DRAFT KWADUKUZA MUNICIPALITY ENERGY POLICY 2024

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1 DEFINITIONS:

"Anti-Islanding" means the ability of an EG system installation to instantly and automatically disconnect the generator from the local utility grid whenever there is a power outage or interruption in the utility grid, thus preventing the export of electricity to the utility grid from the EG.

"Bi-directional meter" means a meter that separately measures electricity flow in both directions (import and export). Such a meter displays the balance of the imported and exported electrical flow energy in a single register meter (net metering) or displays both imported and exported electrical flow energy in separate registers.

"Consumer" means consumers who also generate will be referred to as "consumers" although in actual fact they are "consumer/generators".

"Embedded Generator" means an entity that either operates one or more Unit or Units that is connected to the distribution system, or that desires to connect one or more Unit or Units to the distribution system; which include energy conversion device(s), static power converter(s), if applicable and the control and protection gear within customer's network that operates in synchronism with the utility's network.

"Export tariff" means a payment for every kilowatt-hour (kWh) of surplus electricity a customer system exports (feed-in) to the electricity grid.

"Generating capacity" The maximum amount of electricity, measured in kilovolt Amperes (kVA), which can flow out of the generation equipment into the consumer's alternating current wiring system. This is therefore the maximum alternating current power flow which can be generated.

"Grid impact Study" means a study of impact in capacity and load of the main grid when being connected to a new or another source of electricity energy.

"Grid-tied" An EG that is connected to the utility electricity grid either directly or through a consumer's internal wiring is said to be "grid-tied". The export of energy onto the utility grid is possible when generation exceeds consumption at any point in time. Such consumers would rely on the utility grid to supply them with electricity when their instantaneous generation is insufficient to supply their instantaneous consumption.

"Import tariff" A payment for every kilowatt-hour (kWh) of electricity imported to a customer from the electricity grid.

"Inverter" means a power device that converts direct current to alternating current at a voltage and frequency which enables the generator to be connected to the utility grid.

"Municipality" means KwaDukuza Municipality

"Pr Eng or Pr Tech Eng" This refers to a professional engineer or professional technologist who is registered with the Engineering Council of South Africa (ECSA).

"Reverse power flow" The flow of energy from the consumer electricity installation onto the utility grid as a result of the instantaneous generation exceeding the instantaneous consumption at the generation site in question.

"Stand-alone generator" A generator that is not in any way connected to the utility grid for backup purposes only. Export of energy onto the utility grid by the generator is not allowed

"SSEG" Small Scale Embedded Generation. For the purpose of this policy; an embedded generator with a generation capacity of up to 1000kVA (1MW) (definition further elaborated below)

"MSEG" Medium Scale Embedded Generation. For the purpose of this policy; an embedded generator with a generation capacity above 1MW and up to 10000kVA (10MW)

"Tariff" A combination of charging parameters applied to recover measured quantities such as consumption and capacity costs as well as service costs

"Utility" An energy distribution service provider responsible for the electricity grid infrastructure to which the consumer is connected which is above 10MW

"Wheeling" Wheeling is the transportation of electric energy from generator to a consumer, through the KwaDukuza grid

2 PREAMBLE

This draft policy facilitates the recognition of the changing landscape in the energy sector of South Africa and commitment of the KwaDukuza Municipality to a resilient, integrated municipal energy system with a diversified energy mix to provide least-cost, reliable energy for the citizens and businesses residing and operating in the municipality over the next 30 years.

Currently, KwaDukuza Municipality imports almost all its power from Eskom. Coal-fired generation makes up most of Eskom's generation capacity. The current electricity supply in KwaDukuza has a very low percentage of renewable power.

The price of renewable energy in South Africa is progressively decreasing and is projected to continue in that trajectory. The cost for KwaDukuza to purchase power from Eskom is higher today than to generate or purchase it from private renewable or gas Independent Power Producers (IPPs). Furthermore, the cost of power from Eskom is predicted to rise further. The increasing cost of buying energy from Eskom, combined with increased load shedding, is placing uncertainty on residences and businesses of KwaDukuza and the country as a whole.

The municipal revenue generation model of buying electricity from Eskom and on-selling the power to its customers is a model that requires attention when municipal tariffs are more expensive than IPP renewable energy tariffs. The policy will pave the way for the municipality to diversify its energy portfolio in order to remain financially sustainable. This aligns with the National Treasury's 2019 economic policy on inclusive growth, which encourages municipalities to start developing alternative revenue streams.

KwaDukuza faces a gradual loss of consumers due to households and businesses opting to go off-grid. If too many customers defect, the municipal distribution may experience declining revenue and the Municipality would be without means to cross-subsidize other critical services including free basic electricity provision and other utility services and relook at how other levies are administered.

It is becoming pertinent that the municipality be able to integrate renewable energy and any other alternative energy means to keep energy supply constant and to facilitate for lower energy costs where possible.

3 THE NEW ENERGY VISION FOR LOCAL GOVERNMENT IN SOUTH AFRICA

The President of South Africa announced in the 2020 State of the Nation Address that government planned to implement measures that would "fundamentally change the trajectory of energy generation" in South Africa and would "enable municipalities in good financial standing to procure their own power from IPPs."

On October 16th, 2020, the Minister of Energy and Mineral Resources published amendments to the Electricity Regulations on New Generation Capacity (2011) of the Electricity Regulation Act 4 of 2006 (ERA) that authorize a municipality to "… apply to the Minister to procure or buy new generation capacity in accordance with the Integrated Resource Plan," if the municipality is in sound financial standing and the "application is aligned with its Integrated Development Plan."

The amendments authorize a municipality, for the first time in South Africa, to procure power directly from Independent Power Producers (IPPs) and generate power at scale, in accordance with the national Integrated Resource Plan and subject to a feasibility study and compliance with provisions of the Municipal Finance Management Act (2003) and the Municipal Public Private Partnership Regulations.

KwaDukuza now has the opportunity to transition its energy supply to one that is lower cost, more reliable and renewable. This would help ensure KwaDukuza' energy needs are met while reducing the cost of energy for residents and businesses and improving economic diversification as influenced by the energy sector as a whole where applicable.

4 CONSTITUTIONAL, REGULATORY AND POLICY CONTEXT

Section 156 (1) and Schedules 4B and 5B of the Constitution assign municipalities authority and administration over 'Electricity and gas reticulation'. The municipality has legislative and executive authority in this area, and thus must develop a regulatory environment which ensures the safe and proper functioning of their electricity grid in terms of the Municipal Structures Act, No. 117 of 1998. This environment must not contradict the national regulatory framework. Since embedded generators are connected to, and impact on the local distribution grid, municipalities must develop an appropriate regulatory framework for such generators. The electricity reticulation function extends to providing open and non-discriminatory access to the municipal distribution system and to permit the connection of embedded generation systems.

Paragraph 4 of the Distribution Code sets out the responsibilities of distributors and stipulates in paragraph 4(1) that the distributor shall make capacity available on its networks and provide open and non-discriminatory access for the use of this capacity to all customers including embedded generators.

Section 74 of the Municipal Systems Act requires the municipality to set appropriate tariffs for municipal services. The use of the municipal distribution grid by embedded generators therefore requires that the municipality sets a suitable tariff for such generators.

The National Energy Regulatory of South Africa issues electricity generation licenses in terms of the ERA. Schedule 2 of this Act previously specified that only systems over 1MW capacity require licensing. The licensing threshold was raised to 100 MW in October 2021. However, on 17 January 2023, the Minister of Mineral Resources and Energy amended Schedule 2 of the ERA and uplifted all threshold restrictions for the operation of a generation facility with or without energy storage irrespective of capacity. This also applies to embedded generators.

Effective 17 January 2023, the following activities are exempt from the requirement to apply for and hold a licence under the ERA and to be registered with NERSA:

4.1 PROVISION OF STANDBY OR BACK-UP ENERGY

The operation of a generation facility with or without energy storage for the sole purpose of providing standby or back-up electricity in the event of, for a duration no longer than, an electricity supply interruption.

4.2 FACILITIES WITH NO POINT OF CONNECTION

The operation of any generation facility with or without energy storage irrespective of capacity (MW), where the Facility does not have a Point of Connection.

4.3 SUPPLY OF ENERGY TO ONE OR MORE CUSTOMERS

The generation facility is operated to supply electricity to one or more customers and there is no Wheeling of that electricity.

4.4 FACILITY WITH A CAPACITY OF NO MORE THAN 100 KILOWATTS

The operation of a facility with a capacity of no more than 100 kilowatts which complies with the Code and has a Point of Connection, the Distributor has prescribed the conditions relating to the continued use of the Point of Connection; and the Regulator has prescribed the manner in which the Distributor shall keep a register of each Facility.[i]

Technical specifications and standards have been developed to guide the implementation of embedded generation such that safety, power quality, and grid operational parameters are not negatively impacted, centering around the NRS097-2 series of specifications, and the SANS 10142-1-2: *The wiring of premises; Specific requirements for embedded generation installations connected to the low voltage distribution Network in South Africa.* Local government is given a key role in implementation within the following documents:

a) Local government is given a key role in implementation within the following documents:
   i. The White Paper on Energy Policy (1998)
   ii. The National Climate Change Response White Paper (2011)
   iii. In addition, the Integrated Resource Plan directing electricity supply in the country increasingly recognizes the role of local government and of embedded generation.

b) In addition to the above obligations, local government should align with:
   i. White Paper on the Promotion of Renewable Energy and Clean Energy Development (2003)
   ii. The transition to a green economy
   iii. National carbon mitigation intentions

5 INTRODUCTION

The policy is the first step towards gauging how the KwaDukuza Municipality can best meet the future demand for energy / power in the changing energy landscape and create an enabling environment for the execution of viable energy infrastructure projects.

The immediate priority within the vast energy sector is the electricity sector where renewable energy technologies at different scales can be deployed on-site or electricity wheeled across the grid and aggregated to offer a range of immediate options to all customers / consumers over time.

Other priorities related to the energy sector is supporting infrastructure for non-motorised transport which are important for providing choices related to modes of transport and mobility while addressing matters linked to greenhouse gas emissions.

This draft policy gives way for the formulation of the ***KwaDukuza Municipality Alternative Energy Strategy and Implementation Plan including the KwaDukuza Municipality Integrated Energy Resource Masterplan***. The strategy and plans will inform the council on subsequent policies to formulate where necessary. These plans will form part of the holistic energy policy. Once the outcomes of the masterplan are concluded, the masterplan will form part of an energy policy of the municipality.

6 BACKGROUND

Greenhouse gas emissions which result from the combustion of coal and petroleum fuels accounts for the large majority of emissions in the country and in KwaDukuza. At the same time, steep increases in the price of electricity, elevated environmental awareness, rapidly decreasing costs of photovoltaic (PV) panels, and the high risk of national power blackouts has necessitated a shift in the South African energy landscape.

[i] See GN 2935 in Government Gazette 47877 of 17 January 2023

The President of South Africa announced in the 2020 State of the Nation Address that government planned to implement measures that would "fundamentally change the trajectory of energy generation" in South Africa and would "enable municipalities in good financial standing to procure their own power from Independent Power Producers." The government has since published an Energy Action Plan to deal with the disruptive impacts of load shedding to businesses and residences. According to objective 4 of the Energy Action Plan ,work is already underway to develop a net billing framework for municipalities to enable customers to feed electricity from rooftop solar installations onto the grid.

As part of the fundamental change referred to in the President's 2020 State of the Nation Address, it is critical that KwaDukuza is able to integrate more renewable energy to keep electricity prices down in order to aid the provision of low-cost energy to residents and businesses to drive economic growth and job creation.

7 SCOPE OF THE POLICY

a) This policy document provides a commitment to:
   i. Creation of a resilient integrated energy system, which is diversified in its energy mix;
   ii. Provision of reliable energy supply as a pillar for supporting economic development;
   iii. Development of the energy industry to create jobs and diversify the economy;
   iv. Progressive increases in the supply of renewable energy in KwaDukuza Municipality to address and decrease greenhouse gases;
   v. Regularise any illegal SSEG installations which have not been formerly applied for and will be subject to municipal consideration.

b) The policy is applicable to all renewable energies / alternative energy.

c) The policy covers:
   i. The municipalities commitment to renewable energy
   ii. Small Scale Embedded Generation
   iii. Electricity wheeling
   iv. Independent Power Producers
   v. Business models
   vi. Other forms of energy supply
   vii. Non-motorised transport
   viii. Energy Efficiency and Demand-side Management

8 SMALL AND MEDIUM SCALE EMBEDDED GENERATION DEFINTION

Small and Medium-scale embedded generation 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 PV systems or small wind turbines which are located on residential, and non-residential land uses where electricity is also consumed.

a) KwaDukuza will consider applications to grid connection of SSEGs and MSEG onto the municipal distribution grid.

b) Consumers are not allowed to connect SSEG or MSEGs to the municipal grid without the written consent of KwaDukuza.

c) Consumers who wish to connect SSEG or MSEGs to the municipal grid are required to follow the application procedure.

d) All SSEGs and MSEGs installed within KwaDukuza area of supply must be signed off on commissioning by appropriate personnel.

e) The application process does not exempt any compliance to other pieces of legislation such as the National Building Regulations (where applicable).

f) KwaDukuza aims to implement SSEG and MSEG tariffs which both cover municipal costs (fixed and variable) in different tariff categories and will also be cognisant of a reasonable return-on-investment for the SSEG customer. The tariff will be implemented only once NERSA has approved such a tariff.

g) Such applications will require compliance and due consideration by NERSA where applicable.

8.1 AMEU / SALGA STANDARD DOCUMENTATION

The Association of Municipal Electricity Utilities and SALGA has developed a set of standard documents which provide a framework to facilitate the establishment of systems to process and integrate SSEG into municipal operations. As such, the municipality has an SSEG Policy in place which requires an application process to be followed.

8.2 APPLICATION PROCESS

The Municipality requires that all prospective SSEG and MSEGs customers fill in the Municipality's SMSEG application form and submit it to the relevant office for assessment. The Municipality will evaluate the application according to criteria in the NRS097-2-3 and other criteria as noted in the REQUIREMENTS document, and inform the applicant of the success or otherwise of the application. Should the application not be successful, the Municipality will advise the applicant regarding necessary measures to enable compliance with the criteria and SMSEG connection. Further information or technical studies may be requested by the Municipality before a conclusion can be reached.

8.3 COMMISSIONING

Approved SMSEG systems, once installed, must be commissioned and signed off by suitable personnel as specified in the REQUIREMENTS document. A Commissioning Report must be provided to the Municipality on the prescribed form.

8.4 METERING

All SSEG systems must have approved bi-directional meters installed, as clarified in the REQUIREMENTS document.

8.5 CONTRACTUAL AGREEMENTS

All new SSEG and MSEG customers must agree to the Municipality's GENERAL TERMS AND CONDITIONS: CONTRACT FOR CONNECTION OF AN EMBEDDED GENERATOR before generation may commence. This contract clarifies the legal responsibilities of both the customer and the Municipality.

8.6 SSEG AND MSEG TARIFFS

The Municipality aims to implement SSEG tariffs which both cover municipal costs (fixed and variable) in different tariff categories, and will also be cognizant of a reasonable return-on-investment for the SSEG customer. **The approach to the determination of an SSEG tariff will follow the National Energy Regulator's(NERSA) final Netbilling Rules and** the tariff will be implemented only when NERSA has approved such a tariff.

Prior to the tariff implementation, reverse feed-in to the Municipal grid will be considered and the possibility of compensating customers for feeding electricity into the grid, but no financial compensation will be given until such time the municipality understands the entire dynamics of reverse feed to existing infrastructure.

8.7 STANDARDS

All SSEGs are to comply with the following standards:

1. NRS 097-2-1: *Grid interconnection of embedded generation: Part 2 Small Scale Embedded Generation, Section 1: Utility interface*

2. NRS 097-2-3: *Grid interconnection of embedded generation: Part 2 Small Scale Embedded Generation, Section 3: Simplified utility connection criteria for low voltage connected generators*

In addition, SSEG installations are to comply with the following standards, legislation and regulations:

1. *South African Renewable Power Plant Grid Code (although the NRS 097-2 series cover most issues relevant to SSEG)*
2. *NRS 048: Electricity Supply – Quality of Supply*
3. *SANS 10142-1, including SANS 10142-1-2: The wiring of premises (as amended and published)*
4. *SANS 474 / NRS 057 : Code of Practice for Electricity Metering*
5. *Municipality Electricity Supply by-law (as periodically amended)*

8.8 ILLEGAL / NON CONFORMING SSEG GENERATION

All SSEG and MSEG installations that did not apply formerly for consideration by the municipality are deemed illegal and penalties will be in force to all property owners that have such installations in place. An amnesty period and self-declaring period for all illegal SSEG and MSEG connections will be open to the public once the public participation for this policy is concluded. Associated tariffs will apply once the relevant tariffs for such installations are concluded only if the municipality considers such applications retrospectively.

9 ELECTRICITY WHEELING

Wheeling is the financial transactions representing the transportation of third party electrical energy (kWh) over the Municipality's distribution network which allows for the third party supplier to sell this electrical energy to a Municipality customer.

a) KwaDukuza Municipality will be investigating the implications of wheeling on the municipal distribution grid.

b) Consumers are not allowed to wheel to the municipal grid without the written consent of KwaDukuza Municipality.

c) If the electricity producers wheeling electricity to off-takers are connected onto the municipal electricity network, relevant studies will have to be produced by the wheelers to the municipality to assess the impact of such systems on the municipal electricity grid.

d) Consumers who wish to undertake a wheeling contract are required to follow an application procedure which is to be developed after consultation with NERSA.

e) KwaDukuza Municipality aims to implement wheeling tariffs which both cover municipal costs (fixed and variable) in different tariff categories. These tariffs are to be determined as per NERSA's final Cost of Supply Framework which will give guidance on how electricity distributors can develop Use of System (UOS) charges for wheeling.

f) The tariff will be implemented only once NERSA has approved such a tariff.

g) The maximum capacity allocated to wheeling will be as determined via an administrative process the and must be as per agreement entered into.

10 INDEPENDENT POWER PRODUCERS

These generators are similar to embedded generators but generally entities with the sole objectives to generate power on a commercial basis and differ from SSEG in that they would want to feed-into the network more power than what they consume. Various entities intend to build renewable energy power stations in KwaDukuza with the objective of selling the energy to KwaDukuza Municipality and households or wheeling it to KwaDukuza customers.

a) Independent Power Producers are not allowed to build and operate in the KwaDukuza Municipality until such time that the holistic energy masterplan of the municipality is concluded and such master plan is adopted by council.

b) KwaDukuza is to investigate and explore how it is that IPP' (Independent Power Producers) connect to its electricity network or provide energy in a safe and acceptable manner pending the conclusion of the required studies.

c) KwaDukuza shall have an alternative process in place to assess facilitate the integration of IPPs onto its electricity distribution network. Due to the magnitude of these systems, advanced Grid Impact and Power Quality Apportionment studies will be a requirement. Such a process and relevant studies to be conducted will be made available to the public after the completion of the holistic energy masterplan.

d) IPPs are not allowed to connect any generation to the municipal grid without the written consent of KwaDukuza and in consultation with the National Energy Regulator of South Africa

e) IPPs who wish to connect to the municipal grid will be required to follow an application procedure only once the relevant specialist studies have been concluded

f) KwaDukuza will follow a competitive process in obtaining such generation to comply with MFMA and other legal requirements

g) The IPPs, if considered by the municipality will be charged the required charges and tariffs to cover any additional costs due to its connection and generation

h) IPPs may not charge customers within the jurisdiction of KwaDukuza Municipality a tariff that exceeds the tariff that would have been charged to such customers for the electricity if it had been purchased from the Municipality

11 ENERGY EFFICIENCY AND DEMAND-SIDE MANAGEMENT

Increased energy efficiency and demand-side management is fundamental to energy transition. The Municipality is to investigate the changing patterns of energy consumption brought about by smart devices (e.g. geysers, air conditioning, and heat pumps) as well as the electric vehicle charging load which we expect to gradually gain popularity especially in middle to high-income areas. KwaDukuza will investigate how it may enable load shifting and demand-response interventions to align energy consumption with times of high renewable energy production where this is permissible taking into consideration the many factors at play.

Energy efficiency is very broad and may include buildings and structures which may contribute to efficiency.

12 BUSINESS MODELS

South African municipalities are faced with a number of options, i.e. business models, to respond to the opportunities arising from alternative energy technologies. Business models are defined by the following variables:

a) the role of the municipality: builder/generator, procurer or facilitator;
b) the size of the power systems: small or large;
c) the connectivity: on-site use (self-consumption) or grid-tied (feed in); and
d) the modality of operation: financing models, partnership agreements and fee structure.

ROLES	BUSINESS MODELS	MODALITIES
Building generation capacity	Building embedded power systems (e.g., installing rooftop solar PV systems on municipal buildings with or without feeding into the municipal grid)	a) Financing through the municipality's balance sheet b) Financing through debt c) Financing through grants
	Building stand-alone power plants (e.g., building a large wind farm or solar park on municipal land used for municipal grid with possibility of on selling to Eskom)	a) Financing through debt/grants b) Entering a public-private partnership (PPP) c) Sign a Build-Operate-(Own)-Transfer agreement d) Set up a special purpose vehicle with other municipalities / partners
Procuring energy	Procuring electricity from embedded generators (e.g., procuring electricity from rooftop PV systems installed by residential customers)	a) Purchase based on feed-in tariff / net metering / net billing
	Procuring electricity from an independent power producer (e.g., procuring electricity from an independent solar park / wind farm in the vicinity of the municipality)	a) Purchase based on a power purchase agreement (PPA)
Playing a facilitation role	Playing a trading/aggregating role (e.g., buying electricity from local producers for on selling to willing customers at a premium)	a) Billing through the electricity tariff (with potential premium)
	Operating a storage facility (e.g., store electricity in time of excess and sell it in time of high demand)	a) Billing through the electricity tariff (with potential premium)
	Providing electricity services (e.g., installing power systems, providing maintenance)	a) Billing based on a service fee or energy savings

Source - New Roles for South African Municipalities in Renewable Energy- A Review of Business Models; South African-German Energy Partnership - March 2017

13 CLIMATE CHANGE MATTERS LINKED TO REDUCTION OF GREENHOUSE GAS EMMISIONS:

Electricity is the dominant energy type used in KwaDukuza (43% of total 5.3 million GJ of energy consumed), a pattern that is consistent with other municipalities in South Africa. The sectors consuming the greater proportion of energy in the area are the transportation (56%), residential (15%), Industrial (11%), and Commercial (11%) sectors.

The KwaDukuza Municipality has various programmes and policies that speak to mitigation strategies that it has been running over the years. These seek to introduce measures and strategies for the reduction of emissions.

The below are adopted policies of council except for the Green Buildings Guidelines

- KwaDukuza Urban Low Emissions Development Strategic Framework and Action Plan – Mitigation focused
- Green House Gas Inventory – Mitigation focused
- Climate Change Response Strategy – Mitigation focused

The holistic energy policy intention is to strike a balance between matters related to greenhouse gas emissions that contribute to climate change and the provision of reliable energy taking cognizance of rising energy costs while safeguarding councils finances.

14 PUBLIC CONSULTATION

The Constitution of the Republic of South Africa requires public engagement in policy decisions (Section 195 (1) (e)) and establishes the duty of local government "to encourage the involvement of communities and community organizations in the matters of local government." (§ 151(1)(e)

Similarly, the Municipal Systems Act 32 of 2000 states that the Council has the duty to "encourage the involvement of the local community" and "consult the local community about the (i) level, quality, range and impact of municipal services provided by the Municipality, either directly or through another service provider, and (ii) the available options for service delivery."

During the month of September 2021, the KwaDukuza Municipal Council approved the draft Energy Policy to be published for public consultation for a period of 30 days or longer. All residents of the KwaDukuza Municipality were invited to submit comments for this draft policy.

Due to Covid-19 restrictions, as amended from time to time, the comment process was conducted in an electronic format. The aim was to ensure that people throughout KwaDukuza and across all sectors (industrial, commercial, residential, and non-government) can participate.

The Office of the Municipal Manager reviewed all comments. Comments will be addressed, and consolidated and considered for inclusion as an annexure to an IRP.

15 APPLICABLE BYLAWS AND TARIFFS

All necessary bylaws and tariffs will be developed in due course that will be enforceable to all citizens and businesses of KwaDukuza applicable to energy generation such as SSEGs, MSEGs and IPPs.

16 MUNICIPAL MANAGER AS RESPONSIBLE AND ACCOUNTABLE OFFICER

The Municipal Manager is responsible and accountable for the implementation and enforcement of the provisions of this Policy and must take the necessary steps to do so. The municipal manager may delegate this responsibility to other municipal officials with the necessary expertise and experience.

The Municipal Manager shall monitor from time to time matters relating to this policy, the efficacy of the tariffs set by the Council in terms hereof, the administrative mechanisms, resources, processes and procedures related to its implementation and the extent to which the Policy is achieving the objectives of the Council.

The Municipal Manager shall delegate all the necessary power and authority to the relevant officials to enable them to fulfil their functions, responsibilities and obligations in terms hereof, including appropriate revisions of all requirements / specifications / guideline documents to keep up to date with this fast-changing field, with full authority to further delegate any specific responsibility where these processes may intertwine with other business units and is to be run and operationalised under the Energy Office.

17 IMPLEMENTATION

17.1 APPLICATION PROCESS OF SSEG

The municipality requires that all prospective SSEG customers fill in the municipality's SSEG application form and submit it to the relevant office for assessment. The municipality will evaluate the application according to criteria in the NRS097-2-3 and other criteria as noted in the REQUIREMENTS document, and inform the applicant of the success or otherwise of the application. Should the application not be successful, the municipality will advise the applicant regarding necessary measures to enable compliance with the criteria and SSEG connection. Further information or technical studies may be requested by the municipality before a conclusion can be reached.

17.1.1 COMMISSIONING

Approved SSEG systems, once installed, must be commissioned and signed off by suitable personnel as specified in the REQUIREMENTS document. A Commissioning Report must be provided to the Municipality on the prescribed form.

17.1.2 METERING

All EG systems must have approved bi-directional meters installed, as clarified in the REQUIREMENTS document.

17.1.3 CONTRACTUAL AGREEMENTS

All new SSEG customers must agree to the Municipality's GENERAL TERMS AND CONDITIONS: CONTRACT FOR CONNECTION OF AN EMBEDDED GENERATOR before generation may commence. This contract clarifies the legal responsibilities of both the customer and the Municipality.

17.1.4 EG TARIFFS

The Municipality aims to implement EG tariffs which both cover municipal costs (fixed and variable) in different tariff categories where applicable. The tariff will be implemented only once NERSA has approved such a tariff. Prior to such tariff implementation, reverse feed-in to the Municipal grid will be permitted and no financial compensation will be given. The tariffs will be in line with the cost of supply study to be concluded.

17.1.5 STANDARDS

All EGs are to comply with the following standards:

1. NRS 097-2-1: *Grid interconnection of embedded generation: Part 2 Small Scale Embedded Generation, Section 1: Utility interface*

2. NRS 097-2-3: *Grid interconnection of embedded generation: Part 2 Small Scale Embedded Generation, Section 3: Simplified utility connection criteria for low voltage connected generators*

In addition, SSEG installations are to comply with the following standards, legislation and regulations:

1. *South African Renewable Power Plant Grid Code (although the NRS 097-2 series cover most issues relevant to SSEG)*

2. *NRS 048: Electricity Supply – Quality of Supply*

3. *SANS 10142-1, including SANS 10142-1-2: The wiring of premises (as amended and published)*

4. *SANS 474 / NRS 057 : Code of Practice for Electricity Metering*

5. *Municipality Electricity Supply by-law*

The REQUIREMENTS document has specific information regarding compliance with the above standards or specifications.

17.2 APPLICATION PROCESS OF MSEG

The application process of MSEG will be determined and promulgated as per the outcomes of the holistic energy masterplan. It is essential to have an alternative and explicit application process for these systems because of their complexity and envisaged impact on the municipal electricity network. The processes for MSEG are going to outline which types of systems will need advanced studies such as Grid Impact and Power Quality Apportionment studies. At this stage what is clear is that for all EG systems smaller than 1MW but connected to the medium or high voltage electricity network, the KwaDukuza adopted SSEG application process applies and in addition to that, such applications must be accompanied by a Grid Impact Study.

The municipality requires that all prospective MSEG customers fill in the municipality's MSEG application form and submit it to the relevant office for assessment. The municipality will evaluate the application according to criteria in the NRS097-2-3 and other criteria as noted in the REQUIREMENTS document, and inform the applicant of the success or otherwise of the application. Should the application not be successful, the municipality will advise the applicant regarding necessary measures to enable compliance with the criteria and SSEG connection. Further information or technical studies may be requested by the municipality before a conclusion can be reached.

17.2.1 COMMISSIONING

Approved MSEG systems, once installed, must be commissioned and signed off by suitable personnel as specified in the REQUIREMENTS document. A Commissioning Report must be provided to the Municipality on the prescribed form.

17.2.2 METERING

All EG systems must have approved bi-directional meters installed, as clarified in the REQUIREMENTS document.

17.2.3 CONTRACTUAL AGREEMENTS

All new MSEG customers must agree to the Municipality's GENERAL TERMS AND CONDITIONS: CONTRACT FOR CONNECTION OF AN EMBEDDED GENERATOR before generation may commence. This contract clarifies the legal responsibilities of both the customer and the Municipality.

17.2.4 EG TARIFFS

The Municipality aims to implement EG tariffs which both cover municipal costs (fixed and variable) in different tariff categories where applicable. The tariff will be implemented only once NERSA has approved such a tariff. Prior to such tariff implementation, reverse feed-in to the Municipal grid will be permitted and no financial compensation will be given. The tariffs will be in line with the cost of supply study to be concluded.

17.2.5 STANDARDS

All EGs are to comply with the following standards:

3. **NRS 097-2-1:** ***Grid interconnection of embedded generation: Part 2 Small Scale Embedded Generation, Section 1: Utility interface***

4. **NRS 097-2-3:** ***Grid interconnection of embedded generation: Part 2 Small Scale Embedded Generation, Section 3: Simplified utility connection criteria for low voltage connected generators***

In addition, SSEG installations are to comply with the following standards, legislation and regulations:

6. ***South African Renewable Power Plant Grid Code (although the NRS 097-2 series cover most issues relevant to SSEG)***

7. ***NRS 048: Electricity Supply – Quality of Supply***

8. ***SANS 10142-1, including SANS 10142-1-2: The wiring of premises (as amended and published)***

9. ***SANS 474 / NRS 057 : Code of Practice for Electricity Metering***

10. ***Municipality Electricity Supply by-law***

The REQUIREMENTS document has specific information regarding compliance with the above standards or specifications.

17.3 APPLICATION PROCESS OF LSEG

The application process of LSEG will be determined and promulgated as per the outcomes of the holistic energy masterplan. It is essential to have an alternative and explicit application process for these systems because of their complexity and envisaged impact on the municipal electricity network. The processes for LSEG are going to outline which types of systems will need advanced studies such as Grid Impact and Power Quality Apportionment studies. At this stage what is clear is that for all EG systems smaller than 1MW but connected to the medium or high voltage electricity network, the KwaDukuza adopted SSEG application process applies and in addition to that, such applications must be accompanied by a Grid Impact Study.

17.4 GRID IMPACT STUDY

With the relaxing of the licensing requirements for embedded generators (EGs) up to 100MW, for own use, municipalities throughout South Africa have been inundated with applications from clients wanting to install their own EG. This has resulted in many municipalities being overwhelmed since they are still in the process of setting up application and approval processes for EGs. Further to this, many municipalities do not have sufficient technical resources to adequately evaluate the impact these EGs will have on their network.

The NRS 097-2-3 [2] can be utilised to approve an EG to ensure it will have minimal impact on the network, however this is limited to low voltage (LV) connected customers, with EG up to 350kW. Since the limit is 100MW, and with most clients wanting to install as large an EG system as possible, to maximise the financial benefits, this leaves a very large number of potential EGs, where the impact on the network, cannot be effectively analysed. Sustainable Energy Africa have setup a grid impact specification guide to assist municipalities, as to what grid impact studies need to be conducted, in order to analyse the effects the EGs will have on their network.

The studies recommended in the guide are drawn out of the regulatory requirements for embedded generators, various NRS guidelines and SANS standards.

Besides installing EG, many customers are also installing storage, in particular, battery energy storage systems (BESS). So further to the need to understand the impact EGs has on the networks, municipalities also need to understand the impacts storage will have on their networks and evaluate their compliance to the BESS grid code.

Grid impact studies are conducted from 2 different perspectives, i.e.

1. the customer evaluating the impact their EG will have on their point of connection (POC)

2. the municipality evaluating the collective impact the EGs will have on the larger network.

18 EFFECTIVE DATE OF POLICY

This draft policy is an initiating process and displays intent and direction the municipality is considering given the many changes taking place in the energy sector that affects an array of stakeholders and sectors. Once all existing policies that may have influence to the holistic energy policy are juxtaposed in effort of understanding the environment, the municipality will consider the various sectors that may influence the operations of the municipality. These sectors and stakeholders include but not limited to:

1. transport and mobility,
2. greenhouse gas emissions and climate change,
3. small scale embedded generation,
4. medium scale embedded generation
5. large scale embedded generation
6. independent power producers,
7. renewable energy,
8. waste to energy,
9. other forms of energy
