

Streamlining TX and DX Voltage Criteria to Mitigate Against Licensee Encroachment: Status Quo Report

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ABBREVIATIONS

DX	(Electricity) Distribution
ECB	Electricity Control Board
Electricity Act	Electricity Act, 2007 (Act No. 4 of 2007)
ESI	Electricity Supply Industry
GX	Generation (of electricity)
LA	Local Authority
LAS	Local Authority Surcharge
MME	Ministry of Mines and Energy
NamPower	Namibia Power Corporation (Pty) Ltd
RC	Regional Council
RED	Regional Electricity Distribution Company
TX	(Electricity) Transmission

1 Introduction

1.1 Overview

Unlike many southern African countries, Namibia has an electricity supply industry that is not entirely vertically integrated. While generation, trading and transmission are still largely in NamPower’s hands (with the exception of growing interest of IPPs), distribution is done by REDs and other local and regional authorities who are largely independent of NamPower.

The structure of the industry is shown in Figure 1:

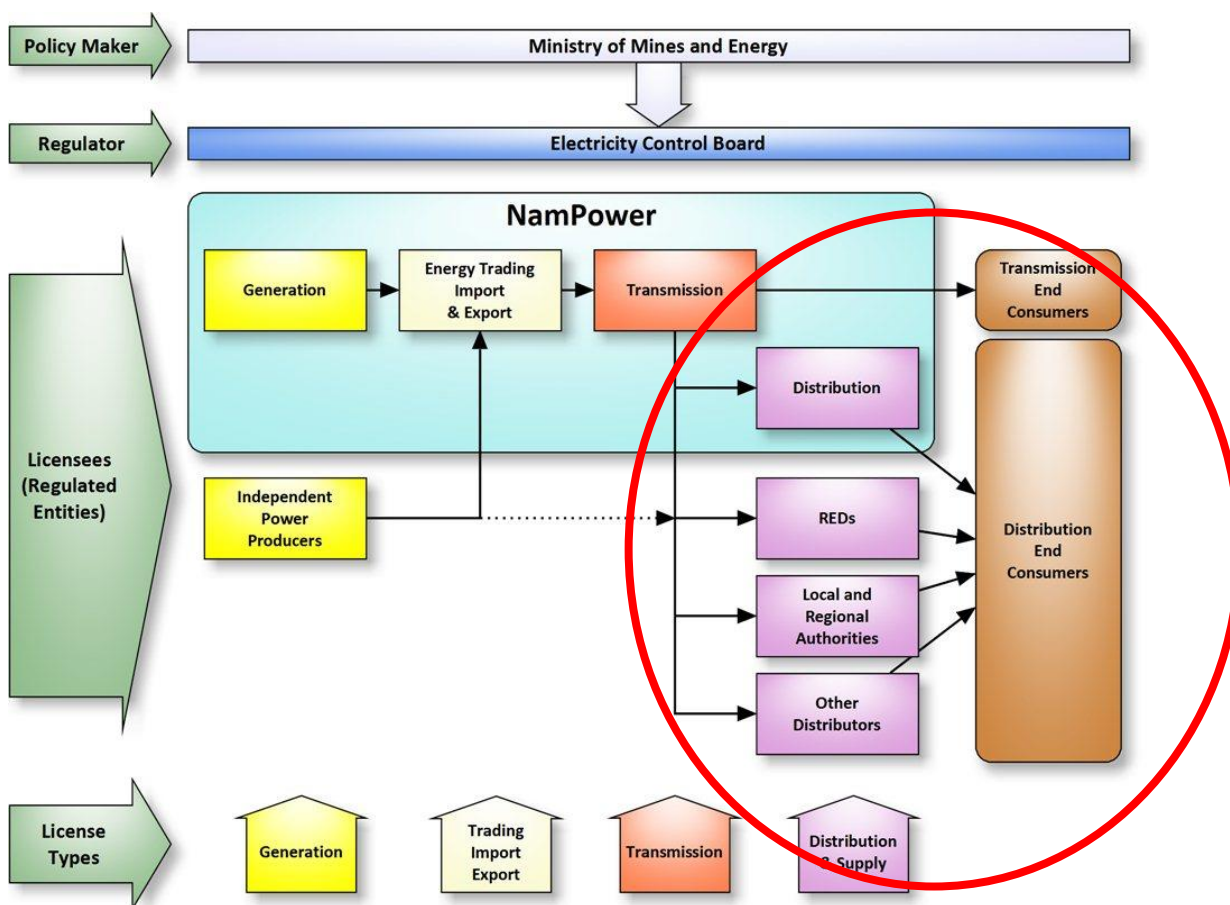


Figure 1: Namibian ESI Structure¹

The fundamental issue to be addressed by the present project is the interface between transmission and distribution, and with that the question whether NamPower should continue to supply power directly to the so-called “transmission end consumers”. Erongo RED, with significant transmission end consumers in its area, contends that they are losing out

¹ No trading license has been issued yet as at time of writing.

on revenue from these customers. They also contend that they have a license area, which is not respected when it comes to these customers.

