Phase 1 Report:

Development of Methodology to Determine a Local Authority Electricity Surcharge in Namibia

Submitted to:

Electricity Control Board (ECB) - Namibia

by:

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In Association with

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1 Executive Summary

Local Authorities (LAs) and Regional Councils (RCs) use the income from electricity sales to pay for the cost of electricity provision and to cross subsidise other municipal services. Understandably these organisations are concerned that the establishment of REDs will remove their access to this critical revenue stream.

The aim of this project is to develop a methodology to determine the appropriate level of a Rental Charges and LA surcharges to be paid over to the LAs. The purpose of a Rental Charge is to provide the LA with fair compensation when the RED utilises distribution assets that belong to the LA. The reason for a LA surcharges is to increase the revenue stream to the LA to help cross subsidise some of the other municipal services. Many of the LAs currently rely on the income from the LA surcharge to remain financially viable. However, at the moment these charges are embedded in the exiting electricity tariff and will fall away when the REDs are established. A specific methodology is required to determine the proper level of the LA surcharge and to recommend suitable implementation mechanisms.

The project has been divided into two phases. This document represent phase one of the project and addresses the Rental charge and LA surcharge requirements of NORED only. Currently NORED is the only operational RED and therefore has an urgent requirement for identifying the correct level of these charges. Phase two of the project will address the methods to determine the Rental charge and LA surcharges for the remainder of the LAs and RCs in the other areas of the country.

In respect of Phase 1 of the project the study has found that:

- A large part (approximately 92% in value) of the distribution assets being used by NORED has been subsidised. These assets were created by a combination of GRN and donor funds (e.g. NORAD). After its creation the assets were transferred at no cost to NamPower, LA's and RC's.
- A sample analysis has shown that the level of the embedded LA surcharge varies considerably between towns.
- The results also show that there is a correlation between the annual electricity sales and the level of the LA surcharge. The smaller the sales quantity the higher the level of the LA surcharge tends to be.
- LAs and RCs in NORED don't pay for the electricity consumed by public lighting.
- From the initial results (outside NORED) it appears that Villages and Settlements don't receive a LA surcharge. The results also show that these areas receive a subsidy from the GRN to pay towards the purchase of electricity.
- That the current tariff methodology don't pass the full benefit of cross subsidised assets through to customers. This is a major cost factor especially when the percent of assets that were subsidised become significant.

Based on the observations and finding in Phase 1 the study has made the following set of interim recommendations in respect of NORED:

- That the tariff methodology be enhanced to address the situation when the licensee has a large percent of subsidised assets. The improvement must pass the full benefit of the subsidised assets to the consumer.
- That the Rental charge for the use of assets not owned by the RED be determined in the same way as described in the ECB's tariff methodology. The methodology prescribes that assets will be compensated through depreciation and rate of return expenses. Given the proposed enhancement mentioned above, it is expected that NORED will not be required to pay any Rental charges.
- It is also recommended that towns below 10 GWh per year be paid a LA surcharge of 5 c/kWh while towns above the limit qualify for a 3 c/kWh LA surcharge. The proposal will effectively increase the LA surcharge from 2 c/kWh to 4 c/kWh.
- That LAs and RCs be charged for the electricity usage by public lights.

Further refinements to these recommendations can be expected once Phase two of the project has been completed.

2 Introduction

This phase 1 report forms part of a two phase project to develop a methodology to determine the Rental charges and Local Authority (LA) surcharges in the Namibian electricity industry.

The development and implementation of a Rental charge LA surcharge represents an important step in the establishment of Regional Electricity Distributors (REDs). The reason for this is that the RED establishment process requires that the electricity departments from the different municipalities be ring-fenced and the responsibility for service delivery be "transferred" to the REDs. Currently, municipalities use electricity sales to cross-subsidise some of the other municipal services. Understandably, municipalities are concerned that the formation of REDs could undermine this important source of funding. Following various interactions, the role-players have agreed that the municipalities should continue to receive these subsidies after the REDs have been put in place.

