WORKING PAPER

An updated assessment on the status quo and current performance of the South African EDI

Transaction number: 81281682; Project processing number: 20.2108.7-001.00

Prepared for:

Prepared by:

Submission contact:

Anirudh (Rudy) Gautama
Project Manager
Tel: +1-647-395-7925
agautama@cpcs.ca

CPCS Ref: 19000
November 9, 2023

www.cpcs.ca

Strategic consultation on the future direction of the municipal electricity distribution industry (EDI) reform processes. The overall objective of this assignment is to support SALGA in analysing the current performance of the EDI as well as the impacts of the energy transition and power sector reform on municipal business models and to develop a working paper with recommendations for the further reform of the South African EDI towards sustainability on behalf of local governments.

Working Paper #1, version 2 of 2.
This working paper provides an updated analysis of the status quo and current performance of the South African EDI, based on additional information, analysis, and stakeholder engagement, obtained since the publication of Version 1 in December 2022.

Acknowledgements
The CPCS Team acknowledges and is thankful for the input of those consulted as well as the guidance and the input of representatives from the SALGA (the beneficiary) and GIZ (the Client).

Opinions and Limitations
Unless otherwise indicated, the opinions herein are those of the authors and do not necessarily reflect the views of SALGA and/or GIZ. CPCS makes efforts to validate data obtained from third parties, but CPCS cannot warrant the accuracy of these data.

Confidentiality Statement
This working paper contains material that may be deemed commercially sensitive and/or confidential. This document may not be shared with third parties without prior written approval by GIZ and/or SALGA.

Contact
Questions and comments on this working paper can be directed to:

Anirudh (Rudy) Gautama
Project Manager
T: +1-647-395-7925
E : agautama@cpcs.ca

Cover and below image source: Sections of a 40-foot mural at CPCS headquarters in Ottawa painted by Toronto artist Mike Parsons.

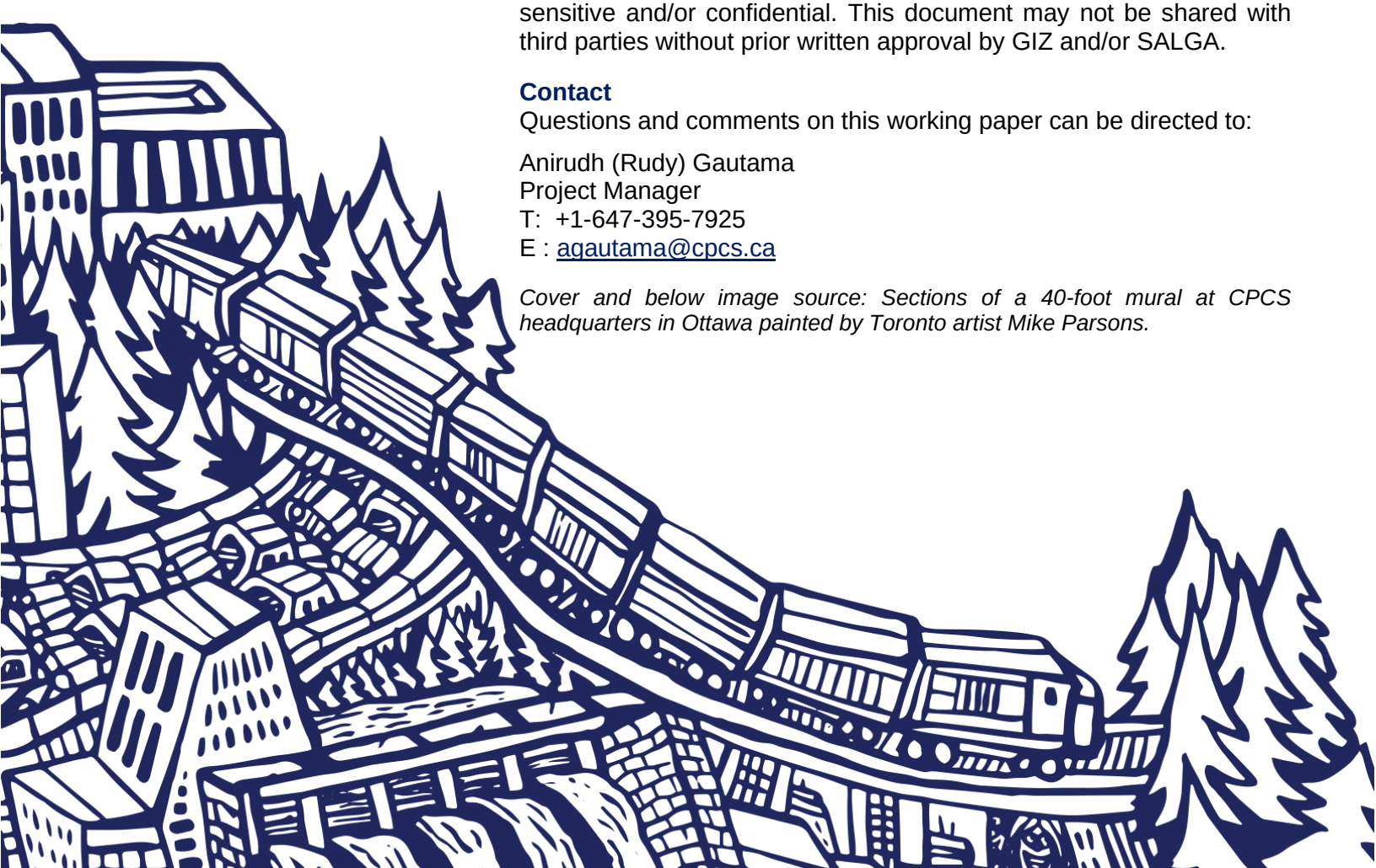


Table of contents

List of figures

Acronyms / Abbreviations

Acronym	Description
ADAM	Approach to Distribution Asset Management Report
AG	Auditor General
CPA	Central purchasing agent
CPI	Consumer price index
CoGTA	The Department of Cooperative Governance and Traditional Affairs
DPE	Department of Public Enterprises
EDI	Electricity distribution industry
ERA	Electricity Regulation Act
ESI	Electricity supply industry
GDP	Gross domestic product
IMTT	Inter-Ministerial Task Team
IPP	Independent Power Producer
IRP	Integrated resources plan
MFMA	Municipal Finance Management Act
MOI	Memo of Incorporation
NERSA	National Energy Regulator of South Africa
NT	National Treasury
PFMA	Public Finance Municipal Act
RE	Renewable electricity
SA	South Africa
SALGA	South African Local Government Association
SDA	Service Delivery Agreement
TE	Transmission entity
TSMO	Transmission system and market operator
TSO	Transmission system operator

1 Introductory overview

1.1 Objective of this paper

This document serves as the second and final version of a working paper entitled *'a high-level assessment of the status quo and current performance of the South African EDI.'* Two versions of this working paper have been provided:

- Version 1: Initial analysis of the status quo and current performance of the South African EDI, based on currently available information and analysis. The working paper serves as an interim deliverable to SALGA within the 3rd quarter of the 2022/23 Financial Year.
- Version 2: Final and updated working paper on the status quo and performance of the South African EDI, based on further analysis, and consideration of additional information that has been forthcoming from additional targeted data sources, the outcomes of a qualitative questionnaire, the guidance of the Energy Reference Group, and the inputs of stakeholders obtained in the workshop with municipalities held on 07 March 2023, as facilitated by SALGA. This working paper has built on the baseline established in the first working paper, albeit with lesser data/information that initially envisaged. Interactions with SALGA led to further investigation of potential additional data sources. The analysis of targeted and accessible information, such as the Auditor General's MFMA Reports, provided limited additional insights, and no material data points specific to the electricity distribution industry. Where meaningful insights of relevance to the report where identified, this data was analysed in preparing this updated version of the Status Quo Report. Specific additional data point analysis, findings, and commentary in the updated report include the following[1]:
  - NERSA D Form submissions for all distribution licensees for the year 2020/21 (Section 3).
  - NERSA annual municipal licensee compliance audits - 2015 to 2019 (Section 2.3.1).
  - COGTA's The State of Local Government Report, 2021 (Section 2.3.1).

1.2 Objective of this assignment

The objective of this assignment is to "support SALGA by analysing the current performance of the South African EDI and the impacts of the energy transition and power sector reform on the municipal business models; and, to develop a working paper[2] with recommendations for the further reform of the South African EDI towards the sustainability of municipal electricity businesses on behalf of local governments, given the forthcoming (gradual) development of a competitive electricity market".

[1] Notwithstanding considerable effort on the part of both SALGA and CPCS to encourage the completion and return of additional submissions of a questionnaire that was issued, the response from the municipalities has been poor. The questionnaire results have been excluded from the updated analysis contained in this report, as a direct result of the poor response rate, to avoid drawing incorrect/misleading conclusions based on a limited sample size. Section 6.3 has thus been removed from this report. Completed questionnaires received from municipal respondents have not been discarded. Responses have been reviewed for alignment with the outcomes of the analysis contained in this updated report, and anecdotal observations suggest a correlation between the questionnaire responses and the detailed NERSA D Form data analysis. However, the low response rate did not allow for the analysis of trends and insights that could be documented with any degree of confidence. The anecdotal data will continue to be used as a point of reference in the stakeholder engagement process, and serve as an input into further deliverables, where valid and appropriate.

[2] In the stakeholder engagements held in November 2022, preference was expressed for the deliverable of a 'Position Paper' as specified in the ToR, to be referred to as a 'Working Paper' or 'Discussion Paper' to better reflect the intention of the document to be a contribution to the improved understanding of all stakeholders of the proposed reform of the EDI, rather than a specific position adopted by SALGA, to the potential exclusion of other stakeholders.

Based on the above, representatives of SALGA, the EDI and national government will be provided with a study that analyses the current performance of the South African EDI and highlights the already visible, as well as potential future impacts, of the development of a competitive electricity market on the municipal business model. The study will also present suitable examples of possible adaptation and transition strategies for (municipal) distributors.

1.3 Scope of this working paper

This paper focuses on an analysis of the status quo and current performance of the South African EDI, which includes both municipalities with electricity distribution licenses and Eskom's Distribution Division. Various discussions between SALGA, GIZ and CPCS have resulted in an agreement to limit the scope of the analysis to a level of detail that provides sufficient understanding of the status quo and current performance of the South African EDI to serve as a baseline in preparing for the analysis to be undertaken in the remainder of the assignment, which is to analyse the impacts of the energy transition and power sector reform on the municipal business model. This paper thus serves as a synopsis of the EDI problem statement, consolidating key historical inputs, currently available data, and current industry developments, into a case for change.

2 Overview of the EDI sector within the context of the SA ESI

2.1 Legislative context

Municipalities in South Africa, in their current form, were established through Section 12 of the Municipal Structures Act 117 of 1998, concurrent with Section 215 (1) and Section 229 (1) of the Constitution, which defines the responsibilities of municipalities, and came into existence through the demarcation of municipal boundaries, in terms of the Municipal Demarcation Act 27 of 1998. South Africa has 257 municipalities categorised into three types, in terms of Chapter 7 of the Constitution:

- Category A – Metropolitan: The eight biggest cities in South Africa belong to this category. These municipalities have executive and legislative authority over their areas;
- Category B – Local: There are 205 municipalities in this category. These municipalities share executive and legislative authority with a Category C municipality within whose area it falls;
- Category C - District: These municipalities have executive and legislative authority in an area that includes more than one local municipality.

With the introduction of wall-to-wall municipalities, all areas in South Africa are included in the municipal areas of jurisdiction of designated municipalities. In terms of the Municipal Systems Act Section 73(1) and 73(2), municipalities must give priority to the basic needs of the local community; promote the development of the local community; and ensure that all members of the local community have access to at least the minimum level of basic municipal services. The provision of electricity is one of these services. Access to reliable and affordable electricity is generally regarded as essential to promote social upliftment, education, health, wealth creation, growth, business sustainability and job creation.

In respect of electricity distribution/reticulation, Section 156, Part B of Schedule 4 of the Constitution of South Africa, allocates the executive authority for this function to municipalities. Furthermore, Section 27 of the Electricity Regulation Act 4 of 2006, as amended (the ERA), expressly acknowledges the executive authority of a municipality in relation to electricity reticulation, meaning the power to generate, supply and distribute electricity. Section 160(1)(a) of the Constitution provides that a municipal council makes decisions concerning the exercise of its powers and the performance of all the functions of the municipality.

The National Energy Regulator of South Africa (NERSA) was established as the licensing authority for the electricity supply industry in South Africa, to regulate the ESI and ensure consistency, compliance, service standards, quality of supply, regulate tariffs, customer protection and economic growth. While the competency to set tariffs resides with the licensee, NERSA is mandated in terms of Section 4(a)(ii) of the Electricity Regulation Act 4 of 2006 (ERA) to regulate prices and tariffs. In respect of tariffs, the Municipal Finance Management Act 56 of 2003 (MFMA) requires that municipalities (licensee) annually determine their tariffs and apply to NERSA for the approval of their

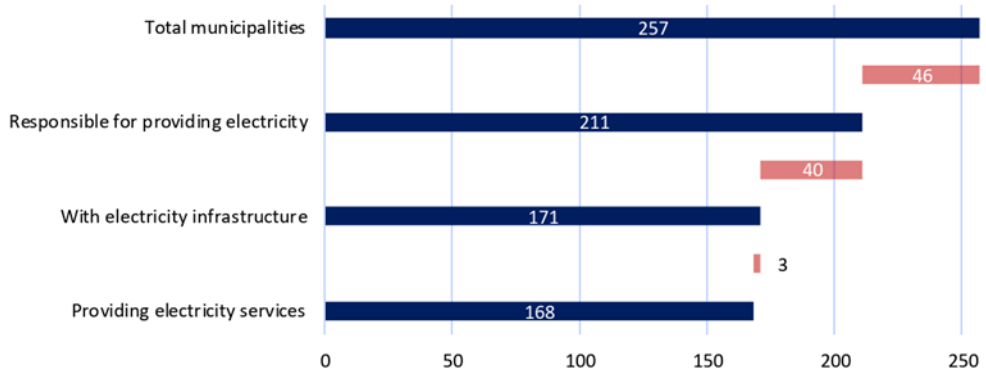
proposed electricity tariffs. Furthermore, NERSA also regulates access to the electricity market[3]. Generation, transmission, distribution and trading licenses are issued under the Electricity Regulation Act 4 of 2006.

2.2 The structure of the EDI

The supply of electricity to grid connected end customers in South Africa is dominated by municipalities and Eskom, with a small number of re-distributors/resellers, such as mines and gated residential communities/estates. The industry currently serves an estimated 13 million customers, with municipalities serving approximately 58% of these customers and the balance served by the Eskom Distribution Group, with a limited number of exceptions[4].

According to Government statistics, there are 257 municipalities in South Africa, 211 of which are responsible for providing electricity services, 171 of which have the infrastructure to do so, and 168 of which provide the services, as illustrated in the Figure 2-1 below[5]. Of these municipalities licensed by NERSA to distribute/reticulate and trade in electricity to end customers within their licensed area, the majority are the eight metropolitan municipalities and local municipalities, while only three district municipalities are licensed to sell electricity[6]. In addition, we understand that Eskom Distribution, in practice, distributes, or co-distributes, electricity with 90 municipalities.

Figure 2-1: Municipalities providing electricity services



Source: Statistics South Africa, 2021[7]

The data sourced from the NERSA D Form submissions for 2020/21 demonstrates that of municipalities providing electricity services, there are a relatively small number who represent the majority of municipally supplied end-customers. The 29 municipalities that have sales volumes of more than 300GWh annually service 5.5 million, or 73%, of customers, whereas the remaining 138

[3] Pursuant to its obligations under Section 35 of the ERA, the Regulator has published "Regulatory Rules on Network Charges for Third Party Transportation of Energy" (2012 Third Party Network Charges Rules), ostensibly to regulate the pricing of network access and transportation of electricity across transmission and distribution systems. Those rules contain some issues and have never really been applied in practice.

[4] The NERSA D Form data for 2020/21, used to update version 2 of the Status Quo Report, reflects a total municipal electricity distribution customer base of 7,369,795.

[5] The exact number of licensed distributors is reported differently in various official sources, which can possibly be attributed to minor changes over time, as the date of publication of (recent) data varies. The NERSA D Form data for 2020/21 used to update Version 2 of the Status Quo Report reflects a total of 167 NERSA licensed municipalities. The list of these licensed municipal electricity distributors in shown in Appendix C.

[6] Three district municipalities sell electricity, namely uMkhanyakude in KwaZulu-Natal, as well as West Coast and Overberg in Western Cape. Source: Department of Statistics, South Africa, Financial Census of Municipalities for the year ended 30 June 2021.

[7] The latest D form data indicates that there were 167 licensees in 2020/21 financial year, including a concession and a number of SDA's between municipalities.

municipalities service under 2 million, or 27%, of customers. These top 29 municipalities also dominate sales volume, with an 86% stake in end customer sales. Nearly half of the electricity distribution licensed municipalities have individual sales volumes of less than 50GWh per annum, representing only 2% of sales volume and 6% of the total customer base. The extreme difference in the size of the licensed municipalities must be considered in assessing the impacts of the energy transition and power sector reform on the municipal business models and achieving customised solutions to address the sustainability of individual municipal electricity businesses. To this end, it is likely that multiple scenarios are required to be developed for customised application to individual, (or groupings of similar), municipalities, considering criteria such as the vast range in customer numbers and sales volume per municipality. A summary of the statistics that inform the relative size of municipalities that are licensed to supply electricity is shown in Figure 2-2.

Figure 2-2: Relative size in GWh of municipalities supplying electricity

Utility Grouping	Number of Utilities	Total Sales	Total Customers	%Sales of Total Sales	%Customers of total customers
>1000GWH	12	53,477,083,769.66	4,488,412	75%	61%
>300<1000GWH	17	7,999,604,810.83	908,912	11%	12%
>100<300GWH	31	5,795,309,153.05	991,392	8%	13%
<100>50GWH	33	2,366,082,244.18	503,082	3%	7%
<50GWH	74	1,638,614,890.51	477,996	2%	6%
Total	167	**71,276,694,868.23**	**7,369,794.81**		

Source: NERSA D Forms 2020/21

A synopsis of the municipal electricity distribution licence holders' key statistics, as extracted from the NERSA D Forms data for 2020/21, is shown in the below table. Key findings from the analysis of the performance data are detailed in section 3 of this report.