The present report seeks to highlight the status quo and the issues arising therefrom, provide information on how the issue has been addressed elsewhere and draw conclusions on problems that need to be addressed or investigated further.

1.2 Issues to be Addressed

1.2.1 The Voltage Border Between Distribution and Transmission

In the current Electricity Act the voltage defining the “border” between distribution and transmission is 44kV. The City of Windhoek however operates a 66kV network, and Erongo RED may also in future have need for 66kV or 132kV network to supply the Walvis Bay area.

The definitions of distribution and transmission in the 2007 Electricity Act are flexible enough to allow the City of Windhoek and Erongo RED to use some networks above 44kV, as long as they “mainly” use distribution voltages.

Some ESI participants have however expressed the view that some or all 66kV networks should be taken over by distribution entities to allow them more freedom to develop their license areas without having to resort to NamPower for every change required at 66kV or above.

1.2.2 The Right to Supply Large Customers

The REDs each have a license fully covering a defined geographical area. At the same time NamPower has a license covering a small area around its existing transmission lines and substations. Within RED areas there is a conflict between these two license areas, as they overlap and no exclusion is made in the one for the other.

Some REDs contend that they should have a right to supply all customers in their area, while NamPower views it as their right to supply large customers outside local authority boundaries.

1.2.3 Financial Benefit Transfer from Large Customers to Distribution Customers

There is a viewpoint in the ESI that the distribution industry should have the right to increase their client and revenue base by supplying large customers within their license area. It is felt by some that specifically the REDs should have a right to supply all customers that fall within their license areas, even if transmission involvement is required to connect such customers. Such an arrangement would be expected to increase the revenue base of the RED, thereby

providing more scope for financial support to low income customers (implying that existing business customers of the RED could be given some relief).

1.2.4 Financial Benefit Transfer from Large Customer to Local Authorities

There is a viewpoint in the ESI that large customers not being supplied by a RED could be made to pay a local authority surcharge like the customers served by the REDs. This would put the large customers on an even playing field with RED customers. It would also generate more revenue for local authorities.

What is however not clear is how the proceeds from such a levy would be distributed among local authorities – be it within a RED area or between all local authorities in the country. It could certainly be deemed unfair for only those LAs to benefit who are fortunate enough to fall within a RED area that also has many large consumers within its license area.

Part of the argument is that local authorities close to large customers such as new mines are burdened with having to develop land and services for the employees of such mines, and yet receive no financial benefit from the mines.

2 The Status Quo in Namibia

2.1 Electricity Act 2007

The Electricity Act defines the interface between “high voltage” and “medium voltage” at 44kV, with “medium voltage” being up to and including 44kV nominal voltage.

Transmission is defined as follows:

“transmission”, in relation to electricity, means the conveyance of electricity by means of a transmission system, which consists wholly or mainly of high voltage networks and electrical plant, from an energy source or system to a customer.

Distribution is defined as follows:

“distribution”, in relation to electricity, means the conveyance of electricity by means of a distribution system, which consists wholly or mainly of medium and low voltage networks, to a customer.

These definitions draw a border at 44kV, but leave flexibility allowing both Transmission and Distribution to go to some extent into each other’s territory.

One can conclude that a distribution licensee can thus own and operate *some* networks at high voltage, provided that such network is not *mainly* at high voltage. In the same way a transmission licensee can own and operate *some* networks at medium voltage, provided that such network is not *mainly* at medium voltage. This implies that a distribution or transmission licensee does not require a separate licence for having *some* of its network on the other side of the voltage “border”.

The Act is silent on the issue of “contestable customers”. The Act gives licensees the **obligation** to supply new customers within their supply area, but does not explicitly convey the **right** to supply. This applies equally to all licensees.

2.2 Rules, Codes and Standards

The documents most applicable to the topic at hand are the transmission and distribution grid codes.

The Transmission Grid Code (Final, May 2005):

Section 3.2 (2) of the network code states that “The Transco shall offer to connect and, subsequent to the signing of the relevant agreements, make available a Point of Connection to any requesting distributor or end-use customer”.

Other than the above statement the transmission and distribution grid codes are silent regarding the right of a customer to choose between a distribution supplier or a transmission supplier.

The draft technical and economic rules and the quality of supply and quality of service standards make no statements regarding the contestability of customers, or whether certain customers are to be supplied at transmission or distribution level.

2.3 ESI Restructuring Studies / Market Structure

Phase 3 of the ESI Restructuring studies commissioned by the MME between 1997 and 2001 recommends the establishment of a Single Buyer (SB) market structure (see Figure 2).

