2 Sale of Electricity and Associated Revenue
Direct revenue from the sale of electricity and the

provision of electricity falls into the following
categories;

service charges

connection fees for new consumers
consumer deposits

monthly extension charges

street lighting

sale of metered energy

maximum demand charges.

At the present time VEC employs all these categories,
each of which is reviewed hereunder in the light of
the expected system growth.

Service Charges.
The present service charges (Appendix A.3) are intended

to cover fixed monthly costs independent of consumption.
Although the service charge is only a _ significant
amount in the case of domestic consumers with small
monthly accounts, the principle of a minimum monthly
fixed payment is sound and we recommend that service

charges be retained in the VEC tariff structure.

The amount of revenue which would be obtained over
the review period from service charges is shown in

Appendix G.l. These figures are based on the January
1991 tariff.

Connection Fees for New Consumers

Connection fees collected from new consumers are
intended to recover all or part of the cost to the
supply authority of giving the connection. Being one-off
payments they do not make a recurrent (or significant)
contribution to revenue, and therefore do not normally
fall within the scope of the tariff.

At the present time VEC levies connection fees of;

R125,00 single phase
and R430,00 three phase

for urban consumers.

Appendix G.2 gives the value of the connection fees which would be collected over the review period using

the 1991 standard charges for urban consumers.

Consumer Deposits

New domestic consumers and small power users are required to pay a power account deposit which is presently R145 in the case of a domestic consumer and on a sliding scale according to the kVA rating of the installation in the case of a small power user. Taking the figure of R700 associated with a 20 kVA supply as an average amount, the consumer deposits which VEC will collect are given in Appendix G.3.

These deposits should not be regarded as a revenue item in the tariff calculation as they are in effect one-off advance payments which would be refunded to

a consumer who was in credit when his supply was

terminated.

Monthly Extension Charges
In terms of present VEC policy non-rebatable monthly

extension charges are levied on selected consumers
in all the categories and the amount of revenue

collected from that source is given in Appendix G.4.

It is of interest to note however that other supply
authorities, including Eskom, regard the monthly
extension charge as performing the same function for
the large power user as the single connection fee
does for the small power user and the domestic consumer.

By that definition the extension charge is not normally

relied on to make a regular and predictable contribution to revenue, particularly in cases where a demand-related rebate is applied to the extension charge, allowing it to be extinguished when the consumer's maximum

demand exceeds a certain amount.

Extension charges are calculated for each particular large power user to recover that part of the cost of extending the system which should not be borne by other consumers, and should also include the actual cost of the connection for that particular consumer,

i.e. the extension charge should incorporate the

connection fee.

If this definition of the extension charge is adopted,

then it falls outside the scope of the tariff.

Street Lighting and Miscellaneous

The energy consumption under this heading runs at an average of about 1,7 GWh per annum over the review period, and as such, is less than 1% of total energy consumed. If this energy were charged for at the January 1991 unit rate of RO,196/kWh it would yield an annual revenue of R333 200. This figure will be included under the miscellaneous revenue heading,

the total amount of which appears in Appendix G.5.

Sale of Metered Energy
The revenue which the sale of metered energy would

yield over the review period is given in Appendix G.6.

Maximum Demand Charges
Revenue collected from the monthly maximum demand

charges applied to large power users is reflected

in Appendix G.7.

Total Estimated Revenue

The total projected revenue over the review period

ae z :
is summarised in Table 8.2 based on the January 1991
tariffs and schedule of charges where applicable.

TABLE No. 8.2 – ESTIMATED OPERATING REVENUE R – million

BUDGET ITEM	’91/’92	*92/’93	*93/’94	’94/’95	’95/’96	’96/’97
SALE. OF ELECTRICITY:						
SERVICE CHARGES	2,990	3,613	4,213	4,811	5,408	6,004
ENERGY SALES	14,545	17,631	20,754	23,979	27,447–}|	31,209
DEMAND CHARGES	6,069	6,433	6,819	7,228	7,662	8,121
MISCELLANEOUS	1,109	1,065	1,114	1,165	1,219	L201
EXTENSION CHARGES	1,440	1,547	1,663	1,789	1,922	2,067
TOTAL SALES	26,063	30,289	34,563	38,972	43,658	48,678
SUNDRY INCOME	1,062	1,206	1,553			
GRAND TOTAL REVENUE	27,125	31,495	35,931	40,525	45,421	50,678

The apportionment between different elements making up the total revenue is shown in pie chart form for

the beginning of the period (1991/92) and the end of the period 1996/97

	91/92 %	96/97 %
Service Charges	11,0	11,9
Extension Charges	5,3	4,0
Miscellaneous	3,8	27D
Energy Sales	53,76	61,6
Demand Charges	22:4	16,0
Sundry Income	3,9	4,0
	100,00	100,00

VEC REVENUE APPORTIONMENT
1991/â\200\23192 versus 1996/Â°97

MISCELLANEOUS
Rs 3.8

Bey. EXTENSION CHARGES
ss YY 6.3

ES
\ \ SERVICE CHARGES

: \
7.
ASS
ENERGY SALES \ S 11

Â§3.6

SEE ESS

es SUNDRY INCOME
â\200\234 3.9

(Ul | DEMAND CHARGES
: 22.4

1991/’92 in PERCENT

VECSYR-@
MISCELLANEOUS
a 2.5
EXTENSION CHARGES
â\200\230 4
SERVICE CHARGES
11
ENERGY

16

1996/’97 in PERCENT

9: RECONCILIATION OF REVENUE AND EXPENDITURE

Table 9.1 reconciles revenue and expenditure and shows

oom that at 1991 tariffs there will be a modest surplus
of revenue over expenditure after the â\200\234own capital"
requirements identified in Section 6 of this report
have been taken into account

TABLE No. 9.1 – REVENUE versus EXPENDITURE R – million

BUDGET ITEM	’91/’92	’92/’93	*93/’94	’94/’95	’95/’96	’96/’97
TOTAL EST. REVENUE	27,13	31,50	35,93	40,53	45,42	50,68
LESS:ESTIMATED OPERATING	–22,05	–25,77	–28,54	–31,84	–34,98	–38,76
EXPENDITURE SUBTOTAL	5,73	7,39	8,69	10,44	11,92	
LESS: OWN CAPITAL REQUIREMENTS						
						5759
						4,80
SURPLUS OF REVENUE						

The surplus of revenue over expenditure in the first
2 years of the review period is approximately 4% of

turnover, rising thereafter to more than 10% by the end of the period.