At the moment, these subsidies 'exist' but they are embedded in the retail tariffs of the various municipalities. The main aim of this project is to develop a framework to define and implement the level of the LA surcharge needed to ensure that the municipalities still receive there subsidies once the REDs have taken over the responsibility for the distribution of electricity.

Phase 1 of the project has focused on the development of a set of interim principles and methodologies for dealing with Rental charges and LA surcharges. The study also recalculated NORED's revenue requirement to demonstrate the use of these methodologies and to determine their impact.

Phase 2 will require further analysis and refinements of the proposed methodologies to develop an approach that could be applied across all the REDs. Phase 2 will also involve more detail stakeholder involvement to obtain inputs and comments.

3 Approach

The phase 1 approach can be summarised into the following key steps.

- ***Step 1:*** Review NORED's financial statements.
- ***Step 2:*** Analyse the accounts from an available range of municipalities, town and villages.
- ***Step 3:*** Develop a set of observations and recommendations.
- ***Step 4:*** Obtain alignment between the proposed LA surcharge and rental charge and the Electricity Control Board's tariff methodology.

Each of these steps is discussed in more detail in the following sections.

4 Review of NORED's statements

NORED has made available its full set of financial statements for periods 03/04 and 04/05. This enabled the project team to develop a comprehensive understanding of the commercial and financial arrangements of the company. The following important observations were made following the review:

- Presently LAs & Regional Councils (RCs) in NORED receive approximately 2 N$c/kWh payment from NORED. This payment could be viewed as a form of LA surcharge and can be used to offset the costs of other services.
- LAs and RCs are not billed for the electricity consumed by streetlights.
- NORED's replacement asset value (according to NENA @ 2003 rates) is approximately N$285 million. The depreciated value is N$181 million.[1]
- The value of assets transferred by NamPower to NORED is about 30% of the total NORED network assets (N$84 million). Furthermore, it has been estimated that approximately 75% of the assets that were transferred were not funded by NamPower. These assets were created using funding from GRN and donor agencies such as NORAD.
- The remainder of the distribution assets in NORED's region belongs to the LAs & RCs. The replacement value of these assets has been put at N$201 million. This is the difference between the total replacement asset value of the NORED region (N$285 million) and the replacement value of the assets that were transferred by NamPower (N$84 million).
- It has also been established that the LAs & RCs generally did not fund/pay for the creation of these assets. Instead these assets were mostly paid for by a

[1] The asset values were derived from NORED's asset register that were done by EMCON during 2001.

combination of GRN & NORAD funds. It is also worth noting that these assets were transferred at no cost/liability from the GRN to the LAs & RCs.

The above imply that of the total distribution replacement asset value of N$285 million in the NORED region about 92.6% were subsidised by the GRN and donor agencies. It is important to note that the project team *do not* expect the same level of subsidised distribution assets in other parts of the country. The reason for this is that there are many examples where NamPower, the LA's and RC's have made substantial investments into the distribution infrastructure. A clearer picture will emerge once phase 2 of this project has been completed.

5 Estimate of Current Level of LA Surcharge

The project team has also attempted to determine the current level of LA surcharge for a number of towns. This is of course a very difficult calculation given that these cross subsidies are presently embedded in the electricity tariffs. The analysis is further complicated by the fact that very few towns have completed the ringfencing of the costs of their electricity departments. Nevertheless, the project team has used the available information in conjunction with a number of assumptions to estimate the value of the LA surcharge.

The available 2001/2002 data set consisted of:

- Total budget electricity sales revenue per town LA,
- Total budget cost per LA. In some instances the total cost included administration and overhead costs.
- Gross and net replacement asset values,
- Actual kWh sales per LA.