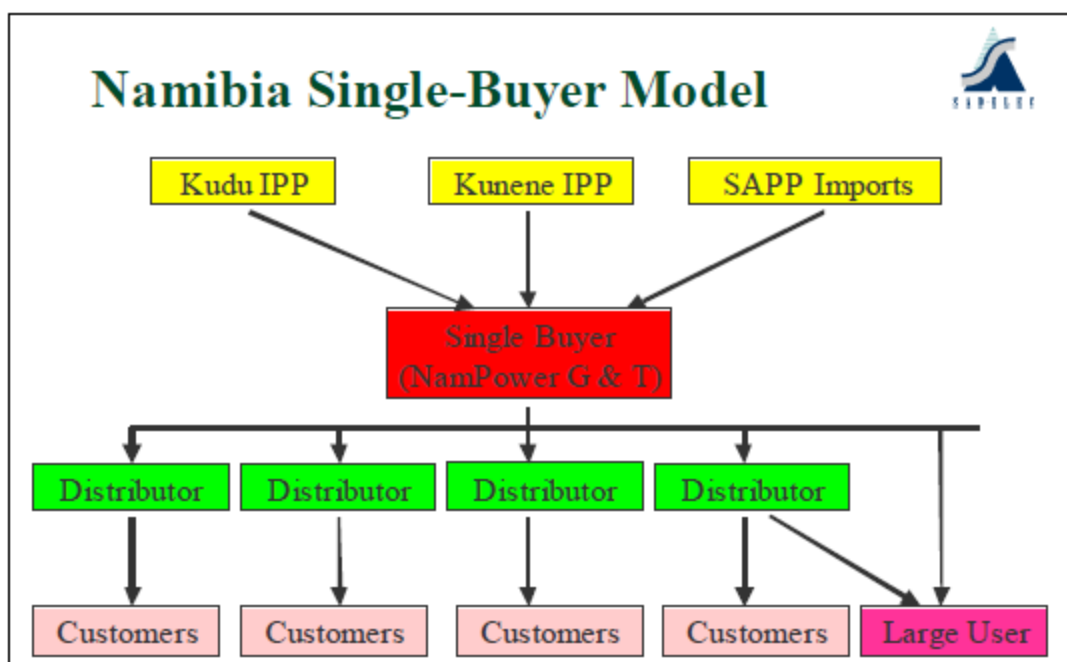


Figure 2: Original Single Buyer Market Concept

The original single buyer concept implies that all generators sell to the single buyer and distributors as well as some large customers buy from the SB. Distributors and large customers would not have been allowed to buy directly from generators, except for embedded generators within distribution networks or where the SB waives its right to supply and allows the distributor to buy from a generator or foreign source.

It was further envisaged that all users would purchase power from their local distributors except for large users (above 5MW) who would have the right to buy from the SB or in cases of smaller users where the distributor voluntarily waives its right to supply.

The report goes on to recommend that parties accessing the transmission system should be required to pay the full cost of using the system (for example if a large user buys directly from

an IPP or the SB). The same applies to parties accessing a distribution system without buying power from the distributor.

After many years of negotiations between NamPower and ECB, a modified single buyer (MSB) concept was put forward (see Figure 3 below, which gives the status as at April 2011).

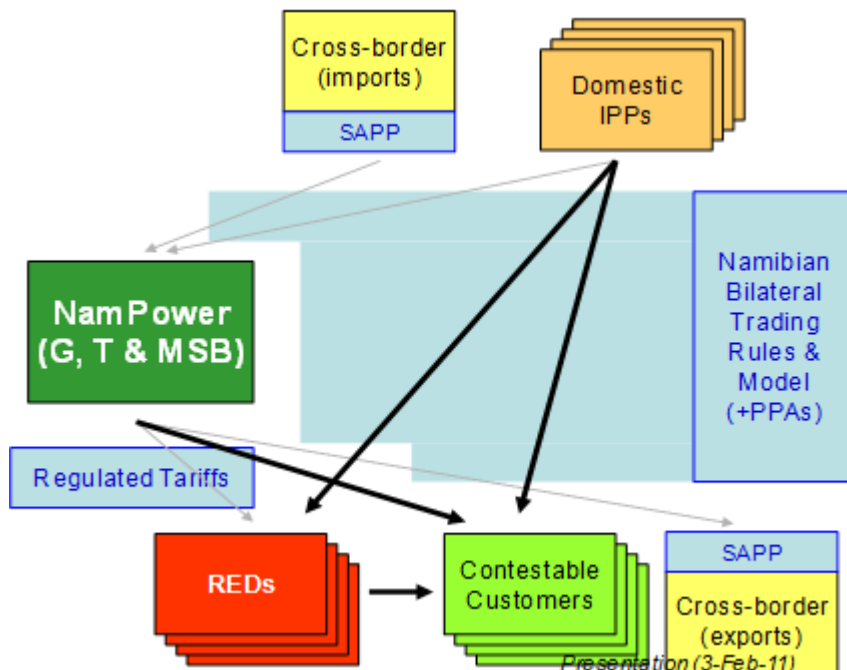


Figure 3: Modified Single Buyer Market Concept

The MSB provides for local distributors and “contestable” customers to be allowed to buy from IPPs (without SB waiver being required). It also provides for “contestable” customers to buy directly from the MSB without distribution licensee waiver requirement, and for IPPs to export without intervention of the MSB.

