Vuthela

ILEMBE LED PROGRAMME

CASE STUDY 9

# SYNERGY FOR ENERGY:

## How rapidly changing municipal and national policies that regulate power supplies impact on initiatives to secure a reliable power supply in the iLembe district.

A Case Study in the iLembe District of KwaZulu-Natal, South Africa

October 2023


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# Introduction and context

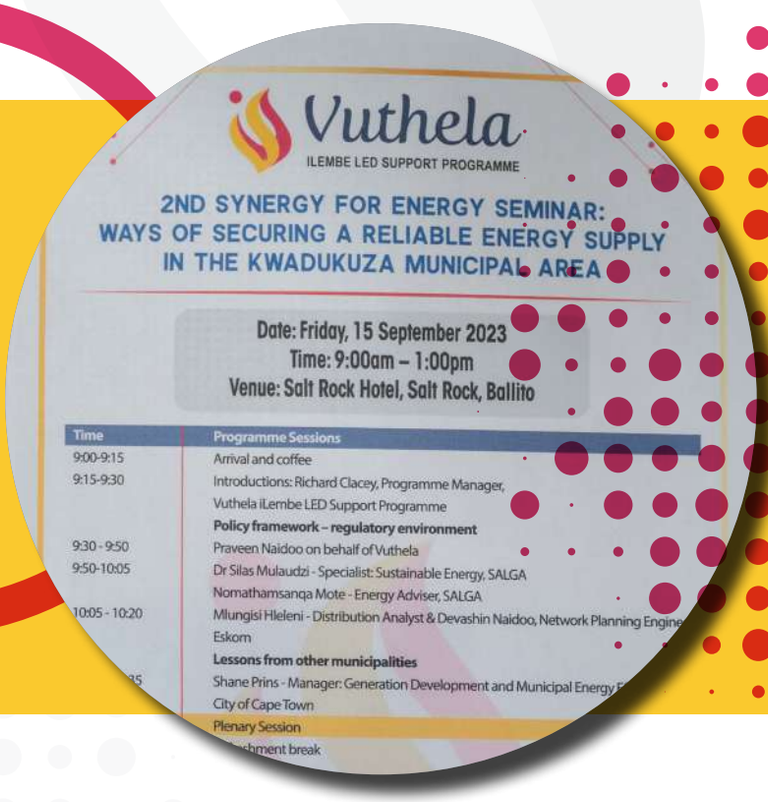
**Loadshedding and the lack of a reliable power supply are hindering the capacity of municipalities in the iLembe district to sustain infrastructure services and the local economy and to enable future economic growth and development in the district.**

This situation puts all the public and private initiatives to improve economic prospects and attract further investment at serious risk.

The Vuthela iLembe LED Support Programme held two "Synergy for Energy" seminars to consider ways of securing a reliable electricity supply in the KwaDukuza and Mandeni Local Municipalities. (These two municipalities are licensed electricity providers. KwaDukuza Local Municipality provides electricity to almost all urban areas; Mandeni Local Municipality provides the town of Mandeni; the remainder of these municipalities and iLembe district is supplied by Eskom.)

The Vuthela Programme is funded by the Swiss State Secretariat for Economic Affairs (SECO) and implemented in partnership with the KZN Department of Economic Affairs and Tourism, the iLembe District Municipality and the local municipalities of KwaDukuza and Mandeni to create an enabling environment for inclusive economic growth in the district.

Senior officials from local municipalities in the district, representatives of the South African Local Government Association (SALGA), Eskom, other municipalities and many private sector operators came together at these seminars to discuss how electricity will be generated,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2ND SYNERGY FOR ENERGY SEMINAR:
WAYS OF SECURING A RELIABLE ENERGY SUPPLY
IN THE KWADUKUZA MUNICIPAL AREA

Date: Friday, 15 September 2023
Time: 9:00am – 1:00pm
Venue: Salt Rock Hotel, Salt Rock, Ballito

| Time | Programme Sessions |
|---|---|
| 9:00-9:15 | Arrival and coffee |
| 9:15-9:30 | Introductions: Richard Clacey, Programme Manager, Vuthela iLembe LED Support Programme |
| | **Policy framework – regulatory environment** |
| 9:30 - 9:50 | Praveen Naidoo on behalf of Vuthela |
| 9:50-10:05 | Dr Silas Mulaudzi - Specialist: Sustainable Energy, SALGA |
| | Nomathamsanqa Mote - Energy Adviser, SALGA |
| 10:05 - 10:20 | Mlungisi Hleleni - Distribution Analyst & Devashin Naidoo, Network Planning Engine Eskom |
| | **Lessons from other municipalities** |
| | Shane Prins - Manager: Generation Development and Municipal Energy F |
| | City of Cape Town |
| | Plenary Session |
| | hment break |

distributed and managed in the future. The enabling environment in terms of policy, legislation and regulations was also discussed.