Figure 2-3: Municipal electricity distribution industry characteristics

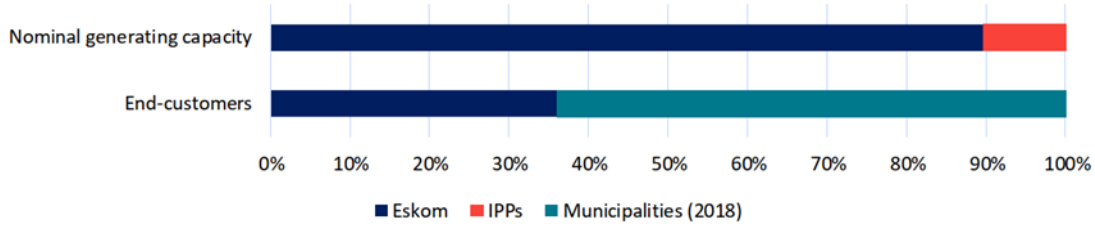
	Description
1	Value of sales R 121,5 bn (Avg R1.70)
2	Cost of Purchases R 94,682 bn (Avg R1.10)
3	Total kWh Purchased 86.209 GWh
4	Total kWh sold 71.276 GWh
5	Total Customers 7 369 79

In practice, Eskom Distribution supplies electricity in bulk to the NERSA licensed municipalities, in addition to providing the full suite of electricity distribution services within the geographic area of the unlicensed municipalities, where Eskom Holdings holds the license.

Eskom Holdings currently owns most of the generation capacity in the country and supplies about 35% of end-customers, as illustrated in the Figure 2-4 below[8].

[8] Source: CPCS analysis based on Eskom Holdings and StatSA data.

Figure 2-4: Generation capacity and supply to end customers

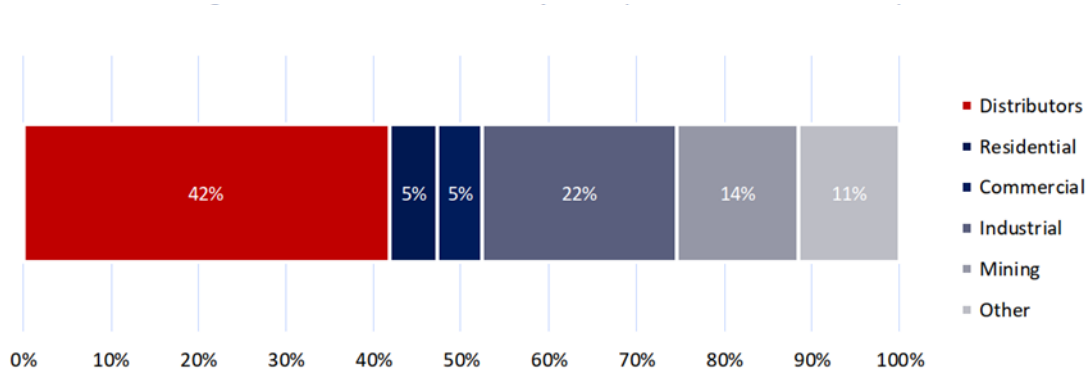


Source: Statistics South Africa, 2021

Historically, municipalities owned generation capacity to meet the local load requirements. Over time, given the establishment and growth of Eskom Holding's transmission and distribution footprint, the purchase of competitively priced bulk electricity became an attractive and cost-effective alternative option to managing ageing, specialised, and often unreliable, generation plants within the municipality. While limited pockets of electricity generation capacity remain in municipal hands, and initiatives are underway to expand this base given Eskom Holding's generation availability crisis, all the municipalities in South Africa are currently dependent on Eskom for the bulk of their electricity supply requirements.

Eskom Holdings sells about 42% of its electricity to distributors, with the majority of its remaining electricity either being sold to industrial/ commercial/ mining operations (which are more likely to be connected to the high-voltage network). The percentage of sales to larger industrial and commercial customers is likely to decline, since these customers are signing an increasing number of bilateral contracts directly with new private developers (sometimes referred to as 'IPPs'). At present, Eskom is continuing to provide a complement of energy during periods when the wind doesn't blow or the sun doesn't shine (particularly during peak hours and overnight). Wind projects, combined with solar (and eventually battery storage), are likely to depend less on Eskom for this 'complement' of power, as opposed to pure solar power producers. As demonstrated in the below Figure 2-5, only about 5% of Eskom's electricity sales go directly to residential end-customers.

Figure 2-5: Eskom sales per category



Source: Statistics South Africa, 2021

As such, Eskom Holdings is highly dependent on sales to municipal networks as municipal bulk purchases contribute to an estimated 40% of the total revenue of Eskom Holdings[9]. Electricity supply

[9] CPCS analysis of data from Eskom Holdings.

agreements for capacity (notified maximum demand), energy (kWh) and terms of delivery and payment, regulate the relationship between Eskom Holdings and the relevant municipalities.

2.3 EDI performance

The EDI is a microcosm of the broader environment in which it operates. The level of dysfunctionality and poor performance in the municipal sector is well documented, and has been publicly confirmed in statements by key institutions such as the Department of Cooperative Governance and Traditional Affairs (CoGTA), the Auditor General (AG), the National Treasury (NT) and the Inter-Ministerial Task Team (IMTT). The level of dysfunctionality impacts directly on electricity service provision.

Due to its monopolistic nature, and impact on the broader economy and wellbeing of the country, the industry cannot operate without well-defined legislation, tight regulation and sound governance. The electricity distribution industry is confronted with serious service delivery, financial and sustainability challenges. Municipalities and Eskom Holdings are confronted with a revenue realisation challenge to meet their business growth, and current and future operating and capital requirements.

The themes of financial, operational and governance inefficiency consistently emerge in analysis of the EDI, including poor administrative governance, weak financial management, high levels of debt, non-payment, and a substantial backlog in infrastructure investment requirements.

Furthermore, the electricity supply industry operates in a highly contested and politically charged environment, with numerous stakeholders expressing views with the objective to either protect the current industry status, or to influence the future of the ESI. Inconsistency in interpretation and application of policy and regulatory compliance requirements has created confusion in the industry, and has contributed to the absence of compliance, performance monitoring and evaluation, as well as inconsistency in the delivery of service to the customer.

The long-term sustainability of the electricity distribution sector in South Africa is under threat, given a dynamic and rapidly changing environment that challenges the fundamental premise of the existing business model. The changing environment consists of both internal challenges, and external disruptors which have the potential to impact on business sustainability.

While the electricity distribution network segment of the industry in South Africa is a natural monopoly, there is growing evidence of a shift taking place with customers having a greater choice of retailers (suppliers), largely enabled by technology and the generation capacity constraint crisis. The enhanced participation of customers provides an opportunity to lead the change in the business model, through being proactive and innovative, thereby remaining relevant in a dynamic electric utility environment[10]. Industrial customers have already begun contracting directly with new power producers, as mentioned above.

Access to data to corroborate this generally supported synopsis of the performance and sustainability of the industry has been constrained. Selected data has been forthcoming since the submission of the first version of the Status Quo Report. The analysis of this data, together with our research and the leveraging of targeted stakeholder interactions, built on long term EDI experience, has yielded a selection of data points and insights, which are expanded on in the section that follows.

[10] It must be noted that usually when a competitive market opens, not all customers are de facto eligible. It can take many years before, for example, residential customers are allowed to choose their retailer (supplier).

2.3.1 Municipal financial sustainability

Introduction

The financial sustainability of municipalities is a growing concern. The National Treasury local government revenue and expenditure report for the third quarter of the 2020/21 financial year pegged aggregate municipal consumer debts at R230.7 billion, with a total amount of R73.7 billion written off as bad debt. Fin24 reported in July 2021 that failures in revenue collection strategy and operations have resulted in sovereign credit rating agency downgrades of some metropolitan municipalities.

Municipalities, in turn, owe their suppliers for the provision of bulk services. The Minister of Water and Sanitation reported in his budget vote at the National Council of Provinces on 18 May 2022 that municipalities owed water boards R13.94 billion, due to non-payment by their water users. The Daily Maverick reported that, as of 31 July 2022, 96 of the 278 municipalities in South Africa collectively owed Eskom an amount of R 49.4 billion. While the dramatic escalation in the cost of bulk electricity tariffs to higher levels (but still low by international standards), has no doubt impacted on the non-payment problem growing, failures in the revenue collection processes are equally to blame.

COGTA Analysis

CPCS used 'The State of Local Government Report' issued by COGTA in 2021 to cross check our electricity service provision findings from other data sources. The objective of the COGTA study was to identify and rate performance of municipalities in five performance areas and implement mitigation measures through the District Development Model; to ensure that municipalities are functional, able to provide basic services, manage their resources appropriately, adhere to good governance practices, raise and manage their own revenue and deal with issues of debt management adequately. CoGTA expressed the view that they had developed a reliable state of local government report which is informed by the National Treasury, Auditor General, Statistics South Africa, and provincial reports. The COGTA report[11] identified 36 municipalities experiencing governance challenges, 63 municipalities having serious service delivery challenges and a total of 163 municipalities in financial distress. A total of 64 municipalities were identified with challenges across the key performance areas of governance, service delivery and financial management.

The comparison of COGTA's assessment against utility financial performance parameters is shown in the below table.

Figure 2-6: Comparison of COGTA assessment against utility financial performance parameters

COGTA Comparisons to Utility performance					
Row Labels	**Average of Billing efficiency**	**Average of Gross Profit**	**Average of Net Profit**	**Average of selling rate (R/kWh)**	**Sum of Total Customers**
High Risk	25%	-9%	-31%	R1.77	R1,120,329.3
Medium/High Risk	16%	9%	-14%	R1.81	R952,691.3
Low Risk	7%	25%	10%	R1.74	R2,274,376.9
Stable	6%	25%	12%	R1.73	R241,952.0
#N/A	19%	8%	-18%	R1.73	R2,780,445.3

[11] COGTA reports on all municipalities in its sample and does not distinguish between municipalities that are electricity distribution licensees, and those that are not. Figure 2-6 addresses this difference in sample by excluding the results of licensed municipalities that were not part of the COGTA sample (as shown in the N/A category).

For the municipalities that are licensed electricity distribution service providers, our findings demonstrate a strong correlation between the COGTA rankings and high-level electricity service provision financial performance indicators. On average, high and medium risk municipalities, as ranked by COGTA, do not perform as well as their peers categorised as low risk and stable, with respect to electricity service provision profitability, both at a gross and net profit level, despite a similar average R/kWh selling price.

In addition, the analysis reveals that there are several municipalities that are not electricity distribution license holders, but are in the stable and low risk categories, which suggests that the electricity net profit contribution to rates and taxes is not a prerequisite for financial sustainability. It would seem rather that municipalities in the low risk and stable categories are more efficient at managing all sources of revenue, whether they are licensed electricity service providers, or not.

NERSA compliance audit assessment of Municipalities

NERSA reports on the findings of the distribution industry compliance audits conducted annually. Typically, a sample of electricity distribution licensees are selected for audit each year and the findings of the audit are published on the NERSA website. A record of the findings of five annual compliance audits from 2015 through to 2019 are available for review on the NERSA website. The key objectives of the compliance audits are to determine and ensure compliance with all the licence conditions governing electricity business operations and to ensure that the quality of service and supply does not decline.

Areas of assessment include financial matters, strategic planning, asset management, quality of supply and service, key network operations and information technology, organisational tactics, legal conditions, repairs and maintenance, and plant condition assessment.

While specific findings show some variance from licensee to licensee and from year to year, the overall findings are remarkably consistent for the target group per annum and across the five reports published on the NERSA website. The consistent theme in the findings is that none of the licensees audited complied fully with the licence conditions, that most licensees achieved a low level of compliance, and that only a small number of licensees achieved an acceptable level of compliance with the licence conditions. The average level of compliance for all the licensees is below 50%.

The tariff guideline on repairs and maintenance budget/expenditure was the most violated licence condition, followed by the non-implementation of the maintenance plan, and then the vacancy rate. The condition of most of the networks that were inspected improved from poor to fair over the five audits, but even so and notwithstanding a different sample selected per annum, the finding was that more money should be invested into refurbishment, repairs, and maintenance of the electricity networks.

The findings of the NERSA audits are consistent with other credible data points that CPCS has reflected on in this report. Detailed analysis of the audits is readily available in the NERSA reports, should this data need to be examined more thoroughly by the reader.

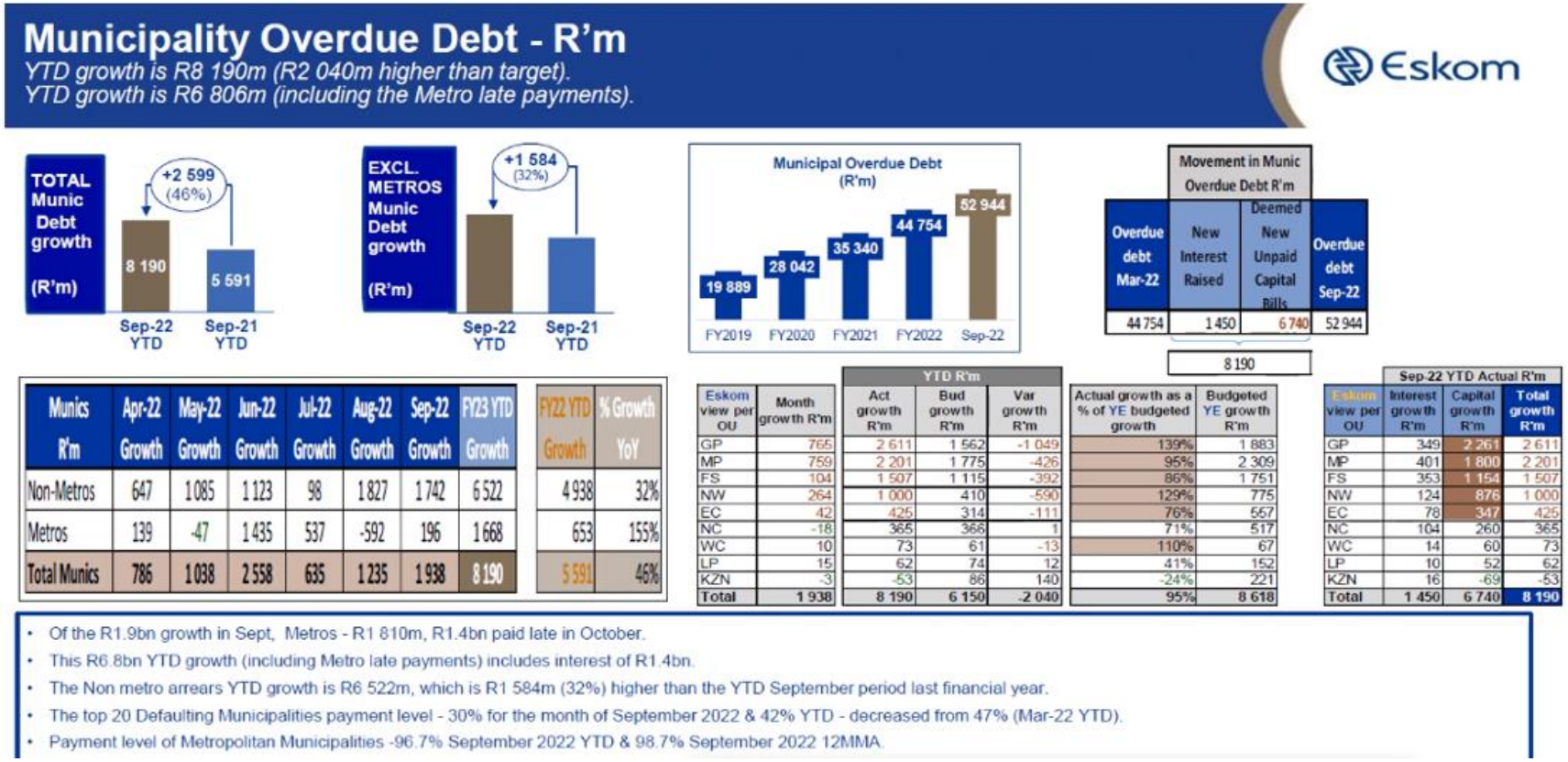
Bad debt

In the AMEU Tariff Committee meeting of 23 November 2022, Eskom Holdings provided the latest official Eskom Holdings statistics on the municipal overdue debt, as at 30 September 2022, which demonstrates a further deterioration in what is already a dire situation. Municipal overdue debt now

amounts to a staggering R52.944 billion, up from R44.754 billion in March 2022, as illustrated in the graphic below[12].

[12] The Budget notes of February 2023 record this figure as having grown to R56.3 billion and is noted as being systemic challenge to the electricity industry as a whole.

Figure 2-7: Muncipality overdue debt to Eskom Holdings as at September 2022



Munics R'm	Apr-22 Growth	May-22 Growth	Jun-22 Growth	Jul-22 Growth	Aug-22 Growth	Sep-22 Growth	FY23 YTD Growth	FY22 YTD Growth	% Growth YoY
Non-Metros	647	1 085	1 123	98	1 827	1 742	6 522	4 938	32%
Metros	139	-47	1 435	537	-592	196	1 668	653	155%
Total Munics	786	1 038	2 558	635	1 235	1 938	8 190	5 591	46%

Eskom view per OU	Month growth R'm	YTD R'm Act growth R'm	Bud growth R'm	Var growth R'm	Actual growth as a % of YE budgeted growth	Budgeted YE growth R'm
GP	765	2 611	1 562	-1 049	139%	1 883
MP	759	2 201	1 775	-426	95%	2 309
FS	104	1 507	1 115	-392	86%	1 751
NW	264	1 000	410	-590	129%	775
EC	42	425	314	-111	76%	557
NC	-18	365	366	1	71%	517
WC	10	73	61	-13	110%	67
LP	15	62	74	12	41%	152
KZN	-3	-53	86	140	-24%	221
Total	1 938	8 190	6 150	-2 040	95%	8 618

Eskom view per OU	Sep-22 YTD Actual R'm Interest growth R'm	Capital growth R'm	Total growth R'm
GP	349	2 261	2 611
MP	401	1 800	2 201
FS	353	1 154	1 507
NW	124	876	1 000
EC	78	347	425
NC	104	260	365
WC	14	60	73
LP	10	52	62
KZN	16	-69	-53
Total	1 450	6 740	8 190

- Of the R1.9bn growth in Sept, Metros - R1 810m, R1.4bn paid late in October.
- This R6.8bn YTD growth (including Metro late payments) includes interest of R1.4bn.
- The Non metro arrears YTD growth is R6 522m, which is R1 584m (32%) higher than the YTD September period last financial year.
- The top 20 Defaulting Municipalities payment level - 30% for the month of September 2022 & 42% YTD - decreased from 47% (Mar-22 YTD).
- Payment level of Metropolitan Municipalities -96.7% September 2022 YTD & 98.7% September 2022 12MMA.