None of these market models have so far been formally implemented. This implies that the rules that would underpin such markets are not available and cannot be queried regarding the issue of transmission/distribution licensee encroachment. However this will give the opportunity to regulate the market, including the issue of contestable customers, when such rules are created in future.

It is not clear whether the “contestable” customers would have the choice between distribution supply or transmission supply or MSB purchase, or only between distribution supply or MSB purchase.

2.4 Draft Electricity Bill 2013 (status as at 26 March 2013)

The draft electricity bill of 2013 foresees the ultimate introduction of an independent system and market operator (ISMO) and the concept of “eligible” customers which is expected to be equivalent to the “contestable” customer referred to in the market model deliberations of the past. The draft bill only provides a general framework which is to be elaborated in detailed rules and regulations which will set out the details of the future market model. During deliberations it was felt that the modified single buyer (see section 2.3) could be a step from the present market to the end state ISMO model.

The draft bill is silent of the rights of a distribution licensee to supply all customers within its license area – like the current Act, it only contains an obligation to connect all customers who are able to comply with connection conditions.

2.5 License Conditions

2.5.1 NamPower Licenses

NamPower’s license conditions stipulate its supply area as being within the servitudes along all its transmission and distribution networks, as well as the proclaimed boundaries of localities in which NamPower supplies electricity (such as Grünau and Noordoewer).

Extensions to NamPower’s networks are to be approved by the ECB annually.

2.5.2 RED Licenses

Erongo RED’s license conditions were inspected. The RED’s license area covers a geographical area as demarcated on a map attached to the license.

2.5.3 Local Authority Licenses

The City of Windhoek’s license conditions were inspected. The local authority’s license area covers the geographical area of the proclaimed boundaries of the authority.

2.5.4 Changes in License Area

According to section 29 (1) of the Electricity Act of 2007 the ECB has the power to amend the license area of a licensee unilaterally (subject to reasonable compensation if the license area is reduced). Under this section the ECB can annually approve changes to NamPower’s license area for new transmission networks created.

2.5.5 Obligation to Supply

All supply licenses inspected oblige the licensee to supply any customer falling within the license area, subject to such customer being able to pay for the supply. By implication NamPower has no obligation to supply customers outside its license area which covers only the existing transmission and distribution networks belonging to NamPower (except for the villages supplied by NamPower).

2.5.6 The Right to Supply

The only explicit reference to a right of the licensee to supply customers is made in the supply license conditions where mediation by the ECB is envisaged if there is a dispute between licensees or between a licensee and a customer. Neither the license conditions nor the Electricity Act confer an explicit right to supply on a licensee. Under the license conditions the licensee may also not transfer the right to supply to another party.

Neither the Act nor the license conditions explicitly give the licensee an exclusive right to supply within its license area. There is an opportunity with the 2013 electricity bill being drafted at the time of writing to address this issue.

2.5.7 Discussion

The license conditions indicate a conflict between the license area allocated to NamPower and to the distributors, in that the area of servitude around NamPower's network are covered by both license areas and are thus under dispute.

It is not apparent from the license conditions how the ECB would evaluate NamPower's request for extension to its networks if they fall within the license area of a distributor, and on what basis decisions would be taken by the ECB where a conflict arises about the supply to a new large customer for whom extensions to the transmission network must be constructed.

2.6 Existing Practice

2.6.1 Current Technical Demarcation Between Transmission and Distribution

The technical (and asset ownership) "border line" between transmission and distribution in Namibia is usually the substation fence for outdoor substations (which are the vast majority of substations). The entire substation asset base belongs to NamPower and is operated and maintained by NamPower. This includes both the high voltage and medium voltage sections of the substation. The distributor's responsibility starts only at the power line or cable where it exits the substation fence.

At van Eck substation (where the City of Windhoek takes supply at 66kV) the “border line” is between NamPower’s bus section links and the City of Windhoek’s line links. NamPower and City of Windhoek have substations directly adjacent to each other, with a fence as physical demarcation line.

For indoor substations there are different arrangements for the “border line”:

1. At Swakopmund substation the “border line” is at the jumper connecting the high voltage to medium voltage transformer circuit to the medium voltage busbar. The medium voltage busbar belongs to Erongo RED;
2. At Walvis Bay substation the 11kV bus coupler belongs to transmission, the rest of the 11kV busbar belongs to Erongo RED; and
3. At Lüderitz, Henties Bay, Tamarisk and Rossmund substations the 11kV busbar and feeders belong to transmission and the border is at the outside wall bushing of the 11kV feeder(s).

2.6.2 NamPower Transmission

In Namibia, NamPower is the Transmission System owner and operator, and in this function owns transmission assets from 66kV upwards.

NamPower typically connects large new load customers directly to its transmission network and enters into supply contracts with these customers, thereby bypassing any distribution licensee in whose license area such customer may be located.