Because the uncertainty level of the revenue and expenditure forecasts is of the order of 5%: inâ\200\231 the early years, and will increase as the forecast projects further into the future we think that the predicted surpluses should be allowed to stand as shown and should not be drawn down as part of any adjustment

to the tariffs considered in later sections of this

report.

10.
10.1

IMPACT ON EXISTING TARIFFS

Effect of Eskom Tariff Increases

The effects of an increase in the Eskom tariff have been examined to see what corresponding amount of

increase would be required: in the VEC tariff on that account.

If it is assumed, on the basis of the income and expenditure figures for 1992/3 that the surplus of revenue over expenditure shown in Table 9.1 must be maintained, then Graph 4 shows the amounts by which the VEC tariff would have to be increased to cover

various increases in Eskom tariff.

&

’ GRAPH No.4:RELATIONSHIP VEC & ESK |

: TARIFF INCREASES BY ESKOM â\200\23092/93 |

i VEC INCREASE PERCENTAGE i

i

| i
i i

7 8 9 0 1 12 13 4 15 16
ESKOM INCREASE PERCENTAGE

VECEYRI2

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It must be stressed that the percentage increase in VEC tariff in Graph 4 is due solely to the increase in Eskom tariff, and does not reflect any other

increases.

10.1

The VEC tariff increases would apply to service charges,

energy charges and demand charges only, i.e. extension
and those

charges

making up miscellaneous revenue
would not be increased.
10.2 Sensitivity to Variations in Capital Costs of New

Consumer Connections.

In â\200\230order to

capital costs

new

study the effects

consumer

connections

we

of variation in the

have

set out the latter as a proportion of the total annual

capital requirement in Table 10.1

TABLE No. 10.1 – EFFECT OF VARIATION IN NEW CONSUMER CAPITAL COSTS (R–million)

YEAR	’92/’93	193/’94	’94/’95	’95/’96	’96/’97
TOTAL CAPITAL REQUIREMENT	13,2	14,9	12,8	15,1	13,5
CAPITAL TO NEW CONSUMER CONNECTIONS	8,3	8,4	8,3	9,4	9,3
NEW AS A PERCENTAGE OF TOTAL	62,5	56,5	64,8	61,8	69,0

from which it can be seen that new consumer connections

account for about 63% of the total capital requirements
year on year.

We have assumed for of this
that the variation in capital requirements which arises
the variation in the cost of
connections will all be reflected

capital" requirement,

the purposes exercise

from new

consumer
of the
which

The amounts

in terms
the

is to be raised on the operating account.

"own i.e. capital

of capital sourced through Government shares and DBSA
loans each year have been regarded as fixed amounts.

Table

10.2 shows the results of the exercise to

determine how the amounts of â\200\234own capital" will vary

if the costs of connecting a new consumer are

120% and 150% of the values assumed in Section 5.

â\200\234TABLE No. 10.2 – VARIATION IN OWN CAPITAL REQUIREMENTS (R – million)

% VARIATION IN NEW CONSUMER CONNECTION COST	*92/’93	*93/’94	’94/’95	’95/’96	’96/’97
– 20 %	3,10	3,70	3,109	3,70	3,20
0	4,80	5,40	4,30	5,60	5,0
+ 20 %	6,50	7,10	6,00	7,50	6,90

+ 50 %

7,00

9,60

8,50

10,30

9,710

Table 10.2 shows that

a 20%

connection cost would result

increase or decrease in new consumer

in a 35% increase

or decrease in "own capital" requirements, and

a 50%

would result in an 88% increase in own capital

increase in new consumer connection cost

requirement
on the basis of the 1992/93 figures.

The amount of own capital which will be required each year is therefore seen to be materially affected by

the actual cost of new consumer connections and it

will be necessary for VEC to monitor the latter cost

closely as the review period progresses. This. is

particularly since VEC intends

important making

increasing use of

private contractors for new

construction work, and because connection

costs are
expected to rise when supplies are given to consumers
in the less densely populated parts of Venda.

10.3 The Effect of Government Subsidies

VEC
50% of the cost of electricity supplies to domestic

At the present time the Venda Government pays

Scenario 2

the consumer revenue each year.
the subsidy remains at its 1991/92

ee
consumers. The purpose of the subsidy is to make
VEC domestic tariffs comparable with the sub-economic
tariffs at present being charged in neighbouring
Gazankulu and Lebowa and to encourage the wider use
of electricity by making it affordable to a larger
number of households.
At the present time therefore the VEC domestic consumer
is only paying 50% towards the cost of his electricity.
Table 10.3 has been drawn up to show the total revenue
which must be collected from the domestic tariff over
the review period.
TABLE No. 10.3 - ESTIMATED REVENUE FROM DOMESTIC CONSUMER TARIFF R - million
BUDGET ITEM â\200\234gif7oe 4 "92/'G3 | 98/98 1 794/95 | â\200\234Say 8) fee
SERVICE CHARGES 2,22 2,73 3,24 3,74 4,24 4,74
ENERGY SALES 7,09 8,76 10,62 12,54 14,62 16,74
TOTAL DOMESTIC REVENUE 9,31 11,49 13,86 16,28 18,86 21,48
Four possible scenarios with regard to the subsidy
have been examined viz.,
Scenario 1 : the subsidy remains 50% of

level of R4,65 million in each
of the. subsequent years.

Scenario 3 . the subsidy is reduced by 20%
each year from 1992/93 onwards

10.4

such that

it reduces

to

zero

in

1996/97 at the end of the review

period.

a reasonably

subsidised amount,

ne
Scenario 4 The subsidy is removed immediately.
The actual amounts of revenue which will need to be
recovered from the consumers in each year for each
scenario are set out in Table 10.4.
TABLE No. 10.4 – REVENUE TO BE RECOVERED FROM DOMESTIC CONSUMERS R – million
SUBSIDY SCENARIO ’91/’92 ’92/’93 ’93/’94 | ’94/’95 ’95/’96 | ’96/’97
SCENARIO 1: 50 % 4,66 Â§,75 6,93 8,14 9,43 10,74
SCENARIO 2: CONSTANT VALUE 4,66 6,84 9,20 11,62 14,20 16,81
SCENARIO 3: REDUCING @ 20% 4,66 1,77 11;,60 14,42 17,92 21,48
SCENARIO 4: NO SUBSIDY 9,32 11,50 13,86 16,28 18,86 21,48
The corresponding percentage amounts by which the
domestic consumer tariffs would have to be increased
for each scenario are given in Table 10.5.
TABLE No. 10.5– PERCENTAGE INCREASE IN DOMESTIC CONSUMER TARIFF
SUBSIDY SCENARIO "91/’92 *92/’93 93/’94 | ’94/’95 ’95/’96 | ’96/’97
SCENARIO 1: 50 % 0 0 0 0 0 0
SCENARIO 2: CONSTANT VALUE 0 19 33 43 51 57
SCENARIO 3: REDUCING @ 20% 0 35 67 nd 90 100
SCENARIO 4: NO SUBSIDY 0 100 100 100 100 100
Of the scenarios considered, only Scenario 2 offers

gradual the
but it still means that by 1996/97

take-up of previously

10.5

the consumer would have to pay 57% more than he would

on the original 50% scheme in that year.