The first seminar confirmed that both the private and public sectors were experiencing significant operational challenges due to the national electricity crisis.

The negative impacts of electricity disruptions permeate through every sector of the economy in the iLembe district.

## Synergy for Energy seminars

In June 2023, the Vuthela Programme brought key stakeholders together in the first energy seminar to consider the initiatives already underway and what steps need be taken in the future to secure a reliable supply of electricity

> *Both the private and public sectors were experiencing significant operational challenges due to the national electricity crisis.*

for the district and its businesses and residents.

The first Synergy for Energy seminar created a platform for participants to share information and build a shared understanding of the challenges facing the district, along with the emerging opportunities to resolve them.

Participants agreed that there was an urgent need to strengthen interaction and collaboration between key stakeholders like the National

Energy Regulator of South Africa (NERSA), Eskom, the Department of Mineral Resources and Energy (DMRE), independent power producers (IPPs), the local municipalities and the private sector to secure a reliable supply of electricity in the iLembe district.

Since the first Synergy for Energy seminar, several developments in the local and national regulatory environment have changed the rules around how electricity will be generated, distributed and managed in the future.

Locally, the KwaDukuza Local Municipality has adopted an Energy Policy and has begun drafting a bylaw to manage alternative energy sources to supplement the failing Eskom supply.

Nationally, the Electricity Regulation Amendment Bill 2023, which seeks to create a competitive multi-market electricity industry, has been formally introduced into parliament. The Bill is expected to diversify ways of buying and selling electricity by introducing competition and hopefully decreasing electricity costs.

Meanwhile, the process of receiving public comments on the South African Renewable Energy Masterplan (SAREM) has been completed. The plan is expected to be finalised by November 2023 and implementation should begin immediately.

The second seminar held in September 2023, delved into the implications of recent policy and regulatory developments at national and local level of government.

It was once again apparent that public and private stakeholders will need to continue engaging and collaborating on plans to produce alternative energy supplies. The challenge lies in formalising such engagements to ensure regular communication and understanding between stakeholders.

The body of information and insights generated from the second Synergy for Energy seminar form the basis of this case study. It is intended to put into context and support the process of finding solutions to the national energy crisis, while reducing its impact in local municipalities.


*Chimene Pereira, Director, Special Projects, KwaDukuza Local Municipality*

# Local policy changes

*Synergy for Energy seminar*

**The KwaDukuza Local Municipality receives its entire bulk electricity from Eskom at present from three intake points (Driefontein, Shakaskraal and Stanger).**

In the future, this supply will be augmented by electricity provided by IPPs, who may produce it from solar, wind, hydro-electric, biomass, gas or ocean resources, depending on the feasibility of these options.

The municipality has approved a policy for small-scale embedded generation and has begun installing meters which can measure power being fed into the system by small producers.

A project is underway to review tariffs, contracts, and metering systems for resellers of electricity, including housing estates, shopping centres, malls, apartment buildings and business parks.

Renewable energy options selected for implementation in the municipality must comply with regulations according to Eskom officials.

All new developments that are linked to Eskom's network must comply with the South African Grid Code, which specifies standards and connection specifications, and developers or the municipalities themselves will be held responsible for remedying any transgressions of these standards.

The KwaDukuza Local Municipality is taking steps to address the challenges of loadshedding and improve the reliability of power supply, cater for growth as estimated through load forecasts done through master planning and reduce electricity costs to improve the ease of doing business. One of the most significant technologies and processes to be deployed is a Supervisory Control and Data Acquisition (SCADA) system for electricity services. The municipality aims for completion of the system by the first quarter of 2024. This will assist in optimising electricity management and improve response times to outages and fault finding and resolution.


*Sibusiso Jali, Executive Director, Electrical Engineering Business Unit, KwaDukuza Local Municipality*

A policy on Small Scale Embedded Generators (SSEGs) has been developed and approved. Tariffs have been developed by the KwaDukuza Local Municipality but have not yet been approved.