Effectively, NamPower extends its license area by building new power lines or substations. This extension is not subject to any prior regulatory approval, and is essentially “ratified” annually by NamPower’s submission of an updated network map to ECB which is then used to define its amended license area. This implies that NamPower encroaches on a RED’s license area without any formal waiver or approval process involving either the RED or the regulator before new assets are constructed which give rise to the change in license area.

2.6.3 City of Windhoek

The only distribution licensee in Namibia owning networks above 44kV is the City of Windhoek which operates a 66kV ring and takes supply from NamPower Transmission at 66kV. The City has indicated that due to load growth it will need to increase the voltage of its main ring to 132kV in the foreseeable future. The majority of the City’s networks however remain at distribution voltages. The City has also on occasion asserted that it should be allowed to take over some or all of NamPower’s 66kV networks within the City’s licence area to allow the City more flexibility in serving and connecting customers. This is becoming a more important issue as the City continues to grow outwards, and the City’s townlands area has been increased substantially in recent years.

2.6.4 The REDs

Erongo RED's licence area spans the entire Erongo Region, which is host to many of Namibia's largest electricity consumers – the uranium mines. All of the large mines are located outside urban areas and have traditionally (i.e. before RED formation) not been covered by distribution licences. Thus before the advent of REDs there was no question about NamPower supplying the large customers outside urban areas.

Large customers within the urban areas (such as the fishing factories in Walvis Bay and the port in Walvis Bay) have always been supplied by the distribution licensees and never really had a "choice" to be supplied directly by NamPower Transmission.

With the coming of the REDs, the legal position has changed. The REDs now have a license area covering entire regions, which includes the areas where old and new mines are located. Understandably the REDs, seeking to grow their business, are interested in any new large customer coming to set up business in their supply area.

2.6.5 "Contestable" Customers

"Contestable customers" is a concept sometimes referred to in the Namibian ESI. What is usually meant with the term is

"A large customer located outside a local authority area and whose connection to the electricity grid requires works on a high voltage network other than a network owned by the distribution licensee in whose licence area such customer is located."

This definition implies that for a customer to be "contestable" such customer must

1. Be located within the licence area of a distribution licensee but outside a local authority area;
2. Be a large customer who cannot be readily supplied from existing distribution networks at or near the location of the customer.

"Contestable" in this context practically refers to competition between a distribution licensee and NamPower Transmission for a customer.

If a large customer is located outside any distribution licence area then there is no "contest" and the customer may be supplied by the transmission licensee, NamPower. This applies only to areas not yet covered by REDs, i.e. central and southern Namibia.

In practice, "contestable customers" are normally connected by NamPower Transmission. Examples of these are the new mines in the Erongo Region, new desalination plant in the same region, and the Ohorongo cement plant near Otavi in CENORED's supply area. It appears that the inability of the distribution licensee to supply such loads from its own networks makes NamPower Transmission intervention necessary. This intervention "automatically" leads to the customer being supplied by NamPower.

Distribution licensees have put forward the argument that they should be allowed to intervene (by virtue of their rights implied in their licence area), and that even a small mark-up on the large volume usually taken by such customers would make a significant difference to the revenue the licensee has to recover from the rest of its customer base. At the same time a “small” mark-up might not unduly affect the large customer (depending on the meaning of “small”).

To strengthen their position in this argument, some distribution licensees have put forward the position that they should be allowed to take over the 66kV and even 132kV networks within their licence area from NamPower. This would put the licensee in a position where they can supply many large customers from their own networks, eliminate the “contest” and thereby fully assert their rights.

2.7 Stakeholder Views

2.7.1 NamPower (Transmission)

NamPower expressed the opinion that they would strategically not have an objection to releasing the 66kV (and 132kV) assets to distribution licensees. NamPower will still sell the same energy, just at a different level. NamPower would in fact have fewer networks to worry about.

NamPower is however concerned about the ability of the distribution industry to deal with the 66kV networks and substations, since these require operational and maintenance skills beyond what the REDs have been able to build so far during their existence. Also, the REDs would need to keep stock of 66kV equipment and transformers which means a much higher value stock holding than is currently required. In NamPower’s opinion the REDs have hardly even built up enough strategic spares to deal with their existing medium voltage networks.

Regarding large customers, it is NamPower’s view that an existing “gentlemen’s agreement” means that NamPower will not supply large customers embedded within promulgated local authority areas, but will offer to supply customers outside such areas where the RED does not have sufficient capacity to do so with its existing or planned networks.

NamPower may support the notion of giving the distribution industry some relief by charging the transmission end customers a slightly higher tariff than that charged to distributors. This would also spread the benefit to all distributors in the country and not localise it to those in whose area the large customers are located. The introduction of a “distribution levy” on transmission customers is not supported due to the additional complexities it would introduce.

It is NamPower’s understanding that Erongo RED offered the possibility of collecting a local authority surcharge from transmission customers as an alternative to the RED becoming involved in supplying what are currently seen as transmission customers. The purpose of such

a levy would be to provide financial support to local authorities towards the land development they have to undertake to accommodate the employees of the transmission customers (specifically the mines). It is however not clear how such a LAS would be administered or fairly allocated to the different local authorities.