Source: Eskom Holdings, 2022

Municipalities are also failing to invest in their networks. Failures in electricity distribution network infrastructure investment were first highlighted in the detailed analysis presented in the Approach to Distribution Asset Management Report (ADAM), released by EDI Holdings in 2008. The updated ADAM report, commissioned by the DoE in 2014, demonstrated a further escalation in the maintenance, refurbishment and strengthening backlog, calculated at R68.1 billion and growing. Of the R68.1 billion, R35.85 billion of the backlog was apportioned to the Eskom distribution infrastructure and R 32.25 billion to municipal electricity infrastructure. CPI escalation brings this figure in 2022 rands to more that R100 billion.

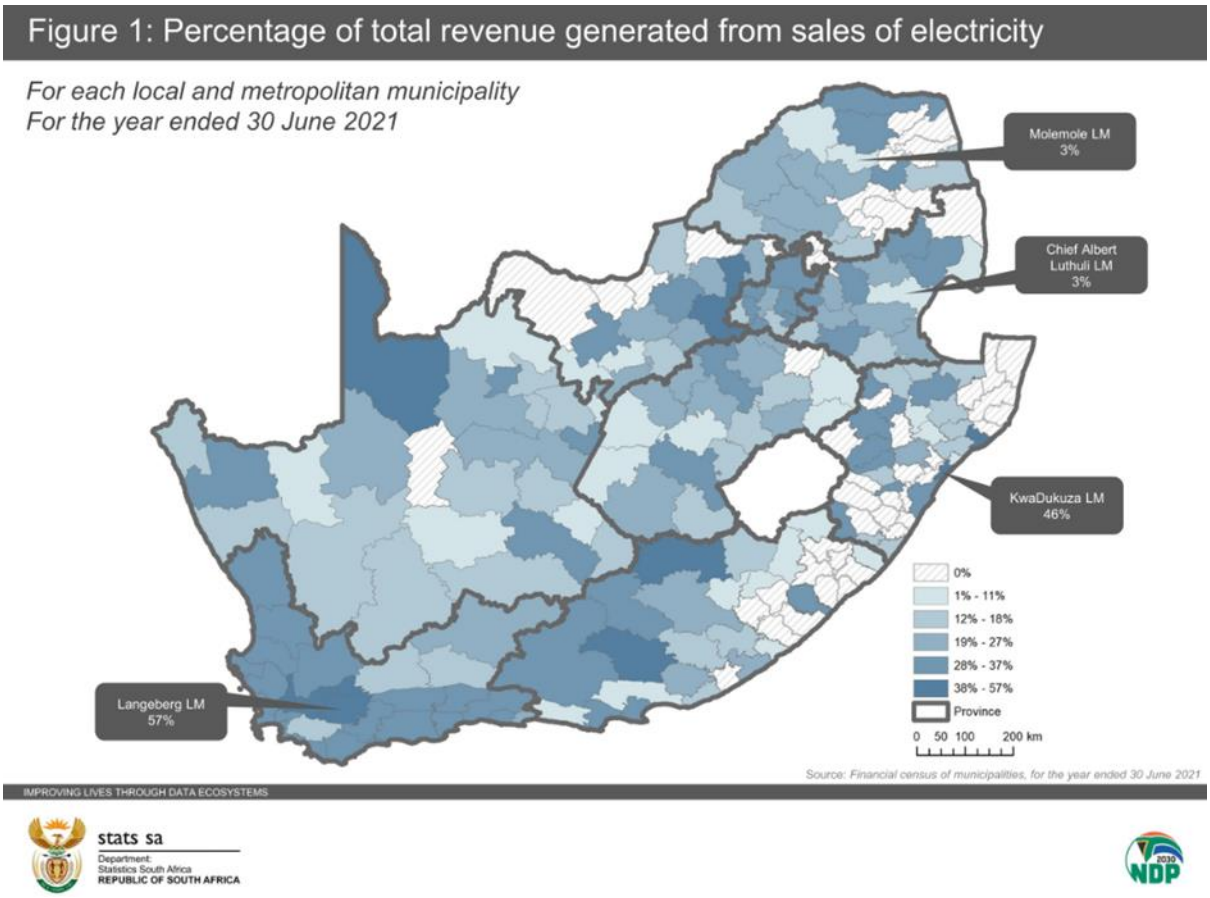
2.3.2 Municipal revenue stream from the sale of electricity

The analysis of data from Stats SA on municipal purchases and the sale of electricity provides a synopsis of this focus area[13].

For the year to 30 June 2021, the largest contributor to total municipal revenue of R453.65 billion (total revenue less deficit) was 'government transfers and subsidies' (30.7%), followed by 'electricity sales' (26.0%), which demonstrates that electricity was the largest contributor to service-related revenue, followed by 'property rates received' (16.6%) and 'water sales' (10.2%). However, 'electricity purchases' (21.7%) is also the second largest contributor to municipal total operating expenditure of R437.98 billion (total expenditure less surplus), with 'employee-related costs' (29.0%) topping the expenditure outflows. The percentage of revenue generated from the sales of electricity fluctuates widely by municipality, ranging from low single figure percentages through to above 50% of municipal income, as demonstrated in the Figure 2-8 below.

[13] Department of Statistics, South Africa, Financial Census of Municipalities for the year ended 30 June 2021.

Figure 2-8: Graphical representation of the percentage of revenue generated from the sales of electricty



Source: Statistics South Africa, 2021

In the 2020–2021 financial year, South African municipalities spent R95.1 billion to purchase electricity from Eskom. Municipalities sold this power to their own customers, generating R118.1 billion in revenue. The difference between these two represents a gross surplus of R23 billion (both utility operational cost and contribution to rates and taxes)– much needed funding that is often used to finance other municipal activities, rather than being invested in network improvements.

The Stats SA analysis of tariff increases over the past ten years points to average tariff increases outstripping inflation, but not yielding a commensurate growth in electricity sales; likely related to factors such as a changing (less profitable) customer mix, affordability constraints and alternative energy solutions opportunities, pointing to a longer-term sustainability concern. These trends are demonstrated in the below Figure 2-9.

Figure 2-9: Electricity tariff increases compared to sales growth

Municipal financial year (1 July to 30 June)	Nersa/Eskom municipal tariff increase	Average CPI inflation	Average increase in municipal electricity purchases	Average increase in municipal electricity sales
2010-2011	28.9%	3.8%	30.5%	25.0%
2011-2012	25.3%	5.8%	26.1%	20.2%

Municipal financial year (1 July to 30 June)	Nersa/Eskom municipal tariff increase	Average CPI inflation	Average increase in municipal electricity purchases	Average increase in municipal electricity sales
2012-2013	13.5%	5.6%	11.5%	8.6%
2013-2014	6.1%	6.0%	5.8%	5.0%
2014-2015	8.1%	5.2%	6.2%	5.7%
2015-2016	14.2%	5.6%	12.8%	10.6%
2016-2017	7.9%	6.1%	7.9%	6.5%
2017-2018	0.3%	4.5%	-1.8%	-1.1%
2018-2019	7.3%	4.6%	7.4%	6.2%
2019-2020	15.6%	3.7%	11.7%	6.7%
2020-2021	6.9%	3.5%	6.7%	4.0%

Source: Statistics South Africa, 2021

From the above, it is evident that the Eskom bulk price increases over the last decade have mostly exceeded CPI inflation, which is also reflected in the average bulk purchase price of the municipalities. Considering gross revenues, the difference between bulk purchases and declining sales clearly illustrates the long-term sustainability challenge of the municipal business. Further challenges in the municipal business are referenced in the remainder of this paper.

3 Municipal utility sustainability analysis

3.1 Introduction

A substantive update to this second version of the Status Quo report pertains to the success achieved in obtaining a data set of NERSA D Form submissions for all distribution licensees for the year 2020/21. The findings are based on an analysis of the data submitted by municipalities to NERSA in the D Forms, configured to the specific objective of the assignment, and interpreted by CPCS. The analysis aligns to the ToR requirement to develop a sustainability analysis of the municipalities that supply electricity in SA and to provide a performance ranking of these municipalities. Individual municipalities are identified in the analysis. The data has not been anonymised, guided by SALGA's requirement for identification and interpretation of specific municipality data, as directed by SALGA in the meeting with CPCS on 07 March 2023. The analysis is intended as a high-level snapshot of the performance of municipalities' electricity distribution business based on a limited number of indices, typically linked to measures such as tariffs, sales price, losses, net profit and utility size.

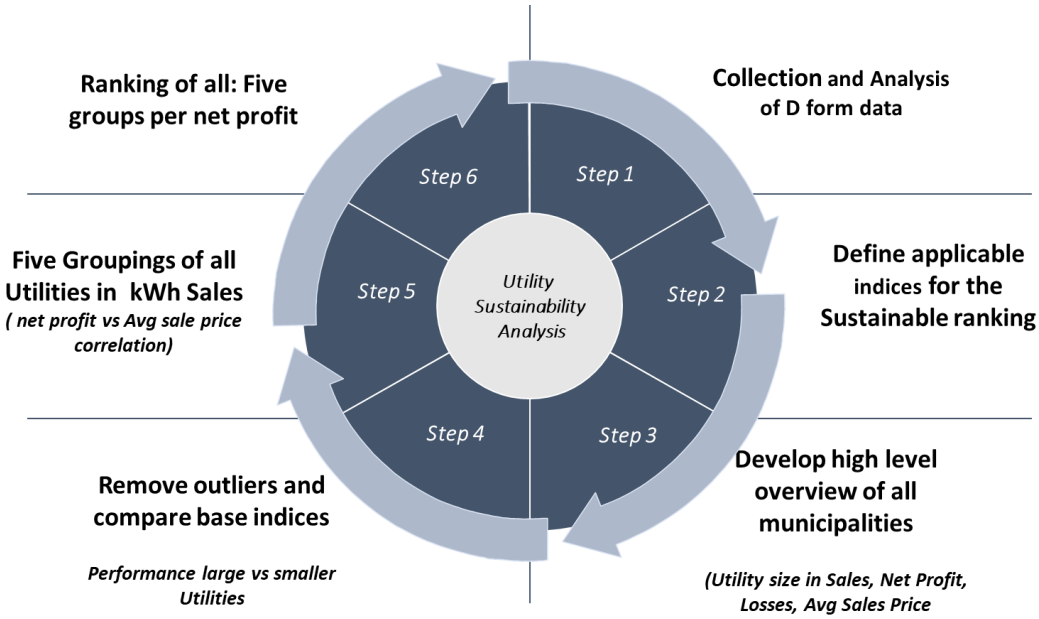
Confidence levels in the accuracy of some of the NERSA D Form data is a concern. Notwithstanding this concern, the data has been used for analysis in the format as submitted by the municipalities and accepted by NERSA. Performing a clean-up process of the full data set was not possible within the scope of this assignment. To mitigate inaccuracies, outliers were removed from the analysis in cases where these outliers materially impacted the results of the analysis. Obviously incorrect data (such as negative losses[14]), were also excluded from the analysis. Further, where specific data points were shown to be inconsistent with the data set, these inconsistencies have been highlighted in the analysis.

3.1.1 Methodology employed

Figure 3-1 provides an overview of the process followed to achieve the Utility Sustainability Ranking objective.

[14] Negative losses may be possible in a focused one-off collection programme where some of the arrears are collected. An assessment of the indices of the municipalities with negative losses indicated that this possibility was unlikely, and was not explored any further for the purpose of this assessment.

Figure 3-1: NERSA D Form ranking methodology



The process consisted of six steps:

- Step 1: Collection and analysis of D Form data – initial assessment of completeness and quality of the data set.
- Step 2: Definition of applicable indices for the sustainability ranking – informed by benchmark indices and data points in the D Form data set available for analysis.
- Step 3: Development of a high-level overview of all municipalities - comparative ranking of dimensions such as utility size, sales volume, average sales price, gross and net profit, and losses.
- Step 4: Removal of outliers and comparison againt base indices – compare performance of the larger vs smaller municipalities to determine trends.
- Step 5: Grouping of all utilities in categories based on kWh sales volume – performing net profit vs average sale price correlations.
- Step 6: Overall ranking of municipalities – categorised into five groups based on net profit performance.

The indices used in this analysis are shown in the below Table 3-1: Description of indices applied in the analysisTable 3-1.

Table 3-1: Description of indices applied in the analysis

	Indices	Description
1	Average selling rate (R/kWh)	Total revenue / Units sold
2	Billing Efficiency (%)	Units sold / Total units purchased
3	Manpower efficiency	Number of customers / Number of employees
4	Operating efficiency (R/kWh)	Operating cost / Units sold
5	Losses	(Total kWh Purchases- Total kWh Sales)/ Total kWh Purchases

	Indices	Description
6	Gross Profit (%)	(Revenue from sales - Bulk purchase expense) / Total Revenue from sales
7	Net Profit (%)	(Revenue from sales- Total expenditure) / Total Revenue from sales
8	Bulk Purchase % of Total OPEX (%)	Bulk Purchase cost / Total OPEX

This high-level analysis needs to be extended into further deeper dive studies, typically related to more detailed efficiency and reliability indices, to corroborate these preliminary findings. This more comprehensive electricity distribution industry analysis is recognised by industry stakeholders as a requirement, but is outside the scope of this assignment. However, for the purpose of this assignment, the process followed, and the level of analysis, is adequate to reach a broad, key-data-informed, understanding of the current level of sustainability of all licensed municipalities in South Africa.

The findings of the analysis are structured into categories of focus in each of the sections below, followed by overall conclusions.

3.2 Utility grouping by sales and customer numbers

The NERSA data consists of records for the 167 municipal electricity distribution license holders. The 167 municipalities were separated out into five distinct groupings, based on annual sales volume in GWh. This allowed an analysis of the distinct characteristics of five separate groups, based on sales volume. The figure below shows the five groupings, the number of utilities in each group, the sales volume of that group and percentage of the total sales which that group holds, as well as the customer numbers and percentage of total customer numbers which that group holds.

Figure 3-2: Utility grouping by sales volume in GWh

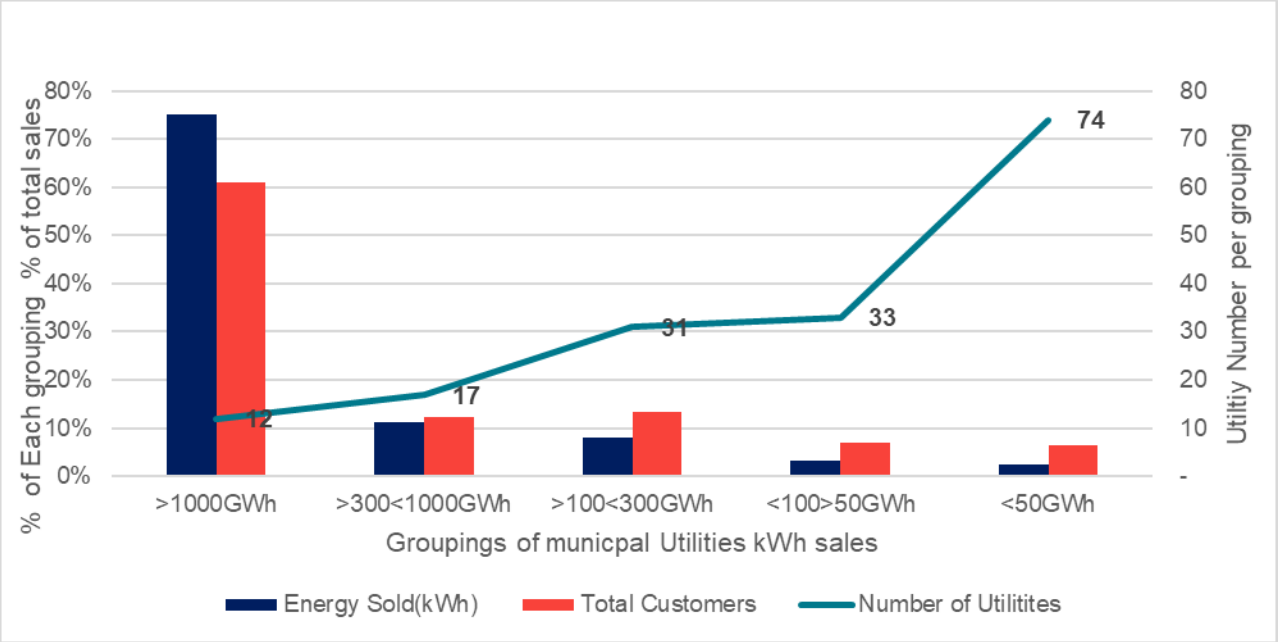
Groupings Indices Analysis

Utility Grouping	Average of Net Profit	Average of Losses efficiency %	Average of Avg selling rate (R/kWh)	Average of Operating efficiency (c/kWh)
>1000Gwh	23.28%	9.99%	1.96	R0.24
>300<1000GWh	15.34%	7.07%	1.80	R0.20
>100<300GWh	7.04%	11.18%	1.74	R0.26
<100>50GWh	-3.86%	16.77%	1.79	R0.34
<50GWh	-40.43%	23.74%	1.74	R0.52

Source: NERSA, 2021

The bar chart representation shown in Figure 3-3 clearly illustrates the dominance of the 12 largest utilities in the total municipal licensee group, who achieve 75% of the total sales volume and serve 61% of the total customer base. Viewing the top two categories of sales volume as a combined group, these 29 utilities with individual sales volume above 300 GWh each, achieve 86% of the sales volume and serve 73% of the total customer base. In comparison, the utility grouping with individual utility sales of less than 50 GWh per annum each, comprises of 74 utilities, who achieve only 2% of the sales volume and serve 6% of the total customer base.