It can be seen that on Scenario 3 the consumer would be paying the full amount by 1996/97.

It would thus appear that VEC might have to increase its small and large power user tariffs (if and when the domestic subsidy is reduced) so that the burden is shared by all consumer groups rather than _ the

domestic consumers only.

Domestic consumer tariffs in neighbouring states are given for comparison purposes:

Lebowa (1991):-

Service Charge R 6,00/month
Unit Charge R 0,096/kWh

Gazankulu (1990):

Service Charge R 2,00/month
Unit Charge R 0,055/kWh

Pietersburg (1990)

Circuit Breaker Charge (average) R16,10/month
Unit Charge R 0,1185/kWh

Louis Trichardt (July 1990)

Unit Charge - urban R 0,1418/kWh
- peri-urban R 0,1631/kWh

11. NEW TARIFF OPTIONS
11.1 Analysis of Existing Tariffs

General

eam On the January 1991 VEC tariff the effective recovery

rate for each consumer category expressed in Rand/kWh
is as follows:-

Consumer Category Rand/kWh
Tariff A – 'Top 25' consumers 0,1475
– Balance of consumers 0,1785
Tariff B – Three phase . 0,2688
– Single phase 0,2180
Tariff C – Domestic 0,2648

Table 11.1 has been drawn up to show how the revenue
in 1991/92 is apportioned between the tariff categories
using the January 1991 Tariff figures:

Table 11.1
Revenue Apportionment According to Tariff Category 1991/92

Tariff A Tariff B Tariff C Total $

Rm Rm Rm
Service Charges 0,157 0,613 2,220 12
Energy Charges 4,426 3,026 7,093 57
Demand Charges 6,069 = = 24
Other Charges 1,614 0,120 0,051 7
Total Rm 12,266 3,759 9,364 25,389
Total % 48 15 37 100

i.e. Table 11.1 shows that

Tariffs A, B and C contributed 48%, 15% and 37%
. respectively to the total tariff revenue in 1991/92

and

Service charges, energy charges, demand charges

and other charges made up 12%, 57%, 24% and 7%

respectively of the total tariff revenue in

1991/92.

It can be seen that energy charges account for the bulk of tariff revenue and that this predominance will become more marked with the large number of new

domestic consumers being connected during the review

period.

Various aspects of the existing tariffs are discussed

in the sections hereunder.

Domestic Consumers (Tariff C)
Graph 5 shows the effective cost of a unit paid by a domestic consumer on the VEC January 1991 tariff

over a range of consumption from 50 units/month to 600 units/month.

The present service charge is R21,96/month (half of which is paid by Government subsidy). If the intention is to recover the capital cost associated with a new consumer (typically R3 600)) at the interest rates currently being charged (by the DBSA and over a 20 year period) in the service charge, the latter would have to be increased to an amount of R44,76/month. To maintain the same cost recovery from the average consumer, the unit rate could then be reduced from 19,6 cents/kWh (half of which is presently paid by Government subsidy) to 12,49 cents/kWh.

Doubling the present service charge to a figure of say R40,00 would result in a corresponding reduction in unit cost to 13,59 cents/kWh.

Comparison of VEC Tariff C with that of Eskom in 1991

is as follows:-

VEC Escom 'C' Eskom 'D'

Service Charge - R/month 21,96 23,84 48,86
Unit Charge - cents/kwh;
i) first 1000 units 19,60 12,964 19,195
ii) balance of units 19,60 12,964 11,106

dal Z

A higher service charge and lower unit charge would thus bring the VEC domestic tariff more into line with Eskom Tariff C.

Small Power Users (Tariff B)

The cost of a unit to a small power user over the range of 700 to 1400 kWh/month consumption, is shown for the single and three phase cases in Table 11.2

Table 11.2
kWh/month Effective Unit Cost - Rand/kWh
Single Phase Three Phase
700 0,;2271 0,3026
1000 0,2180 0,2707
1400 0,2117 0,2493

The present service charges for single and three phase consumers are R21,96 and R74,65 respectively. If the service charge was required to recoup all the capital cost of a new small power user (typically R8 000) over 20 years it would have to be set at a figure of R99,48.

The effect of increasing the service charge to

R100/month would be to reduce the unit charges to;

11,18 cents/kWh in the case of the single phase user, and

17,07 cents/kWh in the case of the three phase user

to effect the same cost recovery from the average

small power user.

Alternatively, if VEC were to reduce the unit charge from 19,6 cents/kWh to say 16,0 cents/kWh, the existing service charges would have to be increased to R58,00 and R110,70 for the single and three phase cases

respectively.

EFFECTIVE UNIT COST
GRAPH No.5 :DOMESTIC CONSUMERS

a RAND/KWh
0.432 -&- RAND/kKWh
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0.6
dye
0.4
ME
a RSS Rae 959 0.261 0.245 024 0236 0.338

– + â\200\2343 â\200\224 4)
0.2
0.1
0
@ 6a 130 150 200 260 300 350 400 460 500 650 600
MONTHLY CONSUMPTION KWh
EFFECTIVE UNIT COST
GRAPH No.6 : LARGE POWER USERS
RAND/kKWh
0.6

. = RAND/KWE
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0.1

0
6 4.08 o4 018 0.2 0.26 as G36 6.4 6.46 a6 G45 a6

LOAD FACTOR

VECOYR-7

Comparison of VEC Tariff B with those of Eskom in

1991 is as follows for a consumer using 1000 kWh per month.

	VEC(1)	VEC(2)	Eskom B	Eskom D
Service Charge – R/month	21,96	74,65	.79,93	99,92
Unit Charge – cents/kWh (average)	19,60	19,60	15,45	15,15

A higher VEC service charge and lower VEC unit charge would bring the VEC tariffs more in line with those of Eskom.

Large Power Users (Tariff A)

This analysis is confined to the 100 or so large power users who have an average monthly energy consumption of 10 700 kWh and a maximum demand of 47 kVA. Graph 6 shows the effective cost of a unit as a function of load factor on the January 1991 VEC tariff, assuming

a power factor of 0,80.