A policy on IPPs has been developed by the KwaDukuza Local Municipality and the public participation process has been completed.

The process for appointing a service provider to conduct a feasibility study into IPPs has begun.

## Municipal Energy Policy

The KwaDukuza Local Municipality has established an Energy Office that played a role in the development of the Energy Policy that will guide future developments in this sector.

The municipal council adopted the Energy Policy in May 2023 with the understanding that it may be amended frequently. The KwaDukuza Local Municipality is developing a bylaw for embedded generators and considering whether tariffs should be applied for embedded generator installations. The policy only allows for the use of embedded generators during times of interruptions on the national grid.

Small and medium-scale embedded generation, as per the current legislation, refers to power generation up to 1MW peak output capacity for SSEG and to power generation above 1MW and up to 10MW peak output capacity for MSEG, such as Photo-Voltaic (PV) systems or small wind turbines which are located on residential, and non-residential land uses where electricity is also consumed.

The policy emphasises that safety issues for the private sector and consumers of electricity in the municipality are a priority. The municipality now has to ensure not only that its electricity network ties safely into the Eskom grid, but also has to take into consideration IPPs and SSEGs.

The cost-related implications of embedded generators, their impact on the grid and potential revenue losses are being determined.

The Energy Office believes that a key next step towards resolving the energy crisis is to allow the municipality to explore its own generation capacity through an appropriate energy mix.

The new policy will change the way that electricity is generated and procured, with the municipality playing a greater facilitation role in the process.

Generation strategies will include embedded power systems like installing rooftop solar PV systems on municipal buildings with or without feeding into the municipal grid. This could be financed through the municipality's balance sheet, debt or grants. It may also include building stand-alone power plants like large wind farms or solar parks on municipal land with the

possibility of selling surplus power to Eskom. This could be financed through debt or grants, public-private partnerships, operational agreements or special purpose vehicles with other municipalities and partners.

The policy will also pave the way for municipalities to procure energy from embedded generators based on feed-in tariffs, net metering and net billing principles.

Municipalities will play a facilitation role by buying electricity from local producers and selling it to willing customers, known as "wheeling". They may also store excess electricity and sell it when the demand is high, and provide electricity services like installations and maintenance for a fee.



While the new policy was considered to be progressive and promoted the uptake of embedded generation for KwaDukuza, commentators believed it lacked guidance on embedded generation that was not small scale, and standards were not explicit.

The status of existing systems with non-compliant inverters and meters and the process for electricity wheeling (buying and selling) was not clear.

## The view from SALGA

SALGA believes that loadshedding is driving customers to seek alternative options and many were going off-grid or semi off-grid, resulting in declining municipal revenue from electricity sales.

The energy sector is undergoing a major transition both globally and nationally as renewable energy takes centre stage and the electricity supply landscape is becoming decentralised and competitive. Municipalities have a bigger role to play in this transition.

While the solution lies in fixing Eskom's national generation and transmission capacity, it was also necessary to enable and accelerate private investment in generation capacity from renewables, gas and improve battery storage technologies and to encourage businesses and households to invest in rooftop solar panels and ancillary infrastructure.

SALGA urges municipalities to identify energy projects that can be incorporated into their Integrated Development Plans (IDPs) and to maintain and upgrade their distribution networks to accommodate renewable energy projects and the implementation of small-scale electricity generation in the future.

# National policy changes

## National policy development

**A historical summary of national policy on renewable energy indicates the changing intentions of national government over time.**

The following policies are relevant in the key areas of energy efficiency and renewable energy implementation.

### White Paper on Energy Policy (1998)

**Key objectives:**

- to increase access to affordable energy services particularly to meet the basic needs of the poor;
- to improve energy governance;
- to stimulate economic development; and
- managing energy-related environmental impacts particularly focusing on poor households and securing supply through diversity.

In 1998 about 40% of all homes and many schools and clinics in South Africa were without access to electricity supply. This figure has reduced significantly to 10% in 2013.

This document set the scene for some of the policies and strategies that followed.

The focus was on energy for poverty alleviation, which has resulted in widespread electrification and subsidised electricity prices for the poor.

### The White Paper on Renewable Energy (November 2003)

This paper set out government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa.