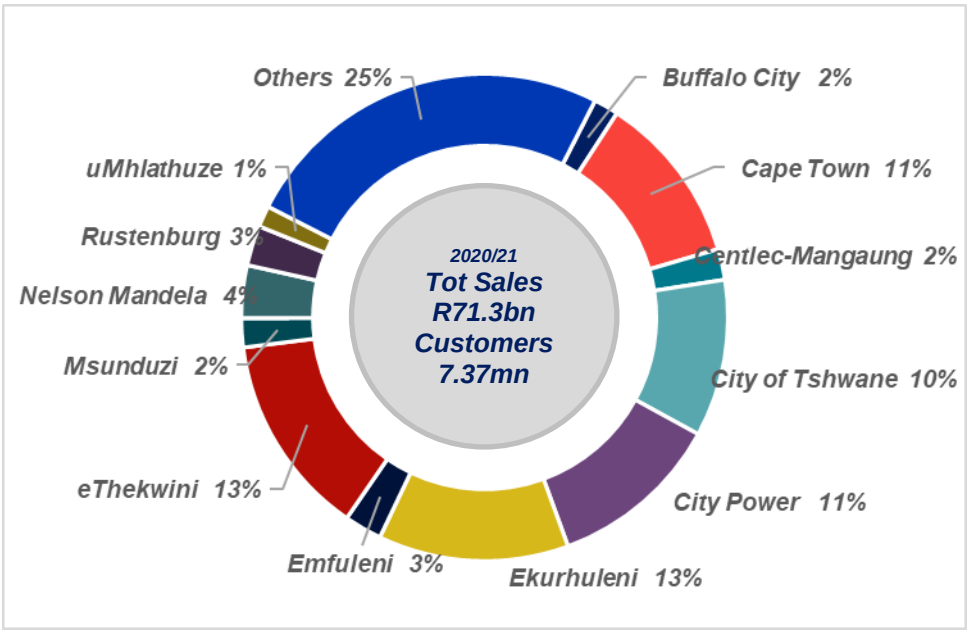
Figure 3-3: Overview of the Utility Grouping in Sales and Customer Numbers



Source: NERSA, 2021

The largest municipalities by sales volume are identified in Figure 3-4. As can be expected, the metropolitan municipalities dominate, with City Power, Cape Town, eThekwini and Ekurhuleni being the biggest utilities by sales volume.

Figure 3-4: Largest muncipalities by sales volume



Source: NERSA, 2021

3.3 Utility size performance analysis

Analysis of the correlation between utility size and selected performance criteria was performed to assess whether utility size is a determining factor in achieving superior performance. Outliers were removed from the sample for this analysis, to demonstrate trends and correlation more clearly. Figure 3-5, Figure 3-6 and Figure 3-7 provide an overview of this analysis, to better understand the relationships between size and performance. The material observations from this analysis are discussed in relation to each figure below.

In Figure 3-5, three dimensions per utility are illustrated:

- The vertical axis shows the percentage losses;
- The horizontal axis shows the percentage net profit;
- The size of the bubble indicates the total sales volume of the utility.

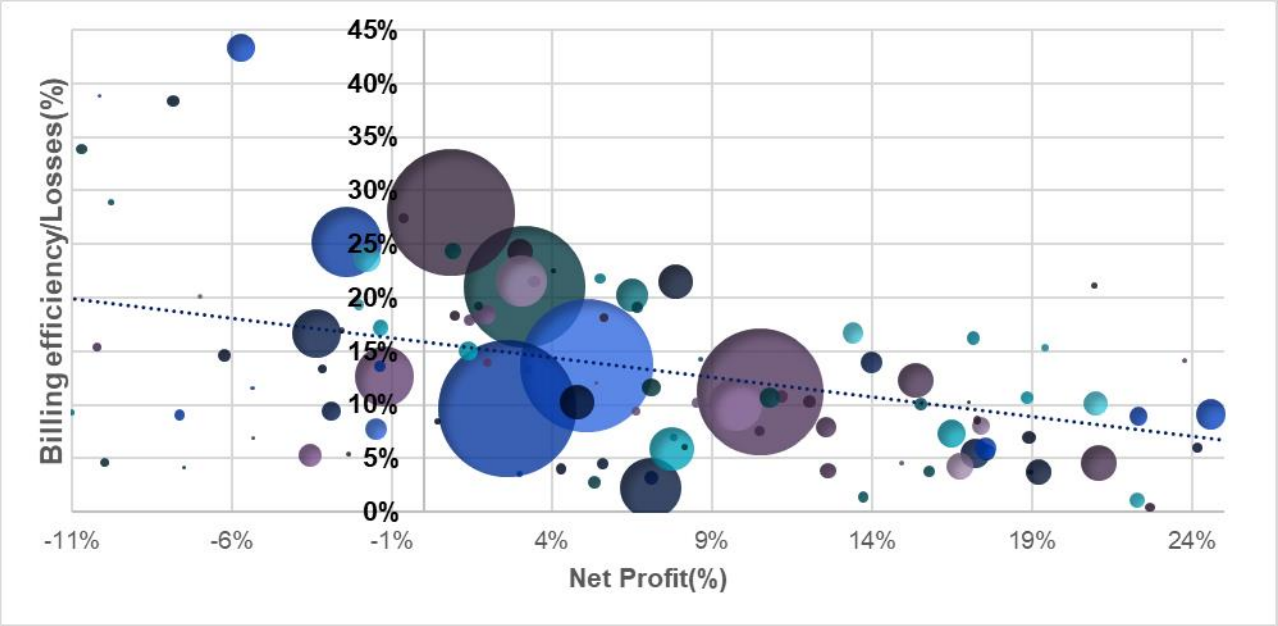
The figure shows that the largest municipalities are clustered in a net profit range of just negative to a positive 10%. However, the range of losses is greater in this group and high losses appear to impact on the extent of profitability. These preliminary observations have been used to inform the more detailed net profit ranking assessment shown in section 3.5.

The net profit performance also suggests that a statistically significant number of smaller municipalities appear to outperform the larger municipalities. The net profit performance of these smaller municipalities is generally not achieved by escalating the sales price, as there is a strong correlation to average sales price, as demonstrated in Figure 3-6. Losses also appear to be better managed in this group of smaller municipalities with a high net profit return.

It further appears that in many cases a higher sales price (above the group average as a benchmark), does not mitigate against high losses, irrespective of sales volume. In such instances, losses impact strongly on net profit quantum, indicating severe illiquidity, utility sustainability constraints and operational management challenges.

The trend line serves as a visual validation of the observations noted above, demonstrating the strong correlation between high losses and a negative net profit, pointing to the importance of actively managing losses and investing in initiatives to reduce losses.

Figure 3-5: Comparison of Utility size against Losses and Net Profit.



Source: NERSA, 2021

In Figure 3-6, three dimensions per utility are illustrated, with the variable shown on the vertical axis changing from losses in Figure 3-5, to average sales price in this figure:

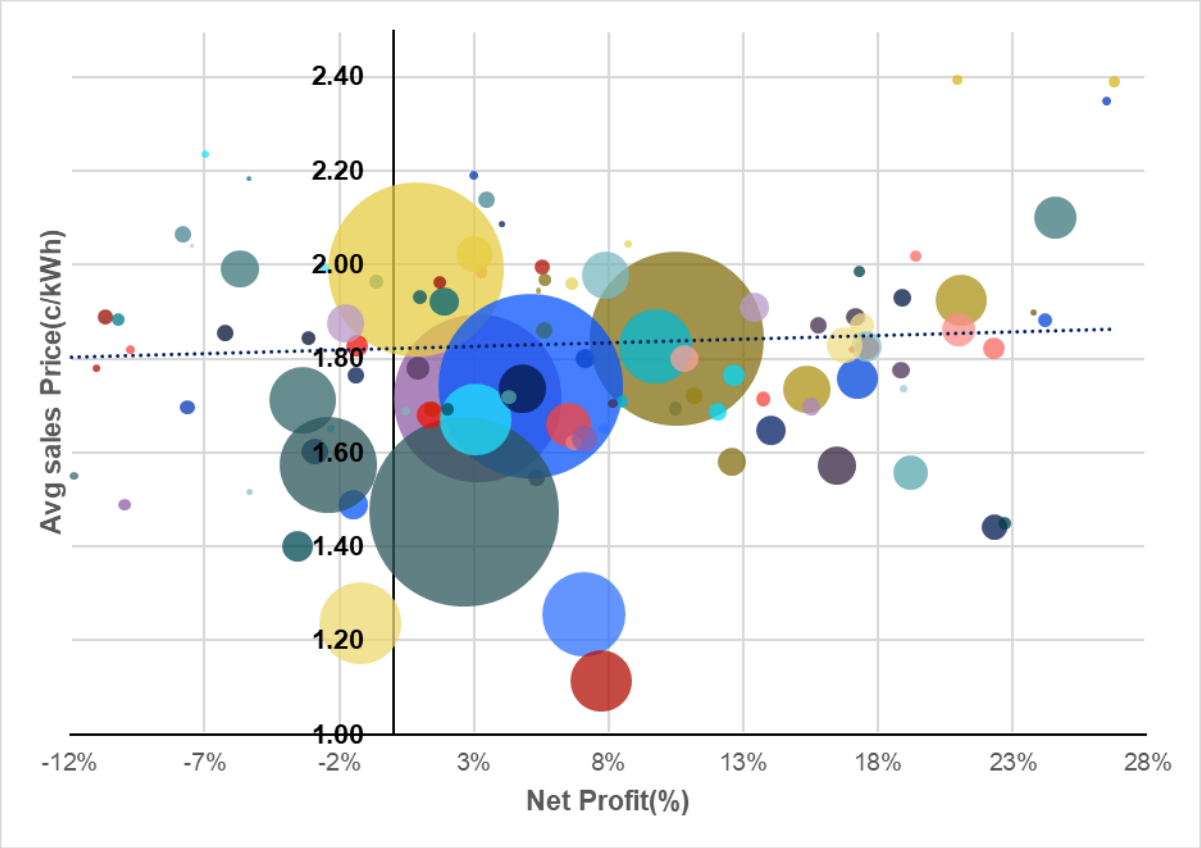
- The vertical axis shows the average sales price;
- The horizontal axis shows the percentage net profit;
- The size of the bubble indicates the total sales volume of the utility.

Consideration of an average sales price demonstrates that a higher than average sales price is no guarantee of achieving a higher net profit. Once again, the impact of high losses appears to have a significantly larger impact on net profit performance than a higher sales price. This is particularly evident for the utilities clustered around a R2.00 per kWh price in Figure 3-6, which only yield a small positive net profit. Conversely, there are several utilities that realise a net profit of around 8% despite having a much lower than average sales price. In a number of these instances, customer mix is a contributory factor to this positive performance, but effective management of business operations is still required to achieve this performance. Further, the figure demonstrates that smaller municipalities, who have a higher-than-average net profit do not necessarily sell at a higher average price to achieve this positive performance.

The trend line demonstrates that the average sales price across the 167 utilities of around R1.85 is relatively constant, irrespective of whether a loss or positive net profit return is achieved. This data seems to suggest that the perception that smaller municipalities sell at a significantly higher price on average than larger municipalities, does not hold true. In practice pricing for some customer classes would be above or below the average sales price in each municipality, and thus the average sales price is not necessarily reflective of the average cost per customer class, based on individual customer class tariff structures. The impact of a low or high load factor must also be considered in the average cost that an individual customer may experience. Further, if a utility has a higher than average industrial customer base, it is possible to achieve a lower average tariff, notwithstanding higher tariffs for some (non-industrial) customer classes.

A more detailed analysis of net profit is shown in section 3.5 of this report.

Figure 3-6: Comparison of utility size against average sale price and net profit



Source: NERSA, 2021

In Figure 3-7, a comparison analysis of net profit, energy losses, percentage bulk purchases and average sales tariff is shown. The figure demonstrates the correlation between operational spend, losses and net profit. In order to analyse the correlations, 25 outlier municipalities were removed from this analysis, typically representing the group with losses above the 10% benchmark.

NERSA publishes an annual Determination of the Municipal Tariff Guideline and the Revision of Municipal Tariff Benchmarks for each financial year. The Guideline for the 2022/23 financial year includes a table that documents the benchmarked performance indicators and an acceptable range associated with each indicator[15]. The benchmark for total cost of bulk purchases as a percentage of total expenditure is specified at 75%, with an acceptable range specified as 58% to 78%. Notwithstanding this broad range, the principle at play here is that if bulk purchases exceed the upper end of the range, the availability of cash to operate the utility is constrained, resulting insufficient funds to manage losses, ultimately leading to a low net profit. At the lower end of the range, where bulk purchases are less than 60% of the total expenditure, operational costs are disproportionately high, suggesting a possibility that operational expenditure is misappropriated to cross subsidise other services in the municipality, rather than focus on utility performance. For the purposes of this analysis, and considering the benchmark indicator in parallel with the other

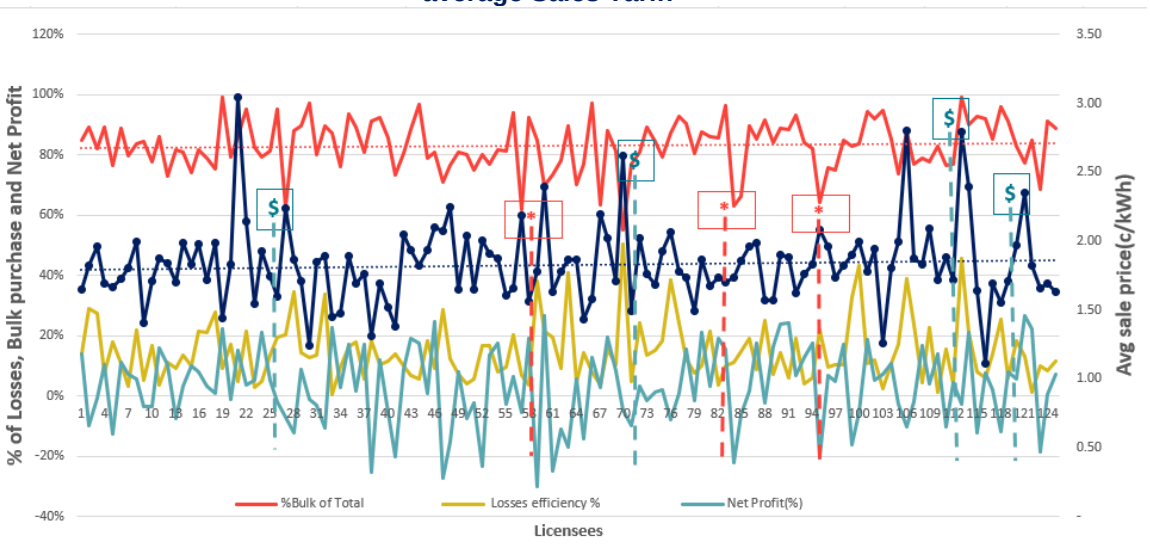
[15] NERSA Determination of the Municipal Tariff Guideline and the Revision of Municipal Tariff Benchmarks for the 2022/23 financial year, Table 21 on page 11.

indicators applied, our view is that a higher range should be tolerated above the 75% benchmark, and a lower range tolerated below the benchmark. The application of some level of flexibility of the range in the evaluation of sustainability is further illustrated in the more detailed analysis in Section 3.5. Indicators are not an exact science, and a level of interpretation based on industry experience and insights into the operations of the municipal electricity utilities has been applied in reporting on the potential for sustainable business operations.

In Figure 3-7, four instances are highlighted with a '$' sign to validate the observation that in many cases, a higher sales price (above the group average as a benchmark) does not mitigate against high losses. In such instances, losses impact strongly on net profit quantum, indicating severe illiquidity, utility sustainability constraints and operational management challenges.

Three instances are highlighted in the Figure 3-7 with a '*' sign to validate the observation that where bulk purchases are very low and operational costs are very high, losses are usually high and net profit is low (or negative). This situation is indicative of non sustainable management practices, including cost transfers from the muncipality to the electricity division in excess of the ringfenced costs that should be legitimately apportioned to the electric utility business within the municipality.