The load factor for the average consumer under

consideration is 0,39.

From Graph 6 it can be seen that consumers with load factors at and below 0,20 start to pay a high effective unit price. Several of the Agriven water pumping schemes fall into this category.

Comparing the VEC Tariff A with that of Eskom (January 1991) in the supply voltage range 0,38 to 11,0 kv

shows the following relationship:-

	VEC	Eskom
Service Charge – R/month	98,36	99,92
Demand Charge – R/KVA	23,41	21,64
Unit Charge – Cents/kWh	6,650	47153

e

i1.2

If the estimated average cost to VEC of supplying
a new large power user is in the order of R18 000
the monthly amount payable by the consumer to cover
the capital charges would be R224 at the interest
rate and term used previously in this section of the
report.

Because of the relatively small number of large power
users and the wide range of capital cost associated
with giving them a supply it is not practical to try
and recover the capital through the service charge.
The -demand charge is therefore relied on in the main
to perform that function (and to recover the demand
component in the electricity purchased). Where a
very large capital outlay is required to supply a
new consumer it is more common to obtain a_Ã© cash
contribution from, or to levy a month extension charge

on that consumer.

Increasing the existing service charge to a figure
of say R200, by way of example, and leaving the demand
charge at R23,41 would reduce the unit charge to
5,70 cents if the cost recovery from an average consumer

with a 0,40 load factor were to be maintained.

Adjustments to Existing Tariffs

The reconciliation of revenue and expenditure in Section
9 shows that the present (1991) VEC tariffs are
adequate, and will provide a modest surplus after
yielding the requisite amount of â\200\234own capital" for

system developments.

Of course the 1991 tariff will have to be increased
year on year to keep pace with inflation and with
the corresponding increases in Eskom tariff. Adjustments
to the VEC tariff will also be required from time
to time to ensure that the â\200\234own capital" requirements
are being met, and to compensate for possible changes
in the form and quantum of the Government subsidy

of domestic consumers.

11.6

At this stage, apart from introducing the various special tariffs discussed later in this section of the report, we recommend that VEC make relatively minor changes to the existing basic tariffs to bring

them more into line with those of Eskom.
Our reasons for this suggestion are:-

the increase in the fixed monthly component makes

revenue less dependent on consumption;

the possibility of Venda being incorporated into a larger geographical region (and ultimately into an Eskom or national tariff) does exist and if that were to happen the tariff transition

would be less abrupt to erstwhile VEC consumers;

consumers generally tend to compare their local tariffs with those of Eskom.

The tariffs we recommend are as follows:

Tariff A - Large Power User

Service Charge R120/month
Demand Charge;

i). 0,38 - 11 kV R25/kVA

ii) above 11 kv R24/kVA
Energy Charge RO,0600/kWh.

Tariff B - Small Power User

Service Charge

i) single phase R38/month
ii) three phase R88/month
Energy Charge RO,1800/kWh.

Tariff C - Domestic Consumer
Service Charge R23/month
Energy Charge RO,1930/kWh

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wt.

The existing schedule of standard charges would remain unchanged, i.e. connection fees and consumer deposits would not be affected.

Special Domestic Tariffs

Attention has been drawn to the fact (Graph 11.1) that domestic consumers who use less than about 150 units per month pay an inordinately high effective unit price, for example, a consumer using only 100

units will pay an effective 41,6 cents per unit.

With the adjusted domestic tariff recommended in Section 11.2 this situation would be marginally worsened i.e.

the figure would become 42,3 cents per unit.

Two possibilities exist to provide the very small domestic consumer with some relief, these being:

Â° a flat rate tariff where the consumer is charged for metered energy only at a suitable unit cost,

and

a circuit breaker tariff where the consumer pays a fixed monthly sum of money which is related to the size of circuit breaker installed in his

dwelling.

In our opinion the circuit breaker tarift is. â\200\230tne preferable of the two alternatives since it avoids the need for a meter (fixed cost) and for regular meter reading (recurring cost). Should the consumer wish to increase his load at some stage a meter could

be fitted at the time the supply was uprated.

In introducing a circuit breaker tariff in Venda we recommend that VEC provide a single circuit breaker size of 5 amps only. This will only permit lighting to be used with small household appliances, the single largest load permitted at any one time being about 1 kw.

11.4

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The monthly cost which attaches to such a circuit breaker should, we think, be about R30,00, which for a 100 kWh/month consumer is equivalent to 30 cents per unit, and would represent a 25% saving on the

amount presently paid on Tariff C.

This saving to the consumer would, of course, represent a loss in revenue to VEC and Tariff C (or possibly Tariffs A and B as well) would have to be adjusted upwards to compensate, i.e. the larger consumer would be subsidising the small consumer on the circuit breaker tari ft.

The extent of application of a 5 amp circuit breaker tariff should be investigated by VEC pending introduction on a trial basis. We would also recommend strongly that the circuit breaker tariff be introduced in the more remote rural villages and settlements only whereâ\200\231 there is a low level of consumer sophistication and the chance of tampering with the supply is therefore less likely.

The subject of introducing budget electricity controllers as an alternative to metered supplies to domestic consumers should also, we think, be looked into by VEC as a separate study in its own ragnt. This subject is complex and is therefore not readily

addressed within the scope of this report.

Special Small Power User Tariffs
At the present time there does not appear to be any

need for a special tariff in this category.

Special Large Power User Tariff

Apart from the very large new consumer with whom VEC might wish to negotiate a special tariff depending on the particular circumstances, the only other large power user category which needs attention is. that

where the load factor is chronically poor.

41.9

These consumers also pay a high effective unit price

by virtue of a high demand charge and small energy consumption.

Since this situation arises because of the nature of the operation or process they are involved in, these consumers are often unable to improve their

load factors.

The other option which might be available is that of shifting the time at which the maximum demand occurs so that it does not coincide with the VEC system peak. Alternatively, the consumer could avoid operating

the offending equipment during VEC system peak periods.

This is the only situation under which VEC could offer relief to the low load factor consumer, and justify it on the basis that VEC was passing on to the consumer the saving which resulted from a lower VEC system peak on Eskom.

We would therefore recommend that VEC introduce an "off peak" tariff to cater for this situation, i.e. the consumer would only be charged for the maximum demand which he incurs during VEC system peak periods.

The normal rates for Tariff A could still apply.

As a simpler alternative to this suggestion VEC could avoid the complexity of dual or peak rate demand metering (and abolish the demand charge altogether) by allowing the limit for the transition from Tariff B to be raised from its present level of 100 kVA to say 200 kVA. Large power users with poor load factors (the majority of whom have maximum demands between 100 kVA and 200 kVA) would then be reclassified as small power users and would be charged for units only at the Tariff B rate.