The calculation to estimate the LA surcharge assumed that:

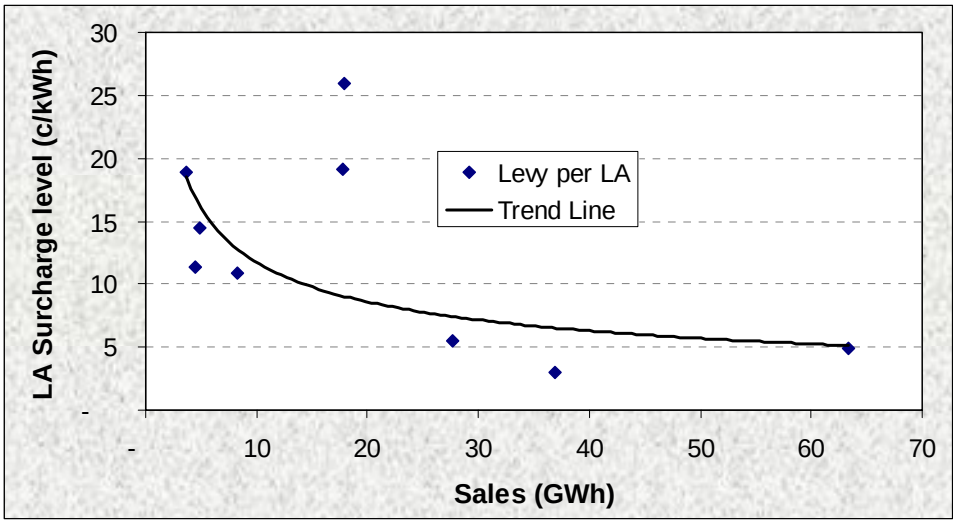
- The budget costs excluded any depreciation expenses and rate o return expectations,
- The total LA surcharge amount consisted of the sum of the surplus, administrations costs and overhead expenditure.
- That the average asset life is 30 years, and
- That the rate of return is 6.4% of net replacement asset value.

The detail data, calculations and results are presented in Appendix 1.

An interesting observation is that Aroab (the only village for which data was available) shows that villages receive a subsidy from the GRN to pay for the purchase of essential services such as electricity. The results also indicate that Aroab does not cross subsidise other services from the sale of electricity. This finding supports the general understanding that villages and settlements don't currently have an embedded LA surcharge embedded in its tariff structures. These are important observations and should be borne in mind when these entities are integrated into REDs.

The following graph shows the relationship between sales volume and the percent LA surcharge mark-up.

Figure 1: Estimated LA surcharge



The following remarks can be made from the information that is presented in Figure 1:

- There is a wide range of LA surcharges levels currently in operation in the industry. This observation holds true even for the same type of LA such as towns.
- There is a definite trend that smaller LAs and RCs have a higher LA surcharge levy.

6 Rental Charge

The project team has discussed and agreed that the current ECB tariff methodology is appropriate to deal with the introduction of a Rental Charge. The methodology states that a licensee will be compensated for the cost of establishing the asset by way of two components in the revenue requirements. These components are depreciation and rate of return.

Notwithstanding the above, the project team has determined the need to enhance the existing tariff methodology in order to better deal with situations where a significant percent of the assets (whether owned or rented by the licensee) have been subsidised.

The current methodology recommends that subsidised assets should be *excluded* from the rate base when rate of return values are calculated but that it should be *included* in the rate base when depreciation figures are determined.

The above approach works fine while the percent of subsidised assets are relatively small, for example less than ten percent of the total asset base. The disadvantage of this approach however, is that the full benefit of subsidised assets is not passed on to the consumer.

The full benefit of subsidised assets can be passed on to consumers if the subsidised assets are excluded from the rate base for *both* the rate of return and depreciation calculations.

The disadvantage of this approach is that customers will experience a real increase in electricity tariffs once the subsidised assets need to be replaced without any further subsidies. It is expected that this will happen gradually over time.

7 Recommendations

Based on the above observations the project team recommends the following interim solution applicable to NORED only:

a) Based on the preliminary 2001/2002 results from Figure 1 it is suggested that the current 2 c/kWh LA surcharge levy be increased to 4 c/kWh. This will mean an overall increase of N$2.5 million per year.

b) Given the initial evidence that smaller towns require a higher subsidy it is proposed that LA's and RC's be split into two. It is further recommended that LA's and RC's with an annual sales number of less than 10 GWh per annum should be paid 5 c/kWh LA surcharge while towns with an annual consumption of more than 10 GWh per annum be paid 3 c/kWh. Based on the available data this will mean an average LA surcharge payment of 4 c/kWh.

c) That NORED introduce an appropriate streetlight tariff that can be used to bill LAs and RCs for the electricity consumption.