Figure 3-7: Comparison between Net Profit, Energy Losses, Percentage of Bulk Purchases and average Sales Tariff



Source: NERSA, 2021

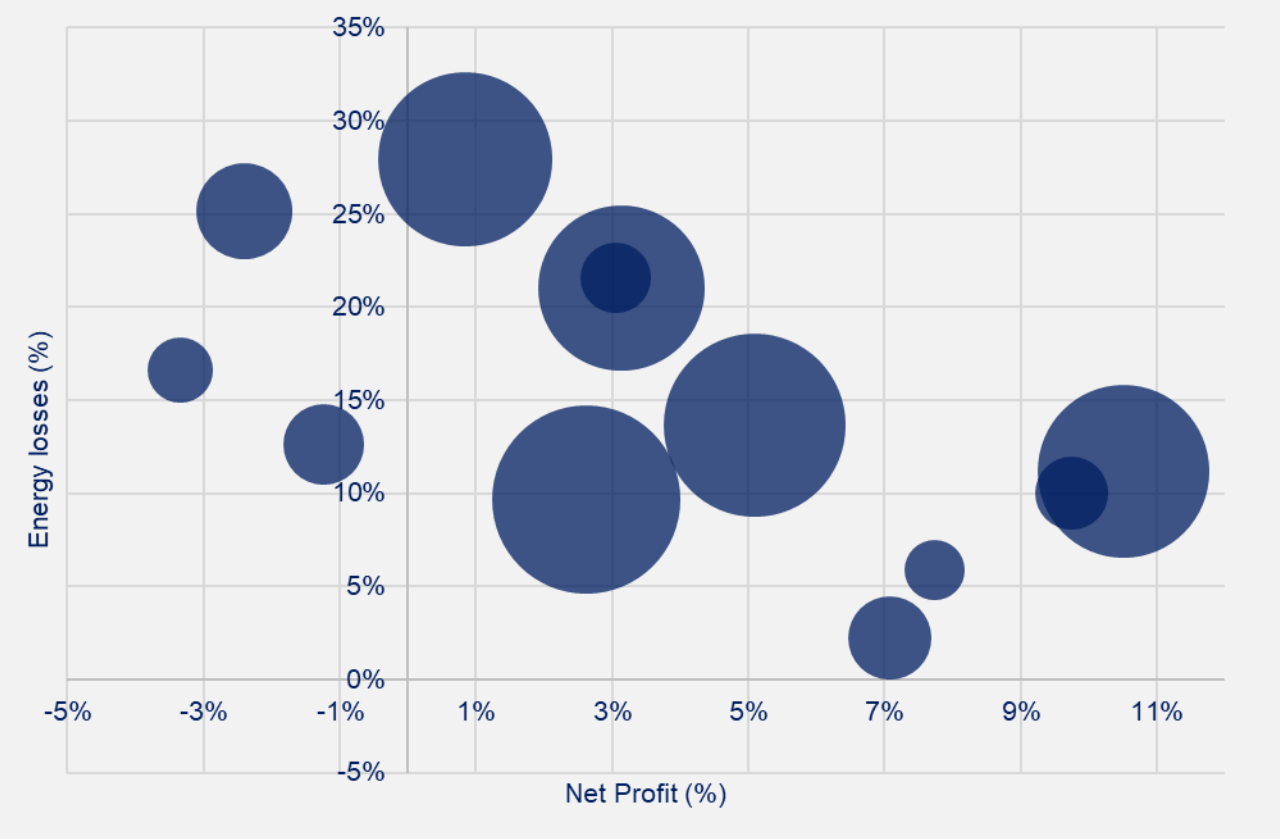
3.4 Comparison of profit/loss per annual sales volume in the GWh groupings

An analysis of the comparative profit/loss of all utilities in each of the annual sales volume groupings (excluding outliers) was done to identify whether any trends and findings emerged that extended beyond the Utility Size Performance Analysis findings shown above. The findings from the group with annual sales volume of more than 1000 GWh per annum each is indicative and consistent with the findings in all annual sales volume groupings.

Results for the utilities with annual sales volume of more than 1000 GWh per annum each are shown below. The charts for the utility groupings with lower sales volumes (<1000GWh and >300GWh,<300GWh and >100GWh, >50GWh and <100Gwh and <50GWh) are shown in Annexure B, for completeness of records.

Figure 3-8 provides a visual illustration of the comparison of the Billing Efficiency/Losses and Net Profit of the municipalities in this group. Billing efficiency is the difference between the amount of electricity received by a distribution company from the transmission company and the amount of electricity for which it invoices its customers. Billing efficiency is expressed as an inverse percentage to that of losses i.e., the higher the percentage, the more efficient the utility is at managing losses through the whole value chain. A positive correlation between billing efficiency/losses and net profit is evident for this group, suggesting that active management of losses yields a positive return in growing the net profit of the utility.

Figure 3-8: Utility Sales Volume: Larger than 1000 GWh per annum – comparison of Billing Efficiency and Net Profit

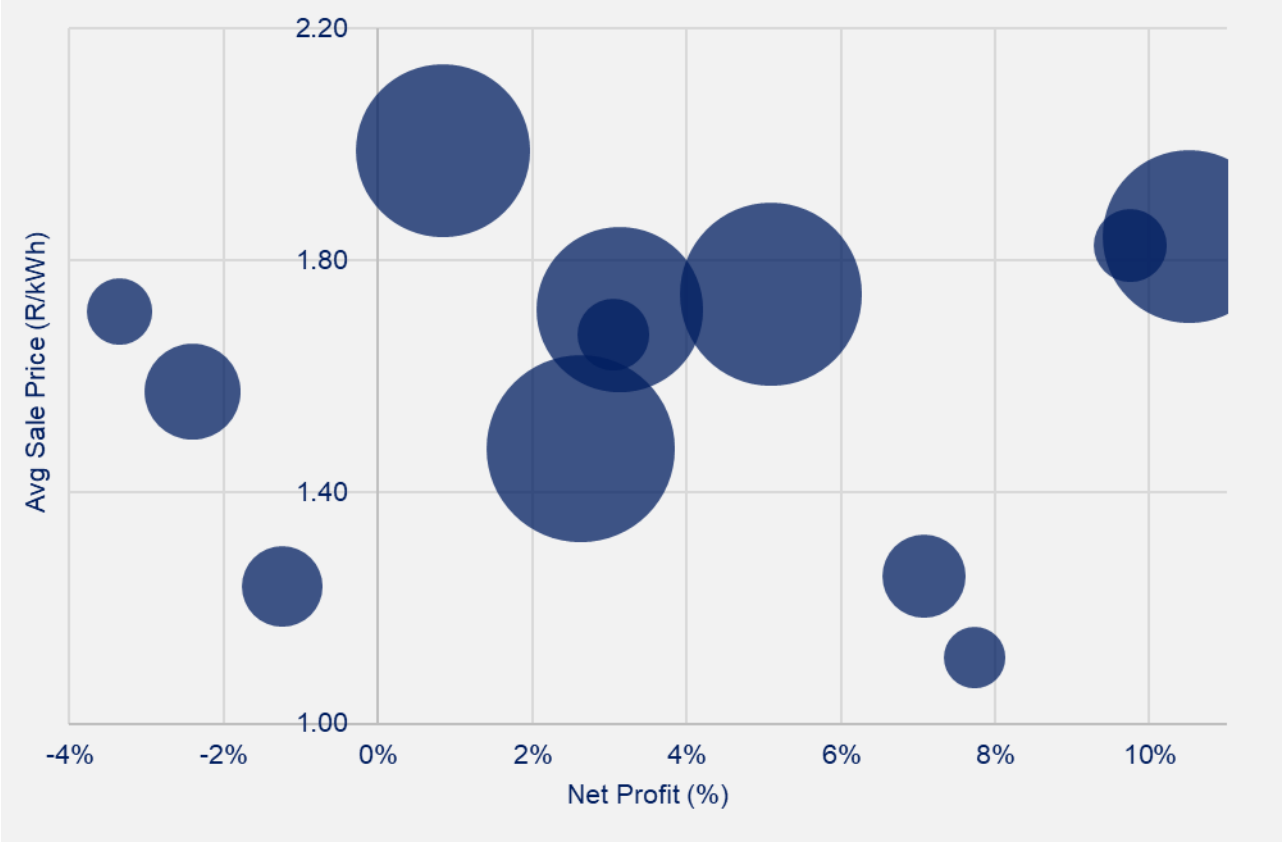


Source: NERSA, 2021

Figure 3-8 shows the average selling price relative to the net profit per utility in this group. The graphic illustrates that not all large utilities perform well. Several have low or negative returns, even with a high average tariff, due to their operational practices[16]. The performance of several utilities with a low average selling price and a higher net profit is attributable in part to the customer mix of these specific utilities.

[16] See section 3.5 of this report for the detailed sustainability performance analysis of the 167 utilities, grouped by percentage net profit performance.

Figure 3-9: Utility Sales Volume: Larger than 1000 GWh per annum – comparison of Average Sale Price and Net Profit

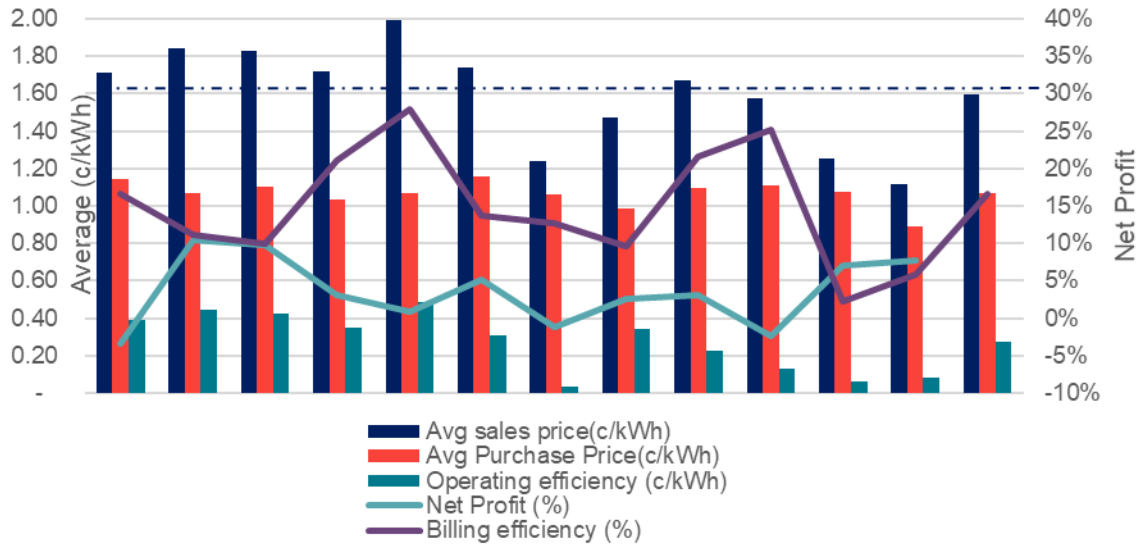


Source: NERSA, 2021

Figure 2-9 provides a composite view of the performance measures. It is evident that utilities with losses greater than the industry average for this class achieve a correspondingly low net profit return (also illustrated in Figure 3-7 above), notwithstanding an above average sales price in some instances. Several of the utilities' operating efficiency spend is below the average spend for this indicator, with an above average manpower ratio, indicating that the availability of resources and other operational investments may be too low to combat high losses. In general, the findings suggest that poor management of losses has negative impact on net profit, that is not improved by a higher-than-average sales price. Lower operating efficiency (i.e., low spend) correlates with high losses, as does high customer/manpower numbers (above the industry average).

This would suggest that in the case of high losses, monetary and manpower resources are not being allocated optimally to address the high losses. The cost of investing in loss mitigation strategies is thus likely to be lower than the negative impact of high losses on net profit, providing a case for taking concerted action on high losses. Industry losses are well in excess of the NERSA benchmark for losses of 10% (range 5% to 12%), as documented in the Determination of the Municipal Tariff Guideline and the Revision of Municipal Tariff Benchmarks for the 2022/23 financial year. Expressed as a financial value, based on the D Form data, losses of > 10% in the 2021/22 data amounted to R7,049,258,656.

Figure 3-10: Comparison between avg sales, purchases,operating, billing, manpower efficiency & profits (for utilty sales larger than 1000 GWh per annum)



Source: NERSA, 2021

3.5 Net Profit Ranking Comparison as an indicator of Sustainability

The final area of analysis related to a comparison of all 167 licensed municipalities electric utility performance, categorised into five net profit groups. The purpose of this high-level ranking was to determine the net profit performance of all the municipalities, rank them accordingly in groups and then analyse their performance indices to provide insight into whether the net profit performance is a sound indicator of sustainability. Net profit performance must be viewed within the context of the other performance indicators. For each category, a list of licensees is provided in a table, together with actual performance against a suite of performance measures. Each of the accompanying indices are colour coded to indicate their weight in the group and to highlight the meaning of the specific indices in relation to the ranking of net profit.

The green colour code in the group number block, assigned to selected municipalities per net profit ranking group, provides a quick reference to an optimistic assessment of sustainability, subject to sustained performance at least at the level of this assessment. A short analysis of each table serves to interpret the performance data set of each group. The outcome provides insight into the current sustainability of each municipal electricity distributor in South Africa and their readiness for market reform.

Note that the green colour code serves only as an indicator of potential sustainability, within the constraints of the data set and scope of this analysis. A green coding is no guarantee of sustainability, and conversely, failure to achieve a green coding is not a determinant that failure will immediately follow. The indicators suggest that at least several of the utilities that have not received the green coding could improve their performance. Focused and sustained intervention in areas such as loss management, effective tariff management informed by up-to date cost of supply

studies, and enhanced operations management, including benchmarked investment in maintenance and refurbishment, could result in improved sustainability.

3.5.1 Group 1: Net profit of >20%

No	Province	*Losses %*	*Avg Purchase rate (c/kWh)*	*Avg selling rate (R/kWh*	*Net Profit*	*Operating efficiency (c/kWh)*	*%Bulk/Total*
1	Northern Cape	21%	1.34	2.39	21%	0.19	90%
2	North West	21%	0.96	2.39	27%	0.53	70%
3	KwaZulu-Natal	13%	1.16	2.35	26%	0.39	77%
4	North West	9%	1.16	2.10	25%	0.30	81%
5	Western Cape	5%	1.15	1.92	21%	0.32	79%
6	KwaZulu-Natal	14%	1.10	1.90	24%	0.16	89%
7	Free State	6%	1.18	1.88	24%	0.17	88%
8	Western Cape	10%	1.16	1.86	21%	0.18	87%
9	Mpumalanga	1%	1.19	1.82	22%	0.22	85%
10	Limpopo	0%	0.97	1.45	23%	0.14	87%
11	Northern Cape	9%	1.01	1.44	22%	0.01	99%

Commentary:

- The apparently high profit levels can be misleading as the utilities ranked 1, 2 and 3 have a very high sales tariff, and the first two have poor performance in areas such as losses. Achieving a high net profit simply by escalating tariffs and not addressing operational performance leaves the utility open to customer defection as PV penetration increases. The high tariff, especially when coupled with poor service, can result in substantial deflection of profitable customers from the grid. Coupled with this risk, utility 2 and 11 are not meeting operational investment benchmarks[17], which is not sustainable over time as the network will deteriorate rapidly. For instance, it appears that utility 2 has a high operational spend, but this spend is outside of the NERSA's benchmark limits (for a utility of that size) and may probably include a high level of internal cost allocation rather than all spend on operational requirements. Conversely, utility 11 spends almost nothing on operational requirements.
- Utility 4 to 8 are marked in green to indicate a correlation between net profit performance and other performance measures, and investment in operations and billing efficiencies are aligned to typical benchmarks and can be considered to have the correct characteristics for sustainably, when measured against the indices contained in the table. Thus, the probability of sustainability in the longer term is greater for this group than those utilities that secure a high net profit, but don't manage losses or invest in operations.

[17] Best practices and the NERSA annual performance guidelines stipulate certain operational categories of expenses for municipal distributors. This high level analysis indicates where these utilities are outside, or in the lower or higher percentile, of those categories. (See section 3.3 of this report for further explanations).

3.5.2 Group 2: Net profit of <20%>10%

No	Province	*Losses efficiency %*	*Avg Purchase rate (c/kWh)*	*Avg selling rate (R/kWh*	*Net Profit*	*Operating efficiency (c/kWh)*	*%Bulk/Total*
1	Western Cape	11%	1.07	1.84	11%	0.44	73%
2	Western Cape	11%	1.22	1.80	11%	0.24	85%
3	Western Cape	11%	1.21	1.72	11%	0.17	89%
4	KwaZulu-Natal	10%	1.23	1.69	12%	0.11	92%
5	Limpopo	8%	1.23	1.58	13%	0.04	97%
6	Western Cape	4%	1.25	1.76	13%	0.25	84%
7	Eastern Cape	17%	1.06	1.91	13%	0.38	77%
8	Western Cape	1%	1.21	1.71	14%	0.25	83%
9	KwaZulu-Natal	14%	1.03	1.65	14%	0.21	85%
10	Northern Cape	5%	2.12	3.04	15%	0.36	86%
11	Gauteng	12%	1.17	1.73	15%	0.14	91%
12	Limpopo	10%	1.24	1.70	16%	0.05	96%
13	Western Cape	4%	1.31	1.87	16%	0.22	86%
14	KwaZulu-Natal	7%	1.02	1.57	16%	0.21	84%
15	Western Cape	4%	1.15	1.83	17%	0.32	79%
16	Western Cape	10%	1.15	1.82	17%	0.23	85%
17	Western Cape	-4%	1.22	1.53	17%	0.10	92%
18	Northern Cape	16%	1.22	1.89	17%	0.10	93%
19	Western Cape	5%	1.12	1.76	17%	0.28	81%
20	Eastern Cape	9%	1.28	1.99	17%	0.24	85%
21	Western Cape	8%	1.16	1.87	17%	0.28	82%
22	Western Cape	6%	1.16	1.83	18%	0.27	82%
23	KwaZulu-Natal	6%	1.38	1.82	18%	0.05	97%
24	KwaZulu-Natal	11%	1.21	1.78	19%	0.08	94%
25	Western Cape	7%	1.29	1.93	19%	0.18	88%
26	KwaZulu-Natal	4%	1.16	1.74	19%	0.20	86%
27	Western Cape	4%	1.12	1.56	19%	0.10	92%
28	Free State	15%	1.21	2.02	19%	0.20	88%

Commentary:

- The net profit of this group is lower than the previous group and is typical of the acceptable net profit range prescribed by regulators.
- Utility,18 and 28 have losses in the higher order of this group but are still within benchmarking limits. Tariffs of Utility 10 and 28 are too high.
- Utility 10 and 20 have high tariffs that contribute to their profit level. The profit level is thus not necessarily an indication of excellence in utility practices.

- Utility 5,12, 18, 23 and 24, are not spending enough on operations, leading to sustainability risks in the longer term.
- Utility 27 needs to spend more on operations, despite having a good billing efficiency (low losses) figure.
- The data error of sales being greater than purchases for Utility 17 has resulted in this utility's performance not being considered.
- 15 of the utilities in this category are marked in green to indicate a correlation between net profit performance and other performance measures, and investment in operations and billing efficiencies are aligned to benchmarks. The probability of sustainability in the longer term is greater for this group than those utilities that secure a high net profit, but do not manage losses or invest in operations.

3.5.3 Group 3: Net profit of <10%>5%

No	Province	*Losses %*	*Avg Purchase rate (c/kWh)*	*Avg selling rate (R/kWh*	*Net Profit*	*Operating efficiency (c/kWh)*	*%Bulk/Total*
1	Eastern Cape	22%	1.24	1.99	6%	0.31	84%
2	Free State	5%	1.18	1.86	6%	0.52	70%
3	KwaZulu-Natal	18%	1.26	1.97	6%	0.32	83%
4	KwaZulu-Natal	20%	1.16	1.66	7%	0.10	94%
5	Mpumalanga	9%	1.26	1.96	7%	0.44	76%
6	Mpumalanga	19%	1.14	1.62	7%	0.10	93%
7	North West	2%	1.08	1.26	7%	0.06	95%
8	Western Cape	12%	1.19	1.63	7%	0.17	89%
9	Western Cape	3%	1.29	1.80	7%	0.34	80%
10	KwaZulu-Natal	6%	0.89	1.11	8%	0.08	92%
11	Western Cape	7%	1.14	1.65	8%	0.29	81%
12	Mpumalanga	22%	1.17	1.98	8%	0.33	82%
13	KwaZulu-Natal	6%	1.34	1.70	8%	0.14	91%
14	North West	10%	1.14	1.71	9%	0.29	81%
15	Eastern Cape	14%	1.20	1.71	9%	0.17	89%
16	Northern Cape	10%	1.36	2.04	9%	0.36	81%
17	Free State	10%	1.10	1.83	10%	0.42	74%
18	Mpumalanga	-21%	1.17	1.28	10%	0.19	84%
19	Western Cape	8%	1.25	1.69	10%	0.17	89%

Commentary:

- This group is performing well as a whole, and the probability of sustainability based on the indices is good, which is surprising given that apart from utility 7,10 and 17, the group consists mostly of smaller municipalities. All 19 utilities in this group have a positive sustainability profile, albeit with several borderline cases.
- Utility 1,4 and 12 have relatively high losses but within control limits, although above NERSA's benchmark and 1 has a higher tariff.
- Utility 16 has a high average tariff, but other indicators align well to the benchmarks.
- Utility 7 and 10 have very low tariffs but have an exceptionally good customer mix, with large industrial customers, enabling the achievement of a reasonable net profit with low tariffs.
- Utility 4,6 and 7 have a very low operations spend, and 7 is likely to experience sustainability problems in the longer term if the trend continues.
- Utility 18 has a challenge with billing data.
- Utility 2 appears to have a high operational spend relative to the benchmark. Given that all performance indicators are positive, it is possible that this cost relates to the fact that this utility operates as a concession.

3.5.4 Group 4: Net profit of <5%>0%

No	Province	*Losses efficiency %*	*Avg Purchase rate (c/kWh)*	*Avg selling rate (R/kWh*	*Net Profit*	*Operating efficiency (c/kWh)*	*%Bulk/Total*
1	Eastern Cape	9%	1.40	1.69	0%	0.15	91%
2	Gauteng	28%	1.07	1.99	1%	0.49	75%
3	Limpopo	24%	1.24	1.78	1%	0.13	93%
4	Eastern Cape	18%	1.23	1.93	1%	0.40	79%
5	Free State	15%	1.19	1.68	1%	0.26	84%
6	Northern Cape	18%	1.22	1.69	1%	0.18	89%
7	Northern Cape	19%	1.40	1.96	2%	0.20	90%
8	Gauteng	18%	1.22	1.92	2%	0.39	79%
9	KwaZulu-Natal	14%	1.22	1.69	2%	0.24	85%
10	KwaZulu-Natal	10%	0.99	1.48	3%	0.34	76%
11	KwaZulu-Natal	4%	1.30	2.19	3%	0.78	63%
12	Free State	24%	1.20	2.02	3%	0.37	81%
13	KwaZulu-Natal	22%	1.09	1.67	3%	0.23	86%
14	Gauteng	21%	1.03	1.72	3%	0.35	79%
15	Free State	13%	1.35	1.98	3%	0.36	81%
16	North West	21%	1.54	2.14	3%	0.10	95%
17	Eastern Cape	22%	1.21	2.09	4%	0.44	78%
18	Western Cape	4%	1.21	1.72	4%	0.38	77%
19	Limpopo	10%	1.11	1.74	5%	0.41	75%

No	Province	Losses efficiency %	Avg Purchase rate (c/kWh)	Avg selling rate (R/kWh	Net Profit	Operating efficiency (c/kWh)	%Bulk/Total
20	Gauteng	14%	1.16	1.74	5%	0.31	81%
21	Eastern Cape	3%	1.17	1.55	5%	0.26	82%
22	Northern Cape	12%	1.49	1.95	5%	0.15	92%

Commentary:

- 12 of the 22 utilities in this group appear to be doing well operationally and are marked in green.
- 2 utilities are in a very bad state, with high losses, high tariffs and a large operational spend, which indicate inefficiencies that are not being addressed.
- Almost half of the utilities in this group are on the verge of going into the negative if current performance is not addressed. Despite the low net profit margin, other indicators suggest that at least several of the utilities marked as green could improve sustainability through focused intervention.
- Utility 2, 11,12,16 and 17 have only managed to make a positive net profit because of a high tariff.
- Utility 2, 12,16 and17 have high losses, whilst 1, 3, 16 and 22 do not have sufficient operational spend. Given the marginal net profit position, these utilities are likely to not be sustainable in the longer term.
- Utility 2, 11 and 19 have a high operational spend. However, for utility 2, this investment does not yield a benefit in improving losses at all. For utility 11 and 19, the high costs may indicate large un-ringfenced cross subsidies to other municipal departments. However, for utility 19 other indices are still good.

3.5.5 Group 5: Net profit of <0%

No	Province	Losses efficiency %	Avg Purchase rate (c/kWh)	Avg selling rate (R/kWh	Net Profit	Operating efficiency (c/kWh)	%Bulk/Total
1	KwaZulu-Natal	79%	1.49	1.38	-417%	0.23	97%
2	Eastern Cape	20%	1.57	1.10	-235%	1.70	54%
3	Northern Cape	6%	1.58	0.80	-182%	0.57	75%
4	Free State	20%	1.34	1.85	-155%	3.05	35%
5	Northern Cape	15%	1.58	1.05	-119%	0.45	81%
6	Mpumalanga	23%	1.42	1.13	-114%	0.57	77%
7	North West	59%	1.00	2.10	-97%	1.71	59%
8	Northern Cape	21%	1.57	1.60	-90%	1.06	65%
9	North West	5%	1.69	2.43	-89%	2.81	39%
10	Eastern Cape	22%	1.19	1.52	-83%	1.27	54%
11	Mpumalanga	35%	1.20	1.40	-78%	0.63	75%
12	Gauteng	51%	1.62	2.16	-75%	0.47	88%
13	Free State	11%	1.63	1.19	-67%	0.14	93%

No	Province	*Losses efficiency %*	*Avg Purchase rate (c/kWh)*	*Avg selling rate (R/kWh*	*Net Profit*	*Operating efficiency (c/kWh)*	*%Bulk/Total*
14	Limpopo	11%	1.55	1.40	-66%	0.57	75%
15	KwaZulu-Natal	14%	1.38	1.05	-62%	0.08	95%
16	Mpumalanga	54%	1.23	2.16	-55%	0.66	80%
17	North West	28%	1.02	1.12	-54%	0.30	83%
18	KwaZulu-Natal	43%	1.19	1.64	-53%	0.41	84%
19	Mpumalanga	37%	1.36	1.68	-52%	0.40	84%
20	Limpopo	-32%	1.61	0.94	-52%	0.19	86%
21	KwaZulu-Natal	21%	1.42	1.59	-47%	0.55	77%
22	Eastern Cape	18%	1.56	1.71	-47%	0.61	76%
23	Northern Cape	13%	1.65	1.43	-46%	0.17	92%
24	Free State	51%	1.19	1.84	-43%	0.21	92%
25	KwaZulu-Natal	38%	1.20	1.49	-42%	0.18	91%
26	Limpopo	22%	1.26	1.65	-40%	0.69	70%
27	Northern Cape	14%	1.71	1.59	-40%	0.23	90%
28	KwaZulu-Natal	23%	1.15	1.43	-39%	0.51	75%
29	KwaZulu-Natal	47%	1.25	1.88	-39%	0.22	91%
30	Mpumalanga	44%	1.41	2.14	-38%	0.45	85%
31	North West	33%	1.27	2.13	-37%	1.01	65%
32	Mpumalanga	38%	1.24	2.00	-34%	0.68	75%
33	Eastern Cape	49%	1.16	1.96	-32%	0.32	88%
34	Free State	25%	1.22	1.43	-32%	0.26	86%
35	Mpumalanga	52%	1.06	1.77	-31%	0.13	94%
36	Northern Cape	14%	1.16	1.18	-31%	0.19	88%
37	Mpumalanga	38%	1.21	1.78	-30%	0.35	85%
38	Northern Cape	29%	1.33	2.07	-27%	0.77	71%
39	North West	16%	2.13	2.12	-26%	0.15	94%
40	Eastern Cape	18%	1.22	1.31	-25%	0.14	91%
41	Gauteng	19%	1.20	1.63	-25%	0.55	73%
42	Northern Cape	17%	1.64	2.00	-23%	0.50	80%
43	Free State	11%	1.19	1.74	-22%	0.78	63%
44	Free State	22%	1.26	2.08	-21%	0.90	64%
45	Limpopo	14%	1.05	1.38	-20%	0.44	73%
46	Northern Cape	-5%	1.54	1.39	-19%	0.19	88%
47	Eastern Cape	10%	1.22	1.66	-19%	0.62	69%
48	North West	41%	1.16	1.87	-17%	0.23	90%
49	North West	32%	1.24	1.90	-16%	0.38	83%
50	Northern Cape	12%	1.74	2.24	-16%	0.61	76%
51	Eastern Cape	14%	1.08	1.43	-14%	0.38	77%
52	Limpopo	18%	1.18	1.66	-13%	0.44	77%

No	Province	*Losses efficiency %*	*Avg Purchase rate (c/kWh)*	*Avg selling rate (R/kWh*	*Net Profit*	*Operating efficiency (c/kWh)*	*%Bulk/Total*
53	Free State	8%	1.57	1.64	-12%	0.13	93%
54	KwaZulu-Natal	35%	1.20	1.86	-12%	0.25	88%
55	Northern Cape	26%	1.24	1.55	-12%	0.07	96%
56	Free State	9%	1.40	1.78	-11%	0.43	78%
57	KwaZulu-Natal	34%	1.24	1.89	-11%	0.22	90%
58	Limpopo	15%	1.34	1.88	-10%	0.49	76%
59	Northern Cape	39%	1.65	2.80	-10%	0.38	88%
60	Eastern Cape	5%	1.20	1.49	-10%	0.38	77%
61	Eastern Cape	29%	1.27	1.82	-10%	0.22	89%
62	Mpumalanga	38%	1.20	2.07	-8%	0.29	87%
63	Western Cape	9%	1.36	1.70	-8%	0.33	82%
64	Northern Cape	4%	1.69	2.04	-7%	0.43	80%
65	Free State	22%	1.51	2.06	-7%	0.27	88%
66	Eastern Cape	20%	1.20	2.23	-7%	0.89	63%
67	North West	15%	1.11	1.85	-6%	0.67	66%
68	Gauteng	43%	1.00	1.99	-6%	0.34	84%
69	Western Cape	7%	1.32	2.18	-5%	0.88	62%
70	Limpopo	12%	1.21	1.52	-5%	0.23	86%
71	Free State	50%	0.75	2.62	-5%	1.23	55%
72	Western Cape	5%	1.16	1.40	-4%	0.23	84%
73	Eastern Cape	17%	1.15	1.71	-3%	0.39	78%
74	Northern Cape	13%	1.32	1.84	-3%	0.38	80%
75	Eastern Cape	9%	1.22	1.60	-3%	0.31	81%
76	Northern Cape	46%	1.54	2.79	-3%	0.03	99%
77	Eastern Cape	17%	1.25	1.99	-3%	0.54	74%
78	Eastern Cape	25%	1.11	1.57	-2%	0.13	92%
79	Northern Cape	5%	1.20	1.65	-2%	0.42	75%
80	Limpopo	19%	1.25	1.60	-2%	0.08	95%
81	Limpopo	-2%	1.45	1.87	-2%	0.47	75%
82	Northern Cape	24%	1.12	1.88	-2%	0.44	77%
83	Free State	8%	1.12	1.49	-1%	0.30	80%
84	Western Cape	14%	1.38	1.76	-1%	0.19	89%
85	Free State	17%	1.22	1.83	-1%	0.38	79%
86	Gauteng	13%	1.06	1.24	-1%	0.04	97%
87	Limpopo	27%	1.17	1.96	-1%	0.36	82%

Commentary:

- The largest group of utilities (87 of 167) all have a negative net profit return.

- For utility 9,30,31,32,38,39,50,59,71 and 76 (10 of the 87), performance is negative even with high tariffs.
- 17 utilities have insufficient spend on their operations, which will lead to unsustainable service levels.
- Another 10 utilities have high levels of operations spend, but high losses as well, which suggests that operational spend is not being directed to addressing losses, but rather costs from outside the electricity business could be apportioned incorrectly to the utility from elsewhere in the municipality.
- Despite the negative net profit, for 11 of the utilities in this group, there are some positives in other parameters, which suggests that they have the opportunity to implement turnaround strategies.

3.5.6 Summary of the Analysis

Analysing the indices of the 167 licensed municipal electricity distribution utilities shows that 87 of these utilities have an outright negative yield with a myriad of issues in their other indices, suggesting various management and other sustainability challenges. Without intervention, it is unlikely that these utilities will survive in the long run and will certainly not be able to play an active role in any restructuring of the electricity distribution industry. Intervention strategies need to be urgently considered to address this large group of unsustainable utilities.

A further 23 utilities have systemic performance challenges suggesting one or more constraints related to incorrect tariffs, high losses, insufficient spend on infrastructure and availability of manpower. Several (mostly larger) utilities are faced with suspected incorrect cost transfers into electricity, resulting in an additional cost burden that impacts on sustainability. Collectively, this analysis points to some two thirds of all licensees having indicative sustainability challenges, which is an extremely unstable base to be working off in preparing for what is likely to be significant industry restructuring in the near to medium term future.

There are positives that emerge from the analysis. The group of utilities with net profit performance of between 0 and 5% have the best sustainability figures. In this group, almost all have good billing efficiencies, and good operational spend and good performance in the other indices, suggesting that there are serious concerns for the rest. Or put differently, the base utilities characteristics evident for most in this group, if managed correctly, should continue to yield sustainability. There is an opportunity for learnings from this group to be passed onto those where sustainability is at risk.

The utilities with a negative profit, extending to > 50% in extreme cases, cannot survive and need immediate intervention to rescue the situation, as these are dying businesses. Many of this group sell at lower tariffs than they buy. High losses are prevalent, with 114 utilities having losses above the NERSA benchmark of 10% and 25 utilities have losses of > 30. 19% of utilities have average tariff signals that encourage customers to defect. When examining specific tariffs for specific customer classes, the likelihood of higher and accelerated defection is evident. Together with loadshedding, which impacts severely on the on-selling kWh business model, the likelihood of a collapse in electricity distribution service provision is growing and requires urgent intervention to mitigate. Add the challenging environment of electricity industry disrupters and emerging technologies, and it is reasonable to expect that many municipal electricity utilities will not survive without urgent and sustained intervention.

In addition to the sustainability and management issues described in the analysis, regulatory consistency is a further challenge and should be addressed.

4 Key excerpts from significant milestone reports in the recent past

Key excerpts from milestone reports on the performance and sustainability of the EDI are shown below to provide a summarised view of, and learnings from, this analysis. The key themes across the reports, which span a 10-year period, illustrate ongoing and systemic challenges in the EDI, which require extraordinary and wide-ranging intervention to resolve.

4.1 EDI Holdings close-out report (2011)

The EDI Holdings Close-out Report, approved by the EDI Holdings Board on 26 May 2011, provided a detailed analysis of the EDI restructuring process undertaken in South Africa, and was intended to serve as an input into maintaining industry reform momentum.

Of particular relevance to this study are the conclusions and key learning points documented in the EDI Holdings report. Notwithstanding the time lapse of eleven years, many of these points remain valid and applicable to the current EDI reform process.

The central observation that emerges is that despite strong evidence that the current structure of the electricity distribution industry leads to sub-optimal outcomes, EDI Holdings, as a vehicle especially established to reform the EDI, was not able to facilitate significant progress towards changing the operational realities of the EDI. Reasons offered in the report included multiple and complex opposing views accommodated by the political and industry leadership, key political decisions that were delayed, ambivalent support from the key asset owners and key stakeholders, municipal legislative rights and multi service business operations that limited potential solutions, and the failure to establish the receiving entities in practice.

Industry operation performance concerns highlighted in the report included the reality of electricity distribution infrastructure deteriorating at a rapid rate, quality of electricity service delivery being a growing challenge for many municipalities, and growing outstanding debts related to payment to Eskom for bulk electricity delivered.

The report recognised the dynamics and complexities in the current electricity distribution operating environment, while indicating that it is essential that the reform momentum be maintained to improve electricity service delivery, investor confidence, industry sustainability and municipal financial survival. To this end, core recommendations were made, including to:

- Develop and implement an integrated and holistic electricity supply industry reform programme;
- Enforce, through NERSA, much tighter regulation and compliance of the EDI;
- Develop and introduce an appropriate EDI skills training and development programme;
- Secure the required funding and resources, and implement ADAM as a national asset management turn around solution;
- Develop and implement the concession concept as an interim industry consolidation strategy;
- Focus on the EDI stabilisation, particularly with respect to the quality of service delivery and revenue management;

- Implement a tariff harmonisation process and leverage the work done in this regard by EDI Holdings;
- Establish the required programme management capability within DoE (now DMRE), to effectively manage the portfolio of projects associated with this component of the energy sector;
- Use benchmarking and ringfencing insight results to inform policy, to direct investment decisions, to guide the tariff regime and to enhance compliance.

The report prophetically concludes that 'the challenges facing the EDI have not disappeared and neither will they disappear without a well-coordinated and structured national intervention'. Eleven years on, these challenges remain prevalent in the EDI.

Add to this, the dynamic and rapidly changing environment that challenges the fundamental premise of the existing business model, it becomes clear that the long-term sustainability of the electricity distribution sector in South Africa is under threat. Customers now have a greater choice, largely enabled by technology and the generation capacity constraint crisis. Distribution utilities need to undertake proactive planning, become more efficient and re-define the traditional kWh-based business model to mitigate against the effects of customer choice, declining demand, and alternative power supply options available; and to take advantage of new alternatives presented, such as possibly purchasing from non-Eskom sources (including embedded generation). On the other hand, municipalities might also have to allow wheeling within their territories and thus would be losing some retail revenues. Whatever the model, there is a need for a clear emphasis on collecting distribution network charges at the very least. Remaining relevant in a dynamic electric utility environment is essential to business survival.

4.2 SALGA Energy Summit (2018)

In 2018 the South African Local Government Association (SALGA) hosted an Energy Summit, with the theme "Defining the Energy Future for Local Government in South Africa". The aim of the summit was to collectively discuss how the changing energy landscape is affecting municipalities economically, legally, financially, and institutionally as well as how municipalities can respond to these changes.

The SALGA Energy Summit afforded the unique opportunity to engage and explore opportunities which would present South Africa with a sustainable electricity supply industry and assist local authorities to deliver on their mandate. The Energy Summit reconfirmed that the provision of sustainable and affordable electricity is key to economic growth. Furthermore, the deliberations highlighted that the current electricity supply industry structure is not serving the best interest of South Africa; and that the current electricity market structure is not creating a level playing field and it restricts economic growth and effective market participation. The Summit deliberations reaffirmed that the current "as-is" electricity supply industry (ESI) business model deployed is not sustainable.

The Summit Resolutions were, amongst others:

- The electricity supply and distribution industry in its current form is no longer viable for local government, national government, state-owned institutions and society as a whole. Embracing the transition is no longer a choice, but a necessity if the energy sector is to survive.
- Without local government, the transition cannot be achieved since local government not only accounts for 40% of electricity distribution demand, but also has executive authority for electricity distribution in terms of the Constitution. Municipalities can and must be part of the solutions.

A report on the SALGA Energy Summit concludes with a summary of opportunities identified during the Energy Summit that could be used to inform stakeholder engagement and the development of required action plans. These opportunities were categorised into enabling environments, customer centricity, operational resilience, new opportunities deployment, and collaborative leadership opportunities.

It was recognised that SALGA is required to provide decisive leadership within the context of the electricity supply industry. A selection of contextually relevant opportunities included both strategic industry positioning and operational activities, such as:

- Developing new electricity distribution models to facilitate the transition, recognising and costing the value of the grid while reducing the dependency on the sale of kWh of electricity.
- The appointment of a team of experts to provide the required strategic direction and support to the Energy Reform Commission and to provide municipalities access to the necessary capacity and support to ensure the required strategic direction to scale up the transition.
- Exploring within the municipal area of jurisdiction the deployment of renewable energy and energy storage solutions to improve grid utilisation and grid upgrading related capital deferment.
- Reviewing the national tariff framework and municipal specific tariff structure based on prudent cost of supply & economic studies and ring-fencing principles.

The extent to which these opportunities have been acted upon, and progress made in achieving the objectives, remains open to interpretation. However, it is evident that many of the fundamental issues that impact negatively on the sustainability of the EDI remain unresolved.

4.3 Inter-Ministerial Task Team (IMTT) Report (September, 2018)

Mandate of the IMTT

The initial mandate of the Inter-Ministerial Task Team's Advisory Panel on Electricity Reticulation and Distribution was to focus on the constitutionality and functional responsibility for electricity reticulation. This mandate was later expanded to include an advisory policy focus on: a) Eskom billing; b) debt restructuring; c) revenue raising capabilities; and d) a culture of payment, which changed in the Report to 'building a civic duty of payment'. A report was brought out in September 2018, consisting of 5 parts.

Important issues noted by the IMTT Report, of relevance to this assignment

The most important issues noted by the report regarding sustainability and the imminent restructuring of the EDI are summarised below:

- The EDI environment has frequently been characterised by inconsistent dealings with both Eskom and municipalities from the perspective of compliance and regulation. The National Energy Regulator of South Africa (NERSA) has applied different tariff-and-charges frameworks to Eskom and municipalities. This 'dual' regulation is hampering service delivery, performance, and compliance in the industry.
- In the Constitutional dispute between Eskom and the South African Local Government Association (SALGA) – in relation to reticulation of electricity in South Africa and within municipal areas or boundaries – it was concluded that municipalities are entitled, in terms of Section 156, read together with Schedule 4 Part B of the Constitution, to exercise exclusive executive powers to reticulate electricity within their areas or boundaries. The requirement for a service delivery agreement, as contemplated in Section 76(b) of the Local Government Municipal Systems Act 32 of 2000, to exist between each individual municipality and Eskom Holdings, to regulate the

distribution and sale of electricity by Eskom Holdings, within the Eskom Holdings supply area, on behalf of the municipality, remains unresolved.

- Municipal capacity to distribute, supply, and trade in electricity will require an executive solution (either by the Minister of COGTA responsible for local government or the Minister of Finance) to ensure that local government is adequately and appropriately resourced to efficiently execute this capacity.
- The metropolitan municipalities and larger towns (an estimated 12), contributing 75 per cent to South Africa's GDP, account for an estimated 80 per cent of municipal electricity distributed. There is a critical need to ensure technical excellence within these municipalities.

Summary of Municipal Challenges

The report lists several challenges in the delivery of electricity distribution services. The key challenges are listed below:

- Municipalities are not servicing their Eskom-municipality bulk accounts;
- There is a generic problem with electricity, as a trading and business unit, in respect of revenue collection. The reasons are manyfold, but amounts to:
  - Inadequate tariff structures;
  - Incorrect tariff design;
  - Absence of cost of supply, or cost to serve studies;
  - High energy losses;
  - High indigent rate.
- Financial – including a lack of robust revenue management processes/systems;
- Technical – including poor network reliability and maintenance backlog;
- Inadequate technology deployment;
- Capacity constraints; and
- Resource constraints

Many of these challenges, identified in 2018, have high correlation to the issues identified in the EDI Holdings Close-out Report in 2011. These issues are still prevalent in 2022, as is illustrated by the AMEU Conference poll, discussed in Section 4.2.2 of this paper.

EDI Sustainability Issues

The report makes several suggestions on how to address and mitigate against each of the identified challenges. The way forward included important references to regulation, performance measurement and industry restructuring matters, including:

- Eliminating the multiple regulations for industry (i.e., the inconsistent regulations between Eskom and municipalities) and positioning NERSA as the regulatory authority and ombudsman for the ESI and associated functions;
- Introducing benchmarking, performance measurement, and consequences for not complying with standards and license conditions; and
- Establishing an independent system and market operator to level the playing field from the perspective of national energy procurement (from energy producers) and sales to the market.

Municipalities face many difficulties, as explored in depth by the 2018 IMTT advisory team. It was noted in the report that in 2018, only 7% of municipalities were functioning well, 31% were functioning reasonably well, and 62% were dysfunctional. The reasons for dysfunctionality were explored further in the report, but in short, included both internal and external factors such as:

- Infrastructure that is in serious need of expansion or upgrading and repair including poor skills in key delivery areas;
- Poor financial and revenue management like poor budgeting and unfunded budgets and poor internal controls and cash flow management inefficiencies;
- Tariff structures that are not cost reflective, including poor billing and poor debt management processes and leakages in the system (funds not used for municipal business);
- Corruption and inefficient procurement process.

Conclusion

The report indicated that the industry challenge is far greater than the impasse in respect of the signing of the service delivery agreement (SDA). While the introduction and the signing of an SDA between municipalities and Eskom might have some benefits, it will not address the real challenge, which is to improve municipal, Eskom and the broader ESI's sustainability. The report concluded "that a structured intervention is required to drive the reform of the electricity supply industry in the interest of customer service, business sustainability and economic growth. Such an intervention will require the establishment of a governance structure potentially reporting to the President or Deputy President to direct and oversee the ESI reform."

5 Overview of recent sectoral developments

The below subsections provide an introductory overview of notable recent developments that have taken place with respect to the South African ESI. A separate working paper under this assignment will delve into the details of the proposed reforms.

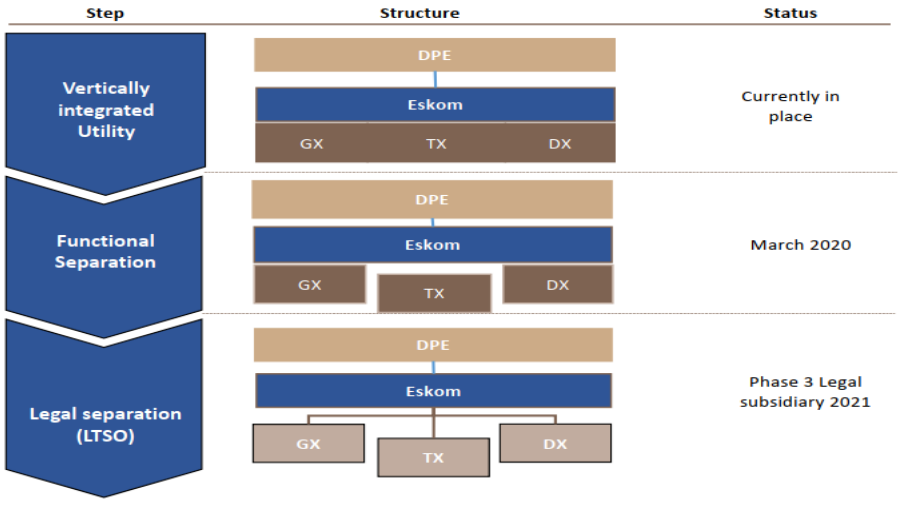
5.1 The DPE Road map

In 2019, DPE published a Roadmap for Eskom in a Reformed Electricity Supply Industry[18]. The roadmap had in mind the restructuring of Eskom into Eskom Holdings with three new subsidiaries, namely Generation, Transmission and Distribution. Notable elements of the roadmap include the following:

- The formation of a Transmission Entity (TE) under Eskom Holdings is envisaged to foster a competitive wholesale electricity market and will encourage the use of diverse sources of energy.
- Eskom Generation is expected to sign capacity contracts with a new central purchasing agent (CPA) and make this contracted capacity available in a future 'day ahead market'.
- Eskom Generation is also expected to develop new renewable projects that would participate in the competitive wholesale electricity market.
- Eskom Distribution is expected to buy electricity from the proposed day ahead market (at a predetermined price for a set period of time) for subsequent resale to its own customers.

The envisaged process is depicted in the below figure, which at the time of the roadmap's development, envisaged a rather ambitious timeline.

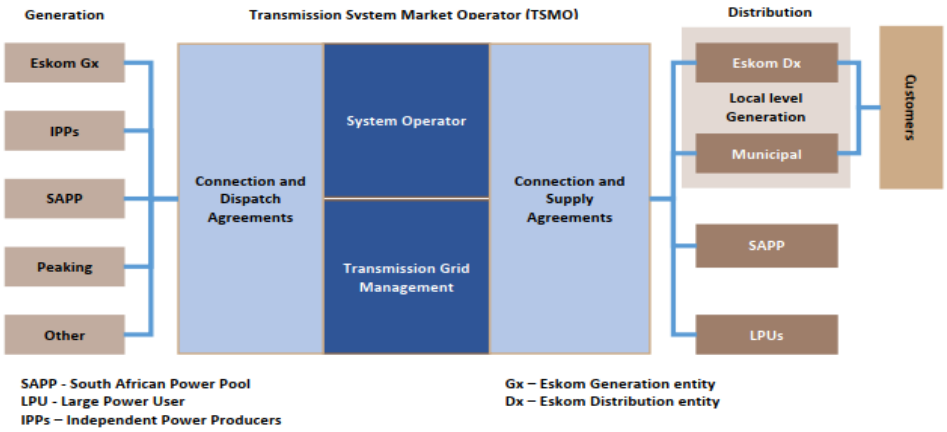
Figure 5-1: Roadmap for the Unbundling of Eskom



[18] DPE Roadmap for Eskom in a Reformed Electricity Supply Industry, 2019.

The roadmap provides a high-level view of how the ESI will be restructured, with a focus on the creation of a Transmission System and Market Operator (TSMO) but does elaborate on how the market will operate, or how municipalities and Eskom Distribution will function under this new dispensation. The roadmap acknowledges that many municipalities do not have the technical capacity to effectively reticulate the electricity function, which is a constitutional mandate. The Figure 5-2 below presents the envisaged reformed ESI at the highest level, as presented in the roadmap.

Figure 5-2: Envisaged reformed electricity supply industry



5.2 The Electricity Regulation Act Amendments

Recently announced amendments to the Electricity Regulation Act (ERA) outline a move away from a predominantly single-buyer electricity market structure to a competitive wholesale multi-market structure.

On 10 February 2022, the Minister of Mineral Resources and Energy published the 2nd Amendment Bill to transition from the vertically integrated, Eskom-dependent electricity market structure to a competitive multi market structure, managed by a transmission system operator (TSO). On 2 September 2022, the Minister of Mineral Resources and Energy published proposed amendments to Schedule 2 of the Electricity Regulation Act, 2006 (ERA), to amend the current licensing exemption and registration requirements for trading, generation, transmission and distribution of electricity in terms of the ERA. Under the Schedule 2 Notice, the 100MW restriction has been removed and paragraph 3.1 instead applies to generation facilities “of unrestricted capacity”. The intended effect of this amendment appears to be that all generation facilities, irrespective of their capacity, would be exempted from the licensing requirement.

While it appears that there is still some time before the promulgation of the proposed regulatory and legislative changes, the proposed changes lay the foundation for an efficient, modern and competitive energy system. These changes will have far reaching implications for current market participants, fundamentally changing the way power is generated, traded and distributed in South Africa.

Further developments will be monitored, and relevant considerations will be outlined in a subsequent working paper under this assignment.

5.3 The restructuring of Eskom Distribution

5.3.1 Current distribution arrangements

The current arrangement of the SA ESI is not quite as clear-cut as contemplated in Figure 9 above, which suggests that municipalities and Eskom Distribution will be coupled directly to Eskom Transmission, as most municipalities are not physically coupled / connected to the transmission system (seen as > 132kV, as per the Grid Code) but rather to Eskom Distribution, at 132kV and lower voltages. Municipalities are currently the customers of Eskom Distribution from a retailing, load balancing, curtailing, and operational point of view. There are currently six Eskom Distribution control centres in South Africa, from where operational control is conducted. It is also commonly recognised that most of the IPPs in South Africa is connected to the Eskom Distribution system. More recent power generation developed as a result of amendments to Schedule 2 of the ERA appears to be connected to both the transmission and distribution systems (though mostly the distribution system – i.e., it is 'embedded generation').

In the future, there will be a need to define distribution tariffs by voltage level to remunerate both Eskom Distribution and municipalities, while ensuring that customers do not have to pay twice for use of the distribution network. While the current commercial arrangements will change with the development of a market, the technical operation of the system is likely to remain the same, albeit based on commercial principles. This will be further elaborated on in a subsequent working paper under this assignment.

5.3.2 The separation of Eskom Distribution

Eskom has reported[19] that the legal separation of Eskom Distribution is progressing well, although not quite in line with the original timelines reflected in the DPE roadmap. To date, the following notable activities have been completed:

- Public Finance Municipal Act (PFMA) 1 approval complete;
- Future Distribution company name approved by the Eskom Board on 29 July 2022 and company name (National Distribution company of South Africa) successfully registered with CIPC on 26 August 2022;
- Memorandum of Incorporation (MOI) approval by the Eskom Board;
- PFMA 2 approval application submitted to DPE and NT on 18 July 2022. Approved by NT on 07 October 2022, but still awaiting DPE approval;
- Draft merger and subscription agreement compiled. Finalisation pending PFMA 2 approval;
- Revised Eskom Legal Separation Programme approved by the Eskom Board.

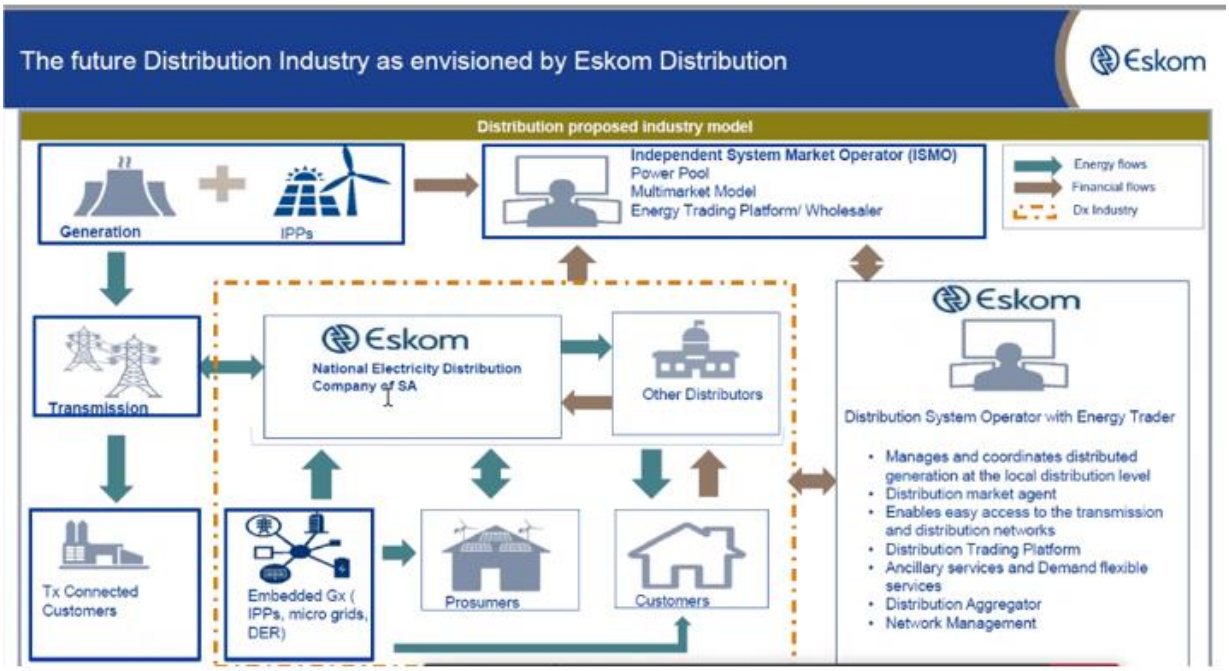
Activities in early stages of preparation to complete the process include lender engagements based on the value of the Eskom Distribution book, labour engagements and preparing for business and asset transfer, leading to eventual legal separation.

The target for the completion of the separation of Eskom Distribution is early 2024 but will have to follow the completion of the separation of Eskom Transmission, and creation of the TSMO. NERSA will need to develop or confirm transmission and distribution tariff methodologies as well as other regulations, including a market code. In practice, the different Eskom Holdings divisions have been operating as ringfenced entities for some time (albeit with NERSA regulating Eskom Holdings revenue requirements as a whole). The new Eskom Distribution company (the National Distribution

[19] Presentation by Eskom Holdings to the AMEU Legal and Statutory Committee on 23 November 2022 at Plettenberg Bay.

Company of SA) is envisaged to operate as depicted in the below diagrams (note that the diagrams are subject to further revisions and regulatory approvals).

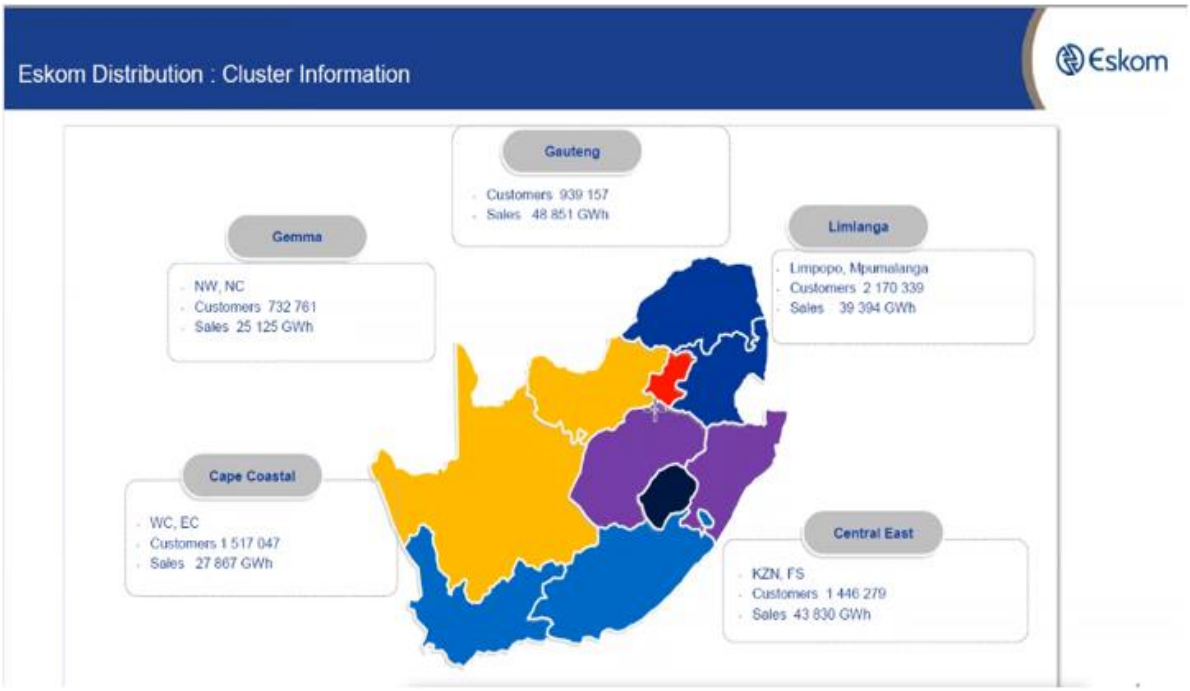
Figure 5-3: The future distribution industry, as envisioned by Eskom Distribution



Source: Eskom Holdings, 2022

It is envisaged that the National Distribution Company of SA will operate in five clusters around provincial boundaries, as per the diagram below. Gemma does not have a control room as yet, but Eskom is in the process of establishing one.

Figure 5-4: Eskom Distribution clusters



Source: Eskom Holdings, 2022

Eskom Distribution has pointed out that it has similar challenges as those experienced in the municipal sector, namely: energy losses, increasing debt, load shedding and supply constraints, and a need for large capital investments in grid modernisation, strengthening and reliability.

6 Initial perspectives from EDI stakeholders

6.1 AMEU/SAIEE webinars and AMEU annual conference

Recent initiatives by the AMEU, in which a range of EDI stakeholders from South Africa as well as international experts have actively participated, provide important insights on municipal perspectives with respect to the future of the EDI.

6.1.1 AMEU/SAIEE webinar

The AMEU/SAIEE Webinar, held on 16 August 2022, provided perspectives on evolving business models, as summarised in the table below. Mr. At van der Merwe was the Chair of the session, and both SALGA and CPCS were panellists in this webinar. This anecdotal content is based on panellist and participant views expressed during the question-and-answer session of the webinar serve as a first batch of qualitative stakeholder inputs outlined under this working paper.

The below perceptions, or views by webinar participants, are presented for illustration purposes and do not necessarily reflect the views of the Consultant.

Table 6-1: AMEU conference attendees' perspectives on various matters on pertaining to the EDI

The 187 plus Eskom model	Industry rationalisation	Utility readiness	Planning horizons	Market establishment	Market requirements
• Municipalities are a non-homogenous group of electric utilities. Range of size and performance is significant. • The South African Dx sector has unique features that need to be considered, including the municipal Dx utilities. • The range of size of municipal electric utilities has resulted in differences in approach, sustainability and the ability to react to competitive alternatives. • There is a need to understand which and how many municipalities have the capacity to trade from both a competency and risk perspective. This should be a key differentiator in the categorisation of municipalities.	• The SA situation is reflective of the UK 70 years back – solved by integration into 12 'REDS' in 1948. Consolidation is a key requirement for sustainability. • There is a real challenge to introduce any form of market model in an environment that has to accommodate 100 plus distribution utilities. • In the absence of a consensus-based masterplan, individual utilities should consider a voluntary based amalgamation model, that may be limited to key areas of co-operation, rather than complete amalgamation.	• The focus on voluntary process to date has resulted in the various levels of participation and different levels of readiness. • There is evidence of leading practice preparedness and implementation, but this is limited to a small number of large metros/municipalities. • There is clear evidence of Eskom doing detailed planning in preparing for the future industry structure, with stronger focus on Tx leg to date. The Dx considerations are a work in progress, which will be refined once Tx rules are in place. • The Eskom Dx utility of the future will be an independent entity. • Notwithstanding recognition of a changing environment, there is an urgent need to get the basics of performance and service delivery right in the majority of Dx utilities.	• Time horizons need to be considered as linked to 'market preparedness' indicators such as: current actions implemented, current preparation, future plans, and the timescale of future plans. • There are many steps in the reform process – it never really ends as circumstances change. Don't aim for an end state. • Policy must be flexible/adaptable to accommodate changes in market drivers over time. • Market rule changes should be promulgated regularly to accommodate market developments and requirements. Growth in renewable energy is seen as a primary driver of market rule requirements.	• No clear idea of when the market is to be introduced. • Problem is that there is no timeline to get this together. • Need clarity on market structure and arrangements to position appropriately - realistic timelines, transition period and market rules. • Need for a consolidated industry view and understanding of markets and market arrangement principles. • Need leadership, a plan, flexibility and stringent project management • How do municipalities not in good financial standing operate in the market. Possibly a two tier system – those with capacity to trade (competitive) and the rest (regulated).	• Markets require overall regulatory supervision. • Market needs controls on initiation of trading - narrow band of market pricing – both negative and positive price caps. • Need enough players for there to be a market. Protect against abuse of market power with limited participants. • Don't focus on closed in choices – allow for rules to change over time. Phased approach with suitable controls. • Regulated tariff likely to go higher. Time of use must influence the price for broader range of customers. Everyone needs to understand that peak prices will be much higher than baseload prices.

6.1.2 AMEU Annual Conference, 3 to 5 October 2022

Sustainability challenges for municipalities

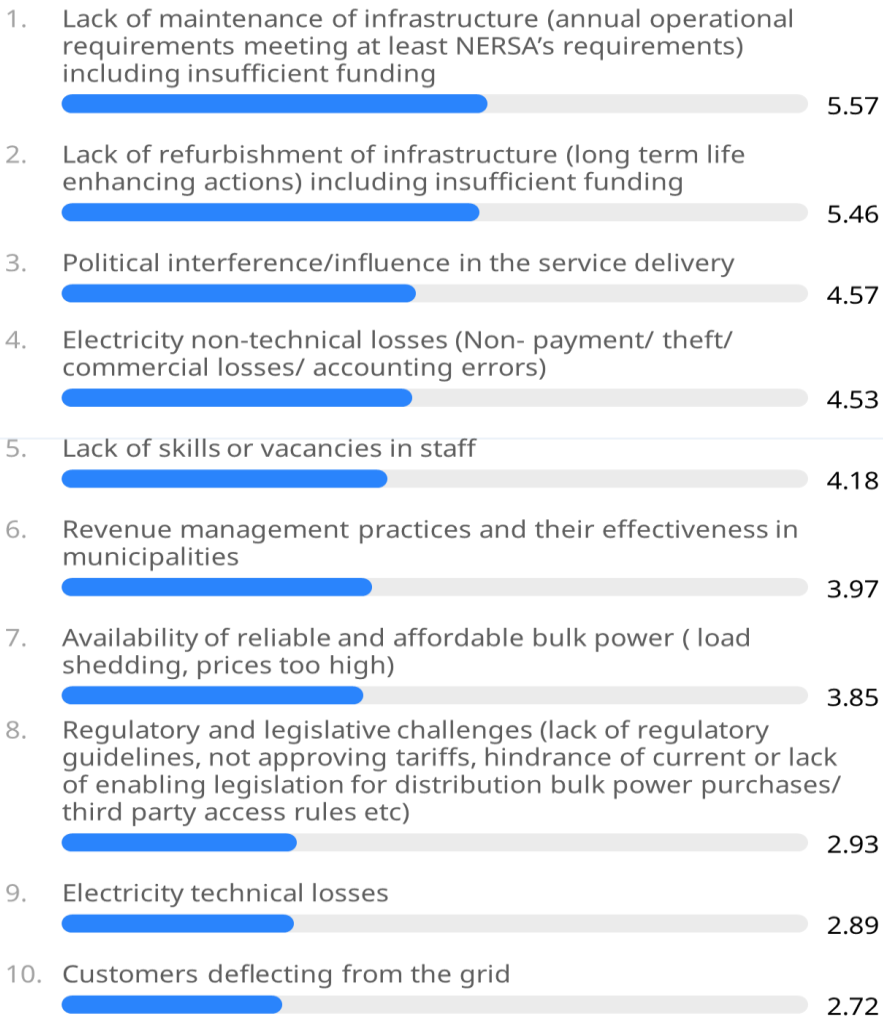
At the recent AMEU Conference, attendees were requested to participate in an online utility sustainability survey. A list of 15 sustainability challenges was compiled by selected municipal representatives prior to the conference. The 15 challenges were as follows:

1. Revenue management practices and their effectiveness in municipalities;
2. Lack of cost reflective tariffs or challenges to the introduction of cost reflective tariffs (including wheeling tariffs);
3. Bulk non-payment (arrears) to Eskom;
4. Electricity non-technical losses (Non-payment/ theft/ commercial losses/ accounting errors);
5. Electricity technical losses;
6. Lack of refurbishment of infrastructure (long term life enhancing actions) including insufficient funding;
7. Lack of maintenance of infrastructure (annual operational requirements meeting at least NERSA's requirements) including insufficient funding;
8. Political interference/influence in the service delivery;
9. Lack of skills or vacancies in staff;
10. Diminishing sales (energy and/or demand);
11. Customers defecting from the grid;
12. Availability of reliable and affordable bulk power (load shedding, prices too high);
13. Lack of Economies of scale in most municipalities (including customer mix);
14. Issues between municipal and Eskom Distribution areas of supply within same municipality (streetlights, levies/surcharges, tariffs etc.);
15. Envisaged restructuring of ESI/ Unbundling of Eskom/ Envisaged Energy market;
16. Regulatory and legislative challenges (lack of regulatory guidelines, not approving tariffs, hindrance of current or lack of enabling legislation for distribution bulk power purchases/ third party access rules etc.).

During the conference, attendees were requested to rank each of the sustainability criteria on a scale of importance from 1 to 10. It is worth noting that participants in the webinar included municipal representatives, distribution sector specialists, academics and service providers to the industry. The ranking poll pointed to the validity of the full list of sustainability criteria, with the most critical sustainability challenges relating to maintenance and refurbishment of infrastructure, political influence in service delivery, revenue management and non-technical losses, and lack of skills[20]. The following table presents a summary of the results and a ranking of the key challenges.

[20] The AMEU analysis of the results is available on request.

Figure 6-1: Ranking of current challenges in the EDI Businesses in SA



6.2 Initial stakeholder engagement results

A number of engagements were also held in November 2022 with key stakeholders, facilitated by SALGA. Details of engagements are as follows:

1. AMEU – 04 November 2022 (Introductory).
2. ESKOM Distribution – 01 November 2022 (Introductory) and 11 November 2022 (Detailed engagement).
3. Government Departments (DMRE, COGTA and National Treasury) – 04 November 2022. Meeting of 20 November 2022 intended for detailed engagement with Government Departments changed in emphasis due to the non-attendance of DMRE, COGTA and the National Treasury. The discussion was used to engage with NERSA and Eskom Distribution who were in attendance.

The following key observations and comments were raised during the aforementioned engagements:

- Stakeholders were reluctant to disclose data on the current performance and their positions on the future of the industry.
- Stakeholders were cautious in adopting a formal position of the future of the industry due to the conflicting, and/or lack of, policy direction from the responsible government department.
- Stakeholders expressed concern that ad hoc announcements and policy decisions have been announced in a piecemeal fashion, without due regard for the impact on the broader EDI.

The lack of progress in scheduling engagements with key stakeholders, as well as the cautious approach adopted, has impacted on the range of data that can be included in this working paper. The second version of this paper will incorporate any additional stakeholder inputs.

7 Conclusion

This working paper has outlined the significant current operational and future sustainability challenges faced by the South African EDI. Many of the challenges are inherent to the EDI model employed in South Africa, and historical reports demonstrate that many of these challenges have faced the industry for decades, although the magnitude thereof appears to have increased in recent years, exacerbated by the impact of regular load shedding and steep increases in costs.

While discussions on the performance, sustainability and future structure of the EDI have been a recurring theme amongst stakeholders for at least the past five years, DMRE's announcements regarding amendments to the Electricity Regulation Act have prompted more urgent engagements and a consideration of the implications of the introduction of a competitive electricity market. Furthermore, the recent amendments to Schedule 2 and the flood of ensuing contracts signed between customers and new private power producers is also prompting renewed discussions on matters such as use of system charges and the wheeling framework.

This paper serves to document some of the history, as well as the current status of the industry, to the extent that stakeholder contributions and access to key data has allowed. This updated version of this paper has provided additional analysis on the performance of the municipal electricity distribution license holders. Analysis of the D Forms for the year 2020/21, in particular, has provided insights into operational performance of the licensees; and the data has enabled the development of a sustainability ranking of all 167 license holders, based on performance against a suite of benchmarked criteria. This ranking exercise serves to inform scheduled stakeholder engagements and further project deliverables.

This paper thus serves as the contextual introduction to the remainder of the project, demonstrating the operational challenges and systemic structural issues that exist in the EDI. The analysis that will follow in subsequent deliverables, will focus largely on the strategic issues emanating from the envisaged unbundling and restructuring of Eskom Holdings, the creation of a competitive electricity market, and the impacts of these fundamental shifts on the municipal electricity business. In this regard, the following outputs will be delivered during the course of this assignment:

- An introductory workshop on competitive markets, proposed reforms, and the role of distribution businesses (network and retail/supply) within competitive markets.
- A second workshop discussing the impact of the envisaged reforms on the network and retail/supply components of the distribution business, inclusive of an initial discussion on the approaches suitable for South Africa.
- A second working paper outlining the impacts of competitive markets on the network and retail/supply components of distribution business and prospective approaches/business models for South Africa, within the context of forthcoming market reforms.
- A final working paper outlining actions for improving the EDI's position within the context of the proposed sectoral reforms.

8 References

- AMEU/SAIEE Webinars, August 2022;
- The AMEU Annual Conference, October 2022;
- Approach to Distribution Asset Management (ADAM), 2008 & 2014;
- Blueprint on Electricity Distribution Industry Reform, 2001;
- Roadmap for Eskom in a reformed electricity supply industry: DPE 2019;
- Companies Act 71 of 2008;
- Constitution of South Africa, 1996;
- COGTA, The State of Local Government Report', 2021;
- EDI Holding Close-out Report, 2011;
- Electricity Regulation Act 4 of 2006;
- Eskom Act 40 of 1987, as amended;
- Inter-Ministerial Task Team (IMTT) Report (September, 2018);
- The State of Local Government Finances and Financial Management 30 June 2017;
- Review of International Non-discriminatory Grid Access and Bilateral Trading Models to Develop Suitable Proposals for Improving the Regulatory Framework in South Africa, CPCS, May, 2021;
- SALGA Energy Summit, 2018;
- South African Government News Agency, https://www.sanews.gov.za/ ;
- Moneyweb, https://www.moneyweb.co.za/news/south-africa/failed-broken-municipalities-with-r79bn-debt-pile-paint-treasury-into-a-corner/?mc_cid=c5800ae24a&mc_eid=b7db803008;
- Municipal Demarcation Act 27 of 1998;
- Municipal Finance Management Act 56 of 2003 (MFMA);
- Municipal Planning and Performance Management Regulations (MPPMR);
- Municipal Structures Act 117 of 1998;
- Municipal Systems Act, 1998;
- NERSA, A record of the findings of five annual compliance audits from 2015 through to 2019, NERSA website;
- NERSA, Determination of the Municipal Tariff Guideline and the Revision of Municipal Tariff Benchmarks for the 2022/23 financial year;
- White Paper on Energy Policy of the Republic of South Africa, 1998;
- News 24.com, https://www.news24.com/
- Eskom Distribution presentation to the AMEU Legal and Statutory and Tariff Committee, 23 November 2022
- Stats SA 2020/21, https://www.statssa.gov.za/

CONTACT INFORMATION

Suite 200, 979 Bank Street,

Ottawa, Ontario, Canada K1S 5K5

P: +1 (613) 237 2500

T: +1 (613) 237 4494

hello@cpcs.ca

www.cpcs.ca