11.6 Time of Use Tariffs

Eskom has recently offered to conduct a study in Venda to assess whether Venda would benefit from a time of use tariff. This subject has therefore not been

investigated as part of the five year plan and tariff study

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ACKNOWLEDGEMENTS

The input to this report and assistance received from

the following persons and organisations is gratefully
acknowledged;

Â°

the Chief Executive Officer of VEC and his Staff.

the Development Bank of Southern Africa and all
its members who participated in the study.

the individual members of the Study Group, and
in particular

Mr PB Power - Chairman of the Board of VEC
Mr AS Bridger - Chief Engineer of VEC
Mr FP Cillie - DBSA Team Leader.
7 Mr EFW Buermann - Institutional Development

Specialist who was responsible for the manpower
study and who acted as_ the facilitator in the
final preparation of this report.

Special acknowledgement is accorded to the Chief Eng
ineer of VEC for preparing the load forecast and
providing the bulk of the input data for the study

from the comprehensive records under his control.

Annexure A
Ce

Annexure B

Annexure C

LIST OF ANNEXURES
Terms of Reference, Scope and
Responsibility Matrix.

Manpower Plan for the 5 Year Period
ending March 1997.

Maps(2) of Venda Showing Townsâ\200\231 and
Villages/Settlements.

ANNEXURE A
TERMS OF REFERENCE AND RESPONSIBILITY MATRIX

PROPOSED TERMS OF REFERENCE

Within a macro planning framework for the region and the intended Venda development program, review previous load forecasts for the Corporation. Prepare an updated load forecast to the year 1996/7 by consumer type, (e.g. domestic, commercial/institutional, and industrial/bulk).

Identify geographical and consumer areas where load is expected to develop.

Extrapolate the forecast to the year 2005.

Review previous short and long term system development plans, updating these were necessary. Present a five-year physical development plan for the corporation's network, capable of logical extension

in the longer term.

Prepare a capital expenditure budget covering the

next five years.

Review the present organisational and institutional arrangements of the corporation and their cost-effectiveness, identifying problem areas, and suggesting any possible improvements and changes in manpower over a period covering the next five years,

quantifying this in terms of an operating budget.

Present a financial synthesis of forecast expenditure

budgets for the next five years.

ANNEXURE A (Cont)

axwfia Recommend a new tariff structure for the Corporation,

taking into account possible alternative tariffs for

power purchases from Eskom.

The recommended tariff should show financial viability over the five-year terms of the study. (It should be assumed that the present government subsidy of domestic tariffs will be phased out).

1.2 SCOPE AND RESPONSIBILITY MATRIX

ELEMENT OF STUDY: VEC DBSA CONSâ\200\231 ESK
1. Macro planning framework: x
2. Venda development program: xX
3. Load forecast: X 0
4. System development plan: 0 xX
5. 5-year capital budgets: 0 X
6. Institutional, manpower, resources: 0 xX
7. Operating expenditure budgets: xX 0 0
8. Financial synthesis: 0 Xx
9. Tariff study: 0 xX
10. Co-ordination, secretariat,

report synthesis and preparation: xX

Legend: x

= Prime responsibility.
0 = Co-authorship and/or assistance.

VEC = Venda Electricity Corporation

DBSA = Development Bank of Southern Africa.
CONS = Consulting Engineer.

ESK = ESKOM.

ANNEXURE 6

â\200\224VENDA ELECTRICITY CORPORATION
KOPORASI YA MUDAGASI YA VENDA

a

MANPOWER PLAN
for the |
5-YEAR PERIOD
ending

MARCH 1997

prepared for the
CENTRE FOR INSTITUTIONAL SPECIALISTS

DEVELOPMENT BANK W/
of
SOUTHERN AFRICA

22 OCTOBER, 1991

1 VEC: 5-YEAR MANPOWER PLAN

1. PURPOSE.

The purpose of this document is to present a 5-year manpower plan for VEC, based on the various scenarios of the 5 year business plan currently under review.

2. BACKGROUND.

The consultants Merz and McLellan, Electrical Engineers, presented the first draft of their proposed 5-year business plan during the first week of October, 1991. A number of assumptions were made in their report, which raised questions. It was deemed appropriate to develop a 5-year manpower plan with VEC in order to provide firm manpower input into the business plan.

The Chairman of VEC, Mr Peter Power, had also requested the MCPP unit of the Centre for Institutional Specialists to review the manpower strength prior to deciding on a final budget plan for the next 5 years. The DBSA team visited VEC on 1 and 2 October,

1991 and again on 15 October to obtain the necessary information.

This report presents the final proposals fora 5-year budget, as agreed by all parties ata planning seminar, held on 15 October, 1991, at VEC headquarters.

3. GENERAL MANPOWER STRUCTURE.

The General structure provides for two streams of activities. A technical leg, headed by the Chief Engineer, and a financial/ administrative leg, headed by a manager, but this position is vacant at present. Positions for 301 staff have been provided, which includes the Chief Executive Officer.

3.1 Engineering (209 staff)

-Chief Engineer, heading 3 line divisions:
-Planning, Design and Marketing (23 staff)
-Construction (113 staff)

-Operations and Maintenance (69 staff)

3.2 Administration/Finance (92 staff)

-Administration and Finance Manager, heading 3 sections:
-Administration (64 staff)
-˜Finance (22 staff)
-˜Personnel (6 staff)

The general organigram depicting this structure is shown below:

5
| FINANCIAL

ADMINISTRATION

FIN./ADMIN. MAN.