It states that South Africa has relied on cheap coal to meet its energy demands and that given the green-house gas emissions from the use of fossil fuels and South Africa's ratification of the United Nations Framework Convention on Climate Change and Kyoto Protocol, it is imperative for government to establish a renewable industry through a phased and flexible strategy which builds on partnerships.

**Key points:**

- Focus on government support to achieve renewable energy targets.
- The policy does not specifically look to support embedded generation.

### National Energy Efficiency Strategy (NEES) (2005)

This strategy strived for affordable energy for all and to minimise the negative effects of energy usage on human health and the environment through sustainable energy development and efficient practices.

The NEES also includes PVs as a fuel switching option only if the substitution improves energy efficiency.

**Key points:**

- Strong call for energy efficiency in all economic sectors with ambitious targets.
- Renewable energy is compartmentalised

*Cobus Oelofse, CEO, iLembe Chamber of Commerce, Industry and Tourism*

as 'fuel switching', mostly focused on poor communities with poor energy access.

## The National Energy Act (2008)

This Act gives the mandate to the National Department of Energy to ensure that diverse energy resources are available in sustainable quantities and at affordable prices in the South African economy to support economic growth and poverty alleviation, while also taking into account environmental considerations.

The Act provides for energy planning, and for the increased generation and consumption of renewable energy.

**Key points:**

- Strong focus on diversifying supply.
- Strong focus on increasing renewable energy generation.

## The Electricity Regulation Act (ERA, 2006, amended 2008)

This Act makes provision for energy efficiency measures with respect to lighting, water heating and space heating/cooling, and smart metering to be promulgated.

It also ensures that incentives and penalties are legislated. These energy efficiency applications included in the Act are largely the responsibility of municipalities to enforce and/or implement.

**Key points:**

- Allows for budget to be allocated for energy efficiency specifically.
- Strong municipal focus for implementation.

## Long Term Electricity Regulation Act 4 of 2006 as amended in 2007

The Act regulates that small scale generators generating for own use and/or connected to the grid with an installed capacity less than 1MW will be exempt from further compliance.

However, all embedded power generators (even those generating for own use and not

*Linda Mncube, CEO, Enterprise iLembe*

connected to the grid) are requested by NERSA to submit the standard generation application form, to register with NERSA and to comply with standards for electricity connection.

**Key point:**

- The policy for embedded generation is not clear, but does allow for it if standards are met.

## Climate Change White Paper (2010)

While the Climate Change White Paper's goal is to support renewable energy as a means to mitigate climate change, the policy is based on technology transfers, flagship programmes and learning curves to kickstart the local renewable energy manufacturing industry.

**Key points:**

- Renewable energy is further recognised as a means to mitigate climate change.
- The paper allows for the support of institutional structures and mechanisms to help remove barriers to large scale renewable energy implementation.

## The 2019 Integrated Resource Plan

The 2019 Integrated Resource Plan (IRP) remains the key framework governing the energy landscape in SA, although many policy experts say that the strategy is incomplete and outdated.

In line with the national commitment to transition to a low carbon economy, the Integrated Resource Plan (IRP 2010) which was promulgated in May 2011 set a more ambitious target of 17 800MW of renewable energy to be achieved by 2030 in respect of the electricity generation mix.

## The Electricity Pricing Policy of the SA Electricity Industry

This policy states that electricity prices should reflect efficient market signals, accurate cost of supply and concomitant price levels that will ensure financial viability of the electricity sector in its entirety.

According to the National Electricity Regulator's Regulatory Policy on Energy Efficiency and Demand Side Management (EEDSM) for South African Electricity Industry (May 2004), all metros are obliged to incorporate EEDSM (and thus proper tariff structures) in their planning and to ensure EEDSM implementation.

**Key points:**

- The Act mandates local municipalities to implement demand side management measures through a portion of their electricity tariff income.
- Local municipalities are also mandated to implement energy efficiency.

## Grid Interconnection of Embedded Generation

NERSA has published rules related to the third-party transmission of energy. These rules allow for wheeling and bi-lateral trade and set out the connection charges and how use-of-system charges will be raised for generators and loads, including customers that purchase or consume wheeled energy.

According to the South African Distribution Network Code, Eskom is obliged to connect embedded generators as long as the generator meets Eskom's grid connection standards.