It is also recommended that the ECB's current tariff methodology, pertaining to subsidised assets, be enhanced. The enhancement should address the situation when a significant percent (e.g. > 10%) of a licensee's assets have been subsidised. In this instance it is proposed that the tariff methodology should state that the subsidised assets should be excluded from the rate base for the determination of the rate of return and depreciation. In the case of NORED this would mean a significant reduction in the revenue requirements which will flow to a need for lower increases in the near to medium term. These principles and recommendations have been applied to NORED financial statements to demonstrate the impact that it would have on the licensee's revenue requirements.

Figure 2: NORED's revenue requirements before and after the proposed tariff methodology enhancement.[2]

Revenue requirement	Budget (N$)	Budget (after sub assets adj (N$)
Item	**2004/2005**	**2004/2005**
Cost of Sales	53 317 641	53 317 641
Operating and Maintenance	30 531 827	30 531 827
Customer Services	1 850 089	1 850 089
Overheads	3 761 811	3 761 811
Rental Charge	15 114 369	-
Assets (Depreciation)	1 384 085	1 384 085
Assets (ROA)	1 535 615	1 535 615
Working capital	1 018 688	1 018 688
Bad debts	1 925 000	1 925 000
LA Surcharge	2 521 660	5 043 320
Adjusted for:		
Less: Other Revenue	(10 276 135)	(10 276 135)
Reconciliation amount		
Total (Target Tariff Revenue Requirement)	**102 684 651**	**90 091 942**
Revenue if "Rental Charge & LA Surcharge" is removed	85 048 622	85 048 622

From the above results it can be observed that NORED's revenue requirement would reduce from N$102 684 651 to N$ 90 091 942 due to the enhancement in the tariff methodology. This represents a 12.3% reduction.

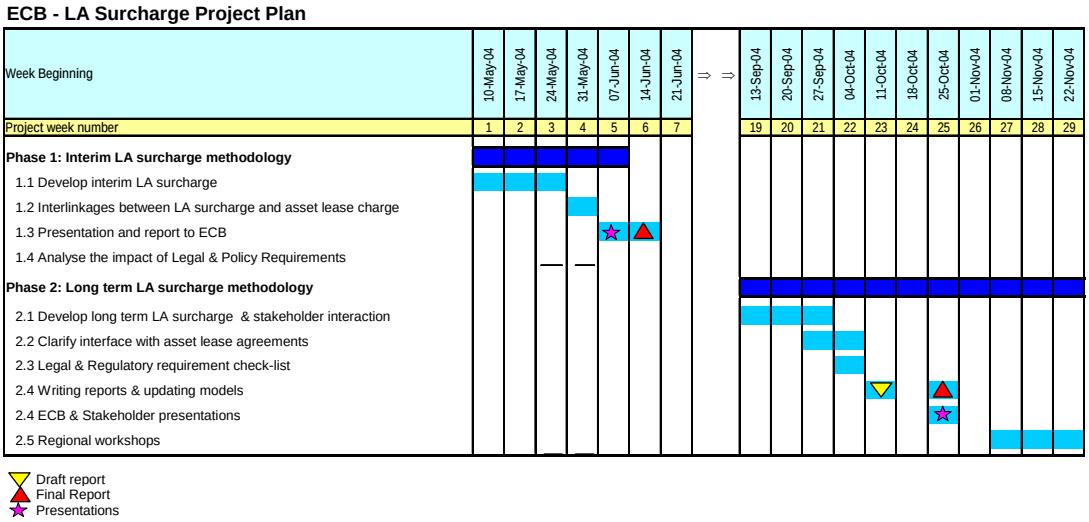
The results in Figure 2 also shows that NORED remains "revenue neutral" if the Rental Charge and the LA Surcharge is excluded under both the scenarios. This is important because NORED will be expected to pay over this money to the relevant LAs and RCs.