VACANT

MUTSHEMBELE

CHIEF EXECUTIVE
J.P. RODGER

=

ENGINEERING

CHIEF ENGINES

A.S. BRIDGER

q
ADMINISTR.

i
PERSONNEL

W.A.S. NEL

VEC-31

64 PLANNING
158 stores |
BOOKKEEPING MARKETING |
: COMPUTERS 1 re
| GONTACL M.L. BELE
CONSUMER REGIONAL
: ACCOUNTS * OFFICES OPERATIONS 28
i | | cocaine
| gp meer 14 OG cree CONSTRUCTION | AND POWER
| READING | MAINTENANCE: SALES
: 2 CASHIER i waecainelae : ee . PLANNING
SECURITY NF. LITHOLE || N.S. MANAGA | Â§ pesian
GARDEN
FIN.CLERK
1 MAINTENANCE eoner
Noreen aoa er SE ACER EEE ETI

333 Planning Design and Marketing

This divis

and

and

ion splits into 3 units:

-Power
*

Sales, subdividing into:

Sales Promotions and Research

Quotations (new connections)

Investigations (new connections & complaints)
Administration of (new) Applications

+ +

-Planning, concentrating mainly on:
* The Upgrading of the System
* Norms, Specifications, Client consultations
* Data collection and evaluation

-Survey, which is mainly a site activity to collect the necessary planning information. Two additional site activities are also controlled by this section:

* Bush-Clearing (for survey and construction)
* Pegging (for construction)

3 VEC: 5-YEAR MANPOWER PLAN

The organigram has been depicted below:

Baie

â\200\234PRINCIPAL
TECHNICIAN |

| | SNR TECHNICN SNR TECHNICN Â© SNR TECHNICN |
|| POWER SALES PLANNING = | SURVEY
[- "BALES. i SYSTEM -
| PROM./RESEARCH | _ UPGRADING poe
i 7 bed thr ihiioatal | ASSISTANTS.

’ QUOTATIONS: , SPECS & |
reegce | CONSULTING |

| | BUSH. *|
uh einial = | CLEARING |
: INVESTIGATIONS) DATA a
| | PEGGING |
| | APPLICATIONS Â© ere
ADMIN

VECMAN-3

3.4 Construction

This is the biggest division in the corporation, employing 6 ful. teams, each 17 man strong, supported by a backactor team of 8 people.

departmental construction â\200\224

Departmental construction will slowly be phased out as the need for maintenance capacity grows. The recent introduction of a security section has been done without employing additional staff, but by converting construction labour into security staff, involving special skills training of the people involved.

external contractors â\200\224-

External contractors are employed to take care of peak loads and whenever the contracts are too complicated or contain high technology outside the capacity of the construction division. A special unit handles external contracts, supported by consultants.

The organigram of the construction division has been depicted below:

Cainer

i

i AY â\200\230

, /) | PRINCIPAL

â\200\234\ | TECHNICIAN |

| |

| at

| |SNR TECHNICN| [PROJECTS SUPERVR| | PROJECTS SUPERVR |

OC -penieesal taco
| {CONTRACTS |

| J :

: ira: ; t bie i 7 T 1 peor | 5 â\200\224,
TEAM. 1|, TEAM. 1, | TEAM {| BACKACT, | J|BACKACT) | TEAM 1) /TEAM 1) | TEAM 1,
\LEADERâ\204¢; LEADER) jLEADER: j OPERA | OPER, | â\200\230LEADER | ’LEADE | LEADER :
1 | i i ; :
â\200\224â\200\224_â\200\224â\200\224_f4 â\200\224â\200\224â\200\224 sack Oo Cec
â\200\234TRUCK | | TRUCK | TRUCK â\200\230TRUCK. | {TRUCK | TRUCK
/DRIVER | | DRIVER i DRIVER i DRIVER | DRIVER (DRIVER
ie Ecey = [LAB GRIT)
| ; | jo | | i | iy hee
FLeoTA LES ore \ 6 peer pete a | ELECTR
i i Re 1 | i Te en a eee 1 j
LINEGMAN, (LINESMAN, \LINESMAN’ LINESMAN. LINE OMAN, ILINESMAN,
| | i Pie Bee) beg:
LAB GR2’ LAB GR2) (LAB GR2 LABGR2 LABGR2, LAB GR2:
: e * i i â\200\230 6 i

3.5 Operations and Maintenance

The maintenance division requires 5 full teams, each 9 men strong, supported by another 2 teams, each 4 men strong and

headed by a technician, for certain specialist applications. Operations and maintenance have been split into :

- Power Transmission Operations and maintenance of the relevant system components.

- Operations and maintenance of the low voltage network and

the consumer connections. This unit also supplies a 24 hour by 7-day-a-week standby service, which covers the whole of Venda with an efficient radio network wherever no telephone is available.

The 5 teams operate in a flexible manner. Two teams normally cater for the workload in each category indicated above, while the 5th team attends to peak demand in any of the categories.

5 VEC: 5-YEAR MANPOWER PLAN

The organigram depicted below incorporates two supervisor posts to reduce the spread of the one senior technician charged with othe responsibility of keeping the customers happy.

| Â§ PRINCIPAL |
| TECHNICIAN.

SNR TECHNICN

[PT BoM ee

SNR TECHNICN|

SUPERVISOR:

SUPERVISOR |
| OPERATIONS!

| MAINTENANCE

[CONTROL 4
OFFICER ˜˜ |

â\200\234TEAM 1, {TEAM 1) | TEAM {| (TEAM 1. TECHNICN [TEAM- â\200\2301 | TEAM 4 TECHNI CN

| â\200\230LEADER | LEADER j â\200\230LEADER . LEADER |. 4 4 ILEADER-, (LEADER, 4.

: jf { | (LINESMAN | { vA Fe > LINESMAN! (STANDBY :
| eer Cone ae oe eee 4 | leet pas Pos vi | CLEKR
| Fo a dees

; â\200\230LINESMAN. (LINESMAN, (LINESMAN, LiNcsMAN (CAB GR2 | [LINESMAN, LINESMAN â
\200\234LAB GR2.

fen pee ae Ea + i : eed Ie ay eae

\ t i ft - Sd \ 1. 4 :

eo a

| [LAB GAT, [LAB GARI, [LAB GR1, | LAB GAY [LAB GRi| | LAB Gar!

jf 22a ere Eee [aerate | eee) oe

en, 4 I mo ees Oe

| Tapen2. LAB GR2, LABGR2 LAB GAZ: LAB.GR2) LAB GR2

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4. ANNUAL BUDGET ESTIMATES.

The consultants Merz and McLellan have based their 5-year forecast on information supplied by VEC. The statistics supplied,

which were based on the current year's budget and actuals, appeared to be incorrect.

The DBSA team obtained detailed information, and by duplicating the data in a Lotus spreadsheet against the information supplied

to the consultants, some considerable deviation has been established. These have been highlighted in the table on the next page, and were resolved during the workshop on 15 October, 1991, in Venda. The â\200\234year cost" column indicates the final firgures agreed and taken into the 5-year manpower plan.

This has been depicted on the next page, and requires detailed comment, before a base figure for the 5-year plan is confirmed and adopted into the business plan. The table has been compiled from remuneration in any Perolmes grade of people in posts.