## South Africa's National Infrastructure Plan 2050

This document notes the following in relation to government's plans: regularised prescheduled bi-annual bid windows are intended to procure

about 5GW of renewable energy annually from IPPs; municipalities will be enabled to procure power from IPPs; there is intended acceleration of transmission and distribution infrastructure investment; and up to 5 000MW battery storage is to be procured by 2023/4.

The regulation of the electricity supply industry is governed by the ERA. Schedule 2 of the ERA was amended in January 2023 to remove the MW capacity threshold for embedded generation.

## DMRE regulations for municipalities (2021)

The DMRE Amended Regulations on New Generation Capacity opens the way for municipalities to procure their own power.

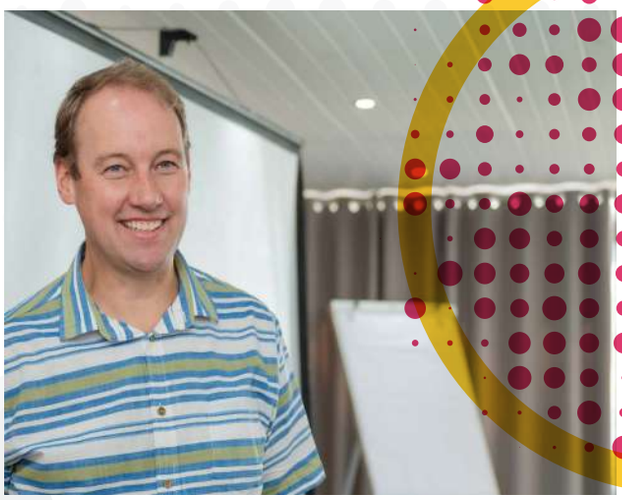
Municipalities will be required to apply to the DMRE Minister, and applications must be supported by a feasibility study approved by the municipal council, with evidence of alignment with the IDP and proof of compliance with the Municipal Finances Management Act (MFMA).

The Amended Regulations on New Generation Capacity paves the way for municipalities to procure their own power in several ways. Some municipalities plan to diversify their electricity supply sources and intend to implement renewable energy projects.

The draft Electricity Regulation Amendment Bill released in 2022 (ERA Amendment Bill) seeks to transform the electricity market to competitive multi-market electricity supply industry managed by a newly-established transmission system entity.

This will diversify ways to buy and sell electricity and foster competition with the aim to decrease electricity costs.

The ERA Amendment Bill will allow for a trading platform where market participants



*Gerhard Pienaar, Deputy Head of SECO, South Africa*

may trade with each other, private power purchase agreements (PPAs) where registered generators enter into PPAs with direct customers, and generators will enter into PPAs with the transmission system operator.

The Bill is vital for the liberalisation of the energy market. It will establish a transmission system operator, which will purchase electricity from Eskom and IPPs on a basis that is free from conflict of interest.

The establishment of an independent transmission company forms part of the unbundling of Eskom into separate generation, transmission and distribution entities as announced by President Cyril Ramaphosa in 2019.

The transmission company will be able to raise capital for investment in transmission infrastructure, the limitations of which have been a severe constraint on access to the grid by IPPs.

The ERA Amendment Bill will allow registered generators to enter into private PPAs with direct customers, and generators to form PPAs with transmission system operators.

Transmission system operators will purchase electricity from Eskom and IPPs.

Establishing an independent transmission company is part of the process of unbundling Eskom into separate generation, distribution and transmission entities.

The poor performance of Eskom's generation unit is the cause of national loadshedding. It is expected that unbundling Eskom will lead to more competitive generation and allow dedicated transmission and distribution companies to expand their operations.

## SA Renewable Energy Masterplan (SAREM)

The process of receiving public comments on the 2023 SAREM has been completed.

SAREM aims to:

- Support market demand;
- Drive industrial development;
- Foster inclusive development; and
- Build local capabilities.

The Masterplan was developed by the DMRE in collaboration with industry experts and other government departments.

The intention is to capitalise on the growing renewable energy and battery storage market, and to use the opportunity for inclusive industrial development.

*Richard Clacey, Programme Manager, Vuthela*

The 18-month long process of developing the Masterplan involved labour unions, industry players, and community representatives who came together to create a social compact that supports national objectives and promotes the development of renewable energy value chains.

