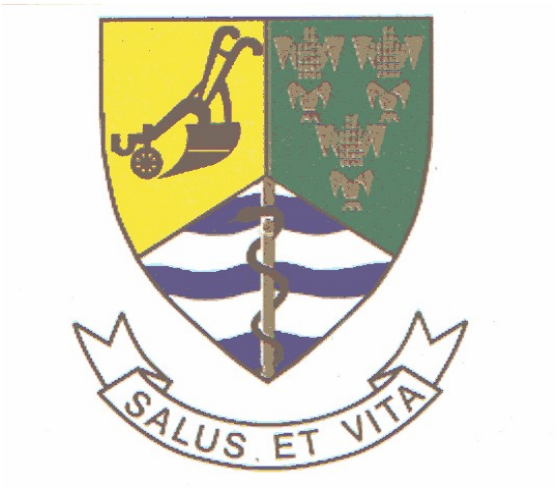
BELA-BELA LOCAL MUNICIPALITY



SMALL-SCALE EMBEDDED GENERATION POLICY

OCTOBER 2022

POLICY NAME	**SMALL-SCALE EMBEDDED GENERATION POLICY**	
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DATE	**OCTOBER 2022**	
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1. ACRONYMS AND ABBREVIATION

EG	:	Embedded Generation
ESD	:	Electrical Services Department
IRP	:	Integrated Resource Plan
kVA	:	kilo-Volt Ampere (unit of electrical apparent)
kW	:	kilo-Watt (unit of electrical real power)
kWp	:	kilo-Watt peak (the rated peak output of solar PV panels)
MVA	:	Mega-Volt Amperes (1MVA=1000kVA)
MW	:	Mega-Watts (1MW=1000kW)
NERSA	:	National Energy Regulator of South Africa
PV	:	Photovoltaic
SSEG	:	Small Scale Embedded Generation/Generator

2. DEFINITIONS

"Bi-directional meter" 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.

"Customer" In the context of this document, customers who also generate will be referred to as "customers" although in actual fact they are "customer/generators".

"Embedded Generator" An entity that operates one or more generation sources connected to the distribution grid directly, or behind the customer's meter, that include energy conversion device(s), static power converter(s), if applicable and the control and protection gear within a customer's network that operates in synchronism with the utility's network.

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

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

"Municipality" Bela-Bela Local Municipality

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

"SSEG" Small Scale Embedded Generation - an embedded generator with a generation capacity of up to 1000kVA (1MVA) (definition further elaborated below).

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

3. BACKGROUND

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 have all resulted in electricity distributors around the country receiving requests to allow electricity customers to connect PV and other Embedded Generators (EGs) to the electricity grid. Such EGs are either directly connected to the distribution grid or are connected to the wiring on the customer's premises which is in turn connected to, and supplied by, the Municipality's electricity network. Such generators are hence all considered to be 'embedded' in the local municipal electricity grid.

The parallel (or embedded) connection of any generator to the electrical grid, however powered, has numerous implications for the local electricity utility. The most significant implications are the safety of the utility staff, the public and the user of the generator. Further implications include the impact on the quality of the local electrical supply, and metering and billing issues. In terms of the Municipal Structures Act, No. 117 of 1998, municipalities are therefore obliged to regulate the installation of EGs to uphold responsible management of the distribution network, as well as for the general benefit and protection of citizens.

Although the electricity distribution industry is highly regulated, EG's have not yet been adequately covered in national policy or legislation. The AMEU and SALGA have developed standardized approaches and documentation to support municipalities in this regard, aligned with national policies and regulation, and this Policy is consistent with the AMEU-SALGA approach and recommendations.

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[1].

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 Electricity Regulation Act. Schedule 2 of this act specifies system sizes that must be registered with NERSA, and those that must be licensed by NERSA (as of July 2022 systems between 100kW and 100MW must be registered with NERSA, and systems over 100MW capacity require licensing, although this Schedule is revised regularly). This also applies to embedded generators.

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 Grid Code, NRS097-2 series of specifications (for small-scale generators), 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* (as published and amended).

[1] 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.

Local government is given a key role in implementation within the following documents:

a) The White Paper on Energy Policy (1998)
b) The National Climate Change Response White Paper (2011)
c) In addition, the Integrated Resource Plan directing electricity supply in the country increasingly recognizes the role of local government and of embedded generation.

In addition to the above obligations, local government should align with:

d) White Paper on the Promotion of Renewable Energy and Clean Energy Development (2003)
e) The transition to a green economy
f) National carbon mitigation intentions

4.1 AMEU / SALGA Standard Documentation

The Association of Municipal Electricity Utilities (AMEU) and the South African Local Government Association (SALGA) have endorsed a set of Standard documents which provide a sound approach for engaging with EG by municipalities. The focus is on Small Scale Embedded Generators, but guidance is also given on larger embedded generators. The documents have been reviewed by a municipal SSEG Working Group, and provide a framework to facilitate the establishment of systems to process and integrate SSEG into municipal operations. This Policy is in accord with this SALGA-AMEU framework.

5. OBJECTIVES

This policy facilitates the inclusion of Embedded Generation (EG) onto the electricity distribution network of Bela-Bela Local Municipality, so that safety, power quality, grid operation and municipal revenue issues are adequately addressed, and that the local renewable energy industry and green economy is promoted at the same time, supporting job creation.

6. EMBEDDED GENERATION DEFINTION

6.1 An Embedded Generator