VECMANS5Y

VEC :ANNUAL MANPOWER COST R

5,421,422 |

4,329,524

P-GR [NUMBER

JOB DESCRIPTIONS

[YEAR COST |VEC BEFORE

ADMINISTRATION

7 1 SNRADMIN OFFICER 76,743 67.479
â\200\224 2 SNR PERS OFF,SNR BOOKKEEPER 112,465 Â«94,014
10 4 SNR ADM.OFF,CR CONTR,SAFETY OFF 193,047. 161,340
oo 8 TRANSP. OFF,PERS.OFF,CEO SECR. â\200\224 109,630 91,431
12. 18. ADM.OFF,CASHR,BOOKKR,ASST STOREMAN Â© $84,499 821,581

â\200\224â\200\224"__ SNR COMP OPR,CHIEF SEC, MANAGER SECR,HANDYMAN
18-2: SECRITYP,OFFICE SUP,HD DRIVERICRANE OPR 45,308 Â«35,952
14-18. CASHR,SNR CLERK, SWBOARD OPR,ASST TRANS SUPVR (241,750 201,435
45.11. CLERK,ASST COMP OPR,SNRMETERRDR, : 158,884 148,489

16 20 METER RDR,SECURITY GRD 217,087 â\200\224- 163,520
17. 1_-SEMISKILLED LABR | 9,062 7,549
18 _4 TEA MAKER 30,498 - 25,552
19. 18 CLEANER 120,632 . 100.800

[ee SUBTOTAL ADMINISTRATION | 1,699,605 | 1,419,142

cua, CONSTRUCTION | je i ical ;
9 1 SNRTECHNICN 50,786. 44,097
10 2 CONSTRUCTION FOREMAN 90,027. 78,122
11 7 TEAM LEADER _ 249,218 - 213,605
13. 4 ELECTRICN _ 85.193 73,068
1 7 DRIVERICRANE OPR 128.847 108,143
15 17 LEARNER ELECTRICN,LINESMAN GR1 226.575 200.600

1 31 LINESMAN GR2 $39,475 282.069
1B 17 LABOURER GR1 130,375 108.579
19 25 LABOURER GR2 180,075 | 149.650
111 | SUBTOTAL CONSTRUCTION 1,481,571 1,254,933

"MAINTENANCE aia ;

g. 2 SNR TECHNICN 100.238 - 83.580
10 _ 1 MAINTENANCE SUPERVISOR 43,718
"1 7 TEAM LEADER 212.836 | 209.886
1 4 ELECTRICN 108,994 72,892
14 4 STANDBY CLERK 69,178 5,060
15 13 LINESMAN GR1 180.472. â\200\224- 151,021
16 14 LINESMAN GR2 143,430 128.408
18 6 LABOUR GR1 31.176 87.920,
12 ig LABOUR GR2 116.195 114,152

ci * ro} SUBTOTAL MAINTENANCE | 1,006,177 | _- 856,921
es PLANNING

g 3 SNR TECHNICN 151,848 | 126,999
40 1 SNR CLERK 44,067 36,808
W 3 TECHNICN 108,173 90,516
10 2 ASS SURVEYOR, INSPECTOR 53,878 44.914
13 1 CLERK(POWER MARKETING) 21,626 18.040
14 + LEARNER ELECTRICN 17,768 14,809
15 i CLERK 14,780 12.318
16 4 CHARGE HD LAB.LINESMAN GR 2 44,654 37.204
17 2 LABOURER SPECIAL GRADE 20,136 16,784
18 4 LABOURER GR 30.366 26.664
19 6 LABOURER GR2 41,902 35.004

bi. 28 SUBTOTAL PLANNING 549,196 460,058
MANAGEMENT a

6 5 PRINC TECHNICN, HEAD ADMIN, ACCOUNTANT 406,929 338,470

2 CHIEF EXEC.OFFICER, CHIEF ENGINEER 277,944 0

| | 7 SUBTOTAL MANAGEMENT 684,873 338,470

The table may be summarised as follows:

â\200\230iii

DIVISION ACTUAL DATA
ADMINISTRATION 1 699 605
CONSTRUCTION 1 481 571
MAINTENANCE 1 006 177
PLANNING 549 196
MANAGEMENT 684 873
TOTAL REMUNERATION 5 421 422

The budget estimate for 1991/92, derived from data provided to DBSA on 15 October, 1991, thus stands at R5,243 million.
4.1 Manpower cost of constructing capital works

A detailed breakdown of the _ cost of manpower required for construction purposes during the 1991/92 year is as follows:

Maintenance: 60 percent capitalised ...-.------ R 604 000
System Operations & Maintenance.....--.-+-+-e-+eee- R 100 000
Construction DiviSion.......----eee errr err reeee R 1 476 000

CONSTRUCTION TOTAL R 2 180 000

4.2 Manpower cost of operations, maintenance and administration

A detailed breakdown of the cost of manpower required for the normal operations, maintenance and administration during the 1991/92 year is as follows:

System Operations & Maintenance....-.---+-+-+-- R 240 000
Budget Heading "Salaries".....----+-+eeererer> R 3 001 422
OPERATIONS TOTAL R 3 241 422

SAY, R 3 250 000

5. MANPOWER INCREASE DURING THE 5-YEAR PLAN.

Firm commitment has been obtained from VEC for the number of extra staff required to carry out the necessary duties over the period. The following additional posts have been identified:

VEC: 5-YEAR MANPOWER PLAN

ADDITIONAL POST

FINANCE : 3 METER READERS 41 370
1 CLERK 21 912
1 BOOKKEEPER 34 442

PERSONNEL: 1 SALARY CLERK 21 912
1 ADMIN CLERK 34 442

3 LABOURERS 17 056
1 CREDIT CONTROLLER 12 27 272
1 SENIOR CLERK 10 40 986

STORES â\200\230: 3 LABOURERS 17 056
2 CLERKS 12 54 544

DEPOT 1 LABOURER 17 056
SILOAM 1 CLERK a3 21 G12

DEPOT : 3 LABOURERS . 17 056
HAKAVELE 1 CLERK 14 17 242

GENERAL 1 TRANSPORT CLERK 14 17 242
1 HANDYMAN 14 17 242
2 CLEANERS /GARDEN 19* 11 279
1 PETROL ATTENDANT 19* 5 665
2 LABOURERS 19% 11 370

MAINTEN.: 2 ELECTRICIANS 1992 12 54 544
1 ELECTRICIAN 1994 13 21 9izZ

PLANNING : 1 DRAUGHTSMAN 13 21 912
1 INSPECTOR 12 27 272
2 TECHNICIAN 11 68 884

TOTAL ADDITIONAL FOR 1992/93 : 459 186
rounded figure to: SAY, R450 000

TOTAL ADDITIONAL FOR 1993/94 TO 96/97 : NIL

The posts that can be converted from construction manpower by either skills training or reducing teams have been indicated by an asterisk in the grade column.

It must be noted that post converted from construction imply no increase in numbers of people, but the cost has to be transferred from the capital budget to the operations and maintenance budget.

9 VEC: 5-YEAR MANPOWER PLAN

@=â\200\224Â§-â\200\224MAMPOWER 5â\200\224-YEAR BUDGET.

During the five year plan period it is envisaged to double the domestic consumers, taking them from a current level of around 10 000 to approximately 20 000. This would imply that further maintenance capacity must be created by reducing the construction capacity. -

As currently some 60% of maintenance cost is capitalised, we -would firstly employ excess maintenance capacity before the construction teams are converted. It is clear, therefore, that VEC will not materially reduce its construction division in the period under review.

VEC has indicated that 60 percent of the current maintenance capacity is spent on capital works. Considering the organogram, this implies that 2 out of 6 teams are needed for current maintenance only, except when problem peaks occur and additional capacity is required to reduce down-time of systems.

With a doubling of consumers in 5 years time, another 2 teams would thus be mobilised away from construction of capital works over that period, or some 30 percent of the current maintenance budget. This amounts to some R 302 000 (para 4.1 above) extra manpower cost to operations and maintenance over that period. The rounded figure of R300 000 has been taken into the budget.

This increase will be taken in two steps, during year 3 and year 5 of the period under review.

We now arrive at the following budget for the 5-year plan period, in January 1992 money value:

â\200\230

MANPOWER BUDGET DETAILS AMOUNT

1992/1993 R 3 250 000 + R 450 000 3,70 mil
(budg 1991/92) + (extras)

1993/1994 No Change 3,70 mil

1994/1995 Additional Maintenance 4,00 mil

1995/1996 No Change 4,00 mil

1996/1997 Additional Maintenance 4,30 nil
NOTE: All money values at January 1992 level.

7. MANPOWER LEVELS.

e=ee-has confirmed that only 19 additional st

to provide a manpower

the period under review. This wou

VEC: 5-YEAR MANPOWER PLAN

aff must be recruited

complement adequate to meet the need for

ld increase the current strength

to 320 during next year, after which it would remain constant

during the planning pe

riod.

Shifting resources from construction to operations

maintenance will be the only additional requ

implications of which have been outlined above.

irement, the

The forseeable manpower plan would thus be as follows:

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cost

MANPOWER NUMBERS DETAILS NUMBER
1992/1993 ADMINISTRATION: 120 320

CONSTRUCTION: ...--- 93

OPERATIONS & MAINT.: 72

PLANNING & DESIGN: . 32

MANAGEMENT: ...-.--- 3
1993/1994 No Change 320
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Donkerhogt

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Government of the Republic of Vanda and
Development Rank of Southern Africa,
Section : Data Bank. 1985Â°

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VENDA

THOHOWANDOU / MUTALE /
portion of DZANANI
TOWNS AND VILLAGES /
SETTLEMENTS AND
TRANSPORTATION
INFRASTRUCTURE

Co Venda
=| Under negotiation for incorporation

BOUNDARIES
National
â\200\224---â\200\224 District

TOWNS

@W ss Proclaimed towns
Â» eae Villages / Settlements

ROADS

Primary paved

me eee Primary unpaved

eee Serondary paved

ere Secondary unpaved
Tertiary paved
Tertiary unpaved

RAILWAYS
4-+-+ Meainlines
n Stations
o Sidings / halts / stopping places

(s)_ sidings
(h) halts
(sp) stopping places

AIRPORTS, AERODROMES AND LANDING-STRIPS
A Airports and aerodromes
A Landing-strips

NOTE
Based on 1982, 1984 and 1985 information

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Government of the Republic ot Vanda andâ\200\235
Develonment Bant of Southern Africa,

Section : Data Bank. 1985Â°

LIST OF APPENDICES

Appendix No Appendix Title

LIST OF APPENDICES
(continued)

APPENDIX A.2
VENDA ELECTRICITY CORPORATION
ESTIMATED SYSTEM INVENTORY 1991

OVERHEAD TRANSMISSION LINES:
220 Volt single phase

380 Volt three phase

11/22 kV single phase

11/22 kV three phase

66 kV

132 kV

TRANSFORMERS (INSTALLED CAPACITY):
Distribution – single phase

Distribution – three phase
22/11 kv

66/11 kv

66/22 kv

132/22 kv

*installed since April

CIRCUIT BREAKERS:
il kV indoor

22 kV outdoor
66 kV outdoor
132 kv outdoor

POLE-MOUNTED RECLOSERS AND SECTIONALISERS:
11 kv
22 kv

APPENDIX A.3

VENDA ELECTRICITY CORPORATION
CONSUMER CATEGORIES AND TARIFFS JANUARY 1991

SCHEDULE OF STANDARD PRICES

Tariff A : Large Power User
Service Charge :
Demand Charge rhe

i) for supply at 220/380 Volts
up to and including 11 kv

ii) for supply above 11 kv
and below 132 kV

Energy Charge

Surcharge

Definition : Notified maximum

or over and three phase supply.

Tariff B : Small Power User
Service Charge :
i) single phase supply

ii) three phase supply
Energy Charge

Surcharge

R98,36/month

R23,41/kVA/month

R22,69/kVA/month
R 0,0665/kWh

- nil -

of 25 kVA

R21,96/month
R74,65/month
R 0,196/kWh

= nil -

Definition : A maximum demand which at no time exceeds

100 kVA and a supply voltage of 220 volts single phase,

or 380 volts three phase.

Tariff C : Domestic Consumer

Service Charge :

i) to the consumer R10,98/month
ii) from Government subsidy R10,98/month
Energy Charge :

i) to the consumer R 0,098/kWh
ii) from Government subsidy R 0,098/kWh
Surcharge : ˜ nii –

Definition : Electricity for domestic purposes for a dwelling unit, group of dwelling units and for a

church, hall, old age home or the like premises.

STANDARD CHARGES

Connection Fees :	Single Phase	Three Phase
i) Urban	R125	R430
ii) Rural	R150	R570

Deposits :
i) Tariff B Approximately R30/kVA of load

ii) Tariff Cc R145

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- 66KV 11kV
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TEL : 339 5754 FAX : 339 1373
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SUBSTATION THOHOYANDOU : :
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SUBSTATION MULEDANE Malamulele P.O. BOX 31012
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VUWANI VENDA ELECTRICITY CORPâ\200\231N
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one MAP OF VENDA

SHOWING MAJOR
SUBSTATION LOCATIONS

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