# Example of Future-Forward Thinking: City of Cape Town Metro's plans

**While the electricity network conditions, consumer profiles and development needs of the City of Cape Town Metropolitan and the KwaDukuza Local Municipality may be different, the Metro's experience in seeking alternative power sources provides some insights into the options available to resolve the current electricity crisis in the iLembe district.**

Here are some of the plans underway at the Metro:

- The City of Cape Town launched a tender for embedded IPPs in 2022, targeting IPPs who produce up to 200MW. Power from these IPPs is expected to come on stream in 2026.
- The city's first utility-scale solar PV plant will be located on vacant land between industrial and residential zones in Atlantis and will provide 10MW directly into the city's network.
- The city also owns a site in Somerset West which has been earmarked for the construction of a 50MW solar PV project which will include battery storage.
- The Steenbras Pumped Storage mitigates against loadshedding and increasing the size of the lower dam is under investigation.
- Power Heroes: the city contracts with customers who agree to be curtailed during loadshedding, increasing the ability to limit the loadshedding impact on industry and commerce.
- A tender for embedded IPP up to 200MW has been launched. Contracts will be awarded in 2024 and the first power is expected by the end of 2026.
- The city will commence a utility-scale Battery Energy Storage System (BESS) which will aid in the availability and dispatchability of energy.
- The city initiated an Energy Efficiency Programme to reduce the overall demand and bring energy cost savings.
- Cape Town has commissioned 'Electricity Pathways' – a least-cost study conducted by the Council for Scientific and Industrial Research (CSIR) to provide a roadmap on various ways for the city to reach energy objectives.

# Pointers to the future

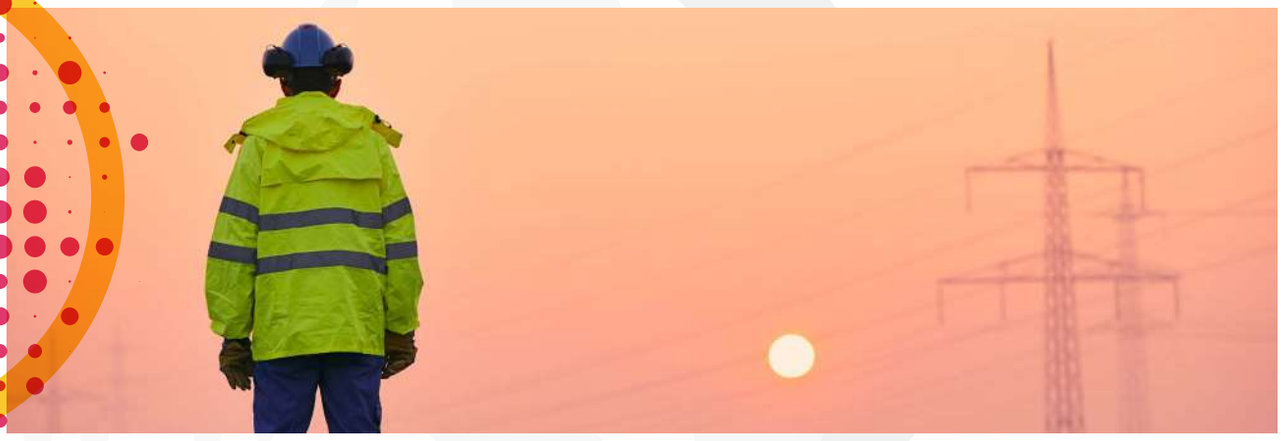
**The rapidly evolving national policy framework and changing local regulations around generating and providing electricity is shifting the role of municipalities, rearranging the shape of the playing fields and modifying the rules of the game.**

With national and local policy going through uncharted territory, many areas of uncertainty and ambiguity will become apparent.

To navigate through these uncertain issues, continued engagement, collaboration and coordination will be required at many levels.

This includes formalised, structured engagement between national, provincial and local government and interactions between the private and public sector, creating the inclusive platform required for collaboration to take root.

It is essential that dialogue continues to build a shared consensus and a central role in the development of renewable energy solutions for the municipalities and their consumers of electricity.



## Acknowledgements

The content of this case study was largely drawn from presentations at the second Synergy for Energy Seminar made by:

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Nomathamsanqa Mote - Energy Adviser, SALGA

Mlungisi Hleleni - Distribution Analyst & Devashin Naidoo, Network Planning Engineer, Eskom

Shane Prins - Manager: Generation Development and Municipal Energy Efficiency, City of Cape Town

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