2.7.2 NORED

NORED has expressed the opinion that they are not interested in taking over the 66/132kV networks from NamPower. The issue of large customers is relatively mute in NORED's supply area since there are few such customers present there.

2.7.3 CENORED

CENORED has expressed the opinion that they are not interested to take over the 66kV or 132kV networks from NamPower, because they do not have the resources to manage them but also due to the perception that many of these assets are relatively old and will require expensive replacement or refurbishment soon.

With regard to large customers CENORED is not concerned about NamPower supplying such customers where the REDs existing networks are insufficient to supply them, at least outside promulgated local authority areas. CENORED does not have the financial means to deal with the risks attached to supplying customers such as Ohorong Cement.

With regard to the distribution sector getting some form of cross-subsidy from the large transmission customers CENORED did not feel strongly that such a subsidy should be introduced. CENORED feels that the imminent introduction of the NEF levy should be a manner in which the REDs will hopefully be able to access some benefit to which the transmission customers will also contribute. The introduction of another levy on transmission end customers is not supported by CENORED because it would introduce economic inefficiencies (by distorting true costs) and introducing more complexity to the industry.

2.7.4 Erongo RED

Erongo RED makes the key points that:

- NamPower is encroaching on Erongo RED's license area by connecting new large customers with Erongo RED having a first right of refusal or at least being consulted. This is seen as inconsistent with Erongo RED's implied rights under its license;
- Erongo RED and its shareholders receive no financial benefit from the transmission customers in the Erongo region. Many of these transmission customers (i.e. the mines) impose a heavy burden on the local authorities in the Erongo region who have to deal with developments associated with the staff of the mines. However the mines make

little or no contribution to these costs which then have to be borne by all consumers in the region;

- Erongo RED needs to have the right to use voltages up to 132kV, specifically for supply to the Walvis Bay area with its growing load.

Erongo RED indicates that if the above key points can be addressed satisfactorily then there is no need or motivation for Erongo RED to be the supplier to all the large customers (or take over the large customers from NamPower), particularly the mines. However NamPower should consult with Erongo RED on any new development of transmission infrastructure and/or connection of new customers in the region and solutions should be mutually agreed. Specifically for large customers located close to places where smaller customers could also be supplied (like the desalination plant near Wlotzka Baken) Erongo RED feel that they should have the right to get a transmission supply point as needed and then supply the large customer together with the small customers.

Erongo RED also indicated that they have no ambition to take over all of the 66kV or 132kV networks from NamPower. Only in some cases where such networks perform purely a distribution function would they consider taking them over.

Erongo RED feels strongly that there should be a financial transfer from the transmission customers to the RED for the benefit of the RED's customers and the RED's shareholders. It is deemed very unfair that the RED's large consumers have to pay a much higher price for electricity than the transmission customers and also contribute to LA surcharges which the transmission customers do not have to do. Such a transfer could take the form of a "distribution levy" which could be collected by NamPower and paid over to the RED. It is also felt that if financial transfers from the transmission customers are introduced then these should be kept within each RED area because the burdens imposed on local authorities by such customers are also confined to the same area.

2.7.5 City of Windhoek

The City of Windhoek's main concern relating to the present project lies in the voltage classifications and definition of distribution and transmission. The City wants the full right to utilise voltages up to and including 132kV, as is envisaged in the draft 2013 Electricity Bill.

The City further proposes that the term "transmission" be divided into transmission and sub-transmission, where sub-transmission would be the voltages 66kV and 132kV in the Namibian context. The ECB should consider inclusion of this terminology in the new Electricity Bill.

The City has no ambitions to take over the 66kV networks within its jurisdiction from NamPower in general. However, it would consider doing so in specific cases where such networks do not cross the City's boundaries and where they are used for the function of distribution (as opposed to transmission).

Regarding “contestable” customers the City does not have a strong opinion on the matter. The City would consider taking over those large customers that fall within its license area and can be supplied from its existing networks, but there is no strong motivation to change the status quo. An example of where the City might have got involved is the supply to new chicken facility just to the north of Windhoek. Should the City take over some of NamPower’s 66kV networks in future then customers served from those networks would come over to the City as a by-product of such asset transfer.

The City recognises that before it expands its networks to higher voltages they need to make sure that they have the required skills and resources for such added responsibility.

3 International References

This section provides some salient points from a review of international literature and references on the topics of “contestable customers”, how electricity markets function, and how transmission and distribution interact in the market.

3.1 South Africa

3.1.1 Industry Structure

South Africa has a mixed industry structure, similar in many respects to the Namibian structure. Generation, trading and transmission are undertaken by Eskom (with independent power producers being slowly introduced), as a substantial part of distribution. The remaining distribution is done by metros and local authorities. For more than a decade, efforts have been under way to consolidate the distribution industry into regional electricity distributors; however this programme has stalled completely due to stakeholder resistance.

Without REDs the situation is relatively clear in that large consumers outside distributor boundaries are supplied by Eskom, while within distributor boundaries they are normally supplied by the distributor.

A position paper issued in 2008 by Eskom on “Transmission / Distribution Asset Demarcation” [1] discusses a proposed way forward; especially should the REDs in South Africa go ahead. The key elements in this paper that may be of interest for Namibia are summarised in the following sections.

3.1.2 Voltage Classification

In South Africa the dividing line between transmission and distribution is the voltage of 132kV. Up to 132kV nominal voltage is defined as distribution, above as transmission.

Some metros own and operate networks at voltages up to 275kV.

There are proposed exceptions to the 132kV rule for cross-border connections, generator connections, short 132kV circuits connecting transmission facilities and allowance for distributors using voltages above 132kV in certain cases (such as some metros).

The voltage classification has not needed to be fully implemented formally because the planned REDs have not been established.

The South African example foresees transfer of up to 132kV assets to distributors. However the envisaged South African REDs would be much larger entities than those in Namibia, which could justify these higher voltage networks.

3.1.3 Contestable Customers

South Africa has not yet opened its market for contestable customers, even though the reviewed documents propose that this should be done [2]. The proposals contained in [2] do however not clearly speak to the issue found in Namibia.

The South African example does not foresee contest between transmission and distribution, but rather eligibility of customers to buy their electricity from the market.

3.2 Other Countries

Other countries on which information was accessed were found to be served by integrated wires utilities, in which case encroachment between transmission and distribution is not an issue.

Furthermore, when wires utilities are integrated, the issue of voltage level at which transmission and distribution are demarcated becomes more of an academic exercise.

The interesting point here is that the REDs in Namibia introduce different market dynamics from those found in many other countries, and with that raise issues which do not occur elsewhere.

3.3 Nigeria

In Nigeria the EPSR Act 2005 introduces the notion of “*competition transition charges from customers to compensate the trading and distribution licensees*”. Such charges may be introduced to compensate distribution licensees for the loss of revenue/financial sustainability from large customers becoming eligible to buy on the wholesale market and being lost to the distribution licensee [3].

The learning point here is that the introduction of an open electricity market and associated loss of large customers can have a detrimental effect on distributors’ viability and may need to be compensated for.

3.4 India

A news article in August 2012 from India notes that “ ... *Maharashtra Electricity Regulatory Commission (MERC) has ordered that for the next one year, large electricity consumers such as commercial establishments and industries cannot switch from one distribution company to another ...*” [4].

The article goes on to mention that MERC recognises that all competing retail/distribution licensees need a sustainable mix of subsidising and subsidised customers: “*We felt there was a need to calibrate migration of customers as the income distribution in Mumbai and suburbs*”

is highly skewed. We need to have a balanced customer profile of subsidised and subsidising consumers under each distribution company”.

The learning point here is that distribution licensees need a balanced customer profile if they are expected to look after social needs of their customers from own resources.

3.5 Germany

Germany operates a market that is open to retail competition. In this regard it is far advanced from Namibia’s position, and the issue of contestability between transmission and distribution does not arise: Large customers either deal with competing retailers or buy on the wholesale market – either way they pay for access to the distribution and/or transmission system in a transaction that is separate from the energy purchases on the open market.

Interestingly, Germany has a three tiered recognition of voltage levels above low voltage:

1. Medium voltage is defined between 1kV and 30kV (equivalent to Namibian medium voltage);
2. High voltage is defined between 30kV and 110kV (equivalent to Namibian transmission voltages 66kV and 132kV considered as possible distribution voltages, also referred to as “sub-transmission voltages”); and
3. Extra high voltage is defined above 110kV (equivalent to above 132kV in Namibia, which are undisputedly transmission voltages).

The learning point here is that in a fully developed market with retail competition the wires businesses each fulfil their function and there is no “contest” between them for customers.

3.6 USA

Reference is made to the Tennessee Valley Administration (TVA) [5]:

“ ... Like other federal entities, the TVA sells power to municipalities and cooperatives that resell the power to their customers at a retail rate. The TVA also sells power to federal agencies, to customers with large and unusual loads, and to exchange power customers ... ”

The TVA is one of the largest power authorities in the USA. From the reference it is clear that the TVA which operates the transmission network in its supply area supplies “large and unusual” load customers directly, while local authorities within their respective areas resell power to end customers within their jurisdiction. This appears to be similar to the pre-RED status of Namibia.

The learning point here is that it is not unusual for a transmission licensee to supply large point loads directly.

3.7 The Issue of “Cherry Picking”

“Cherry picking” is a phenomenon found often in connection with electricity supply. Most references found are related to a competitive retail market, where new market entrants target the more lucrative customer types, leaving the previous distributors with the less lucrative customers and thereby threatening their sustainability. This is more so in countries with large income disparities (see 3.4 above).

“Cherry picking” between transmission and distribution as it might relate to Namibia’s large customers is rare internationally. In competitive retail markets such large customers are usually eligible to buy on the wholesale market, and supply by a transmission licensee in competition with distribution/retail licensees is not an issue.

3.8 General Trends and Summary

In developed electricity markets in general, the practice is for large consumers to buy energy on the wholesale market and pay for access to the transmission network (and distribution network, if distribution is involved at all) in a separate transaction. The distribution level retailers do not get involved in the transaction, and get no benefit from these large consumers.

As can be seen from the Nigerian and Indian examples mentioned above, there are precedents for collecting a subsidy from large customers and paying it to distribution level licensees, i.e. there is a cross subsidy flowing between entities as would have been allowed if all the customers had been served by one single entity. This need has not been seen to arise in the well developed markets but more in developing markets and specifically in those dealing with significant poverty/low income customer issues where cross-subsidies are more important.

No precedents have been found that speak directly to the situation in Namibia, where the license area of regional distributors conflicts with the license area of the transmission operator and conflict over the rights to supply customers arises.

4 Conclusions on the Status Quo

The following conclusions are drawn from the above deliberations and information:

4.1 The Definition of Voltage “Border” Between Transmission and Distribution

The current Electricity Act of 2007 defines distribution and transmission solely on the basis of voltage, and not by their functions. While this condones the use of transmission voltages by distributors and vice versa it is not deemed optimal.

This issue is being addressed (under the auspices of the present project) in the 2013 Electricity Bill and will be elaborated further in the second phase of the present study.

4.2 Concept of “Eligible/Contestable Customers”

In the current Electricity Act of 2007 there is no concept of “eligible” or “contestable” customers. These terms are therefore used in the local industry without a proper definition and without a clear meaning.

It is NamPower’s view that a “gentleman’s agreement” exists which allows NamPower Transmission to supply “large” customers located outside proclaimed local authority areas and outside the capability of existing distribution networks of REDs while NamPower will not supply such customers if located within local authority areas and/or within capability of existing RED distribution networks.

In international context the concept of “eligible customers” refers to the right of select customers to buy their electricity directly from the market at market prices as opposed to from local distributors or transmitters at regulated prices. It is normal in many markets that “large” customers located outside local authority jurisdictions are supplied directly by a transmission licensee. No evidence was found in the literature review of a “contest” for customers between transmission and distribution licensees – indeed the literature gives credence to NamPower’s view of a “gentleman’s agreement”.

There is a need to clarify these concepts and formalise any “agreement” in the proper legal instruments. The 2013 electricity bill is a great opportunity to do so. The second phase of the present project will elaborate on this in more detail.

4.3 License Areas of Transmission and Distribution

A review of the license conditions and license areas of NamPower and some distributors shows a clear conflict of license areas between NamPower Transmission and the distributors who have license areas covering a complete geographical area.

The Electricity Act of 2007 and the licensees’ license conditions do not confer an explicit **exclusive right** to supply on the licensees – only an explicit **obligation** to supply which is not the same thing.

At this time there is no formal consultation or approval requirement on NamPower before extending the transmission network (and thereby NamPower’s supply license area) into the license area of a distribution licensee. Erongo RED sees this as an encroachment on its license area and rights. NamPower’s network developments are submitted to the ECB only after completion, at which time objections are no longer practically possible.

The license area conflict needs to be eliminated and ideally the issue of “right to supply” needs to be clarified in the appropriate legal instruments.

The second phase of the present project will seek to propose solutions to this issue.

4.4 No Explicit Exclusive Right to Supply

Neither the Electricity Act of 2007 nor the license conditions inspected give the licensee an exclusive right to supply customers within its license area. The Act does also not prohibit the overlap of license areas.

In a market like Namibia where neither wholesale nor retail competition have been implemented the non-exclusivity of license areas and their possible overlap creates a potentially competitive situation which is not healthy because no rules or regulations exist that deal adequately with this occurrence.

It is neither normal by international standards nor healthy for the industry that transmission and distribution licensees would find themselves in “competition” for customers.

4.5 Transmission Customers Pay No Transparent Cross-Subsidy to Distribution Sector

Large distribution customers pay a much higher tariff than transmission customers. By implication the large distribution customers pay a substantial cross subsidy which is likely utilised to the benefit of residential customers. It is argued that it is unfair that large distribution customers should be burdened with making this cross-subsidy while transmission customers make no such contribution.

This can be deemed to be unfair towards the distribution customers,

It can be argued that the distribution sector does benefit from the transmission customers sharing in the cost of the transmission network, however the distribution customers also carry their part of this cost.

The ECB currently has a study under way which is investigating a support tariff mechanism for Namibia. That project will look at funding of a cross-subsidy to low income customers and can specifically look into the contribution that transmission end customers could or should make.

4.6 Transmission Customers Pay No Transparent Cross-Subsidy to Local Authorities

All customers in most distributors pay some form of monetary contribution towards a local or regional authority's benefit. This helps the local and regional authorities to improve their financial viability. Transmission end customers currently make no such contributions, which can be deemed unfair towards the distribution customers.

However for this issue to be addressed a stronger legal basis and a widely accepted framework regarding LA income from electricity is needed. This is a national issue, not just an electricity sector issue.

5 Bibliography

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