[2] The Rental Charge indicates the amount of

8 Next Steps

The results and recommendations have already been presented to the ECB and NORED. The second and last phase of the project will commence once the Phase 1 report has been submitted to and accepted by the ECB. The panned completion date for Phase 2 of this project is 24 November 2004. A copy of the project plan is shown below.

Figure 3: LA Surcharge Project Plan



9 Appendix 1

9.1 Calculations of the LA surcharge estimate.

		Name	**Arandis**	**Usakos**	**Hentis**	**Karibib**	**Aroab**	**Okahanja**	**Luderitz**	**Gobabis**	**Mariental**	**Swakopmund**
		Class	Town	Town	Town	Town	Village	Town	Town	Town	Town	Munic
		Year	01/02	01/02	01/02	01/02	01/02	01/02	01/02	01/02	01/02	01/02
Gov Subsidy	A	N$ '000	-	-	-	-	100	-	-	-	-	-
Income from Electricity	B	N$ '000	3 184	2 246	4 745	1 994	175	10 457	14 555	10 016	9 350	29 063
Costs	C	N$ '000	2 029	1 501	2 751	1 560	279	8 202	12 177	5 110	5 675	22 001
Depreciation	D	N$ '000	289	213	482	192	-	979	822	813	766	2 743
Rate of Return	E	N$ '000	166	128	617	1	-	752	473	625	170	2 370
Total Cost	**F=C+D+E**	**N$ '000**	**2 484**	**1 842**	**3 850**	**1 753**	**279**	**9 932**	**13 472**	**6 548**	**6 611**	**27 114**
Surplus	G=A+B-F	N$ '000	700	404	895	241	- 4	525	1 083	3 468	2 739	1 949
Admin	H	N$ '000	-	277	-	274	-	993	-	1 164	655	1 143
Overhead	I	N$ '000	-	-	-	-	-	-	-	-	-	-
Total LA surcharge	**J=G+H+I**	**N$ '000**	**700**	**681**	**895**	**515**	**- 4**	**1 518**	**1 083**	**4 632**	**3 394**	**3 092**
Sales	K	kWh	4 855 428	3 600 000	8 220 000	4 518 144	684 096	27 714 156	36 944 448	17 872 704	17 762 292	63 416 946
LA Surcharge												
Markup	L=B/F	%	28.2%	21.9%	23.2%	13.7%	-37.2%	5.3%	8.0%	53.0%	41.4%	7.2%
c/kWh	M=J/K	c/kWh	14.42	18.91	10.88	11.40	- 0.51	5.48	2.93	25.92	19.11	4.88

9.2 Appendix 2: Asset Values and Calculations.

Asset Values		**Name** Class Year	**Arandis** Town 01/02	**Usakos** Town 01/02	**Hentis** Town 01/02	**Karibib** Town 01/02	**Aroab** Village 01/02	**Okahanja** Town 01/02	**Luderitz** Town 01/02	**Gobabis** Town 01/02	**Mariental** Town 01/02	**Swakop** Munic 01/02
Gross	A	N$ '000	8 656	6 384	14 467	5 752		29 360	24 648	24 404	22 984	82 281
Net	B	N$ '000	2 596	2 000	9 644	22		11 744	7 394	9 761	2 657	37 026
Asset Life	C	Years	30	30	30	30	30	30	30	30	30	30
Depreciation	D=A/C	N$ '000	289	213	482	192	-	979	822	813	766	2 743
% ROR	E	%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%
ROR	F=A*E	N$ '000	166	128	617	1	-	752	473	625	170	2 370
Total (Dep + ROR)	G=D+F	N$ '000	455	341	1 099	193	-	1 730	1 295	1 438	936	5 112
Total (c/kWh)		c/kWh	9.36	9.47	13.38	4.27	-	6.24	3.50	8.05	5.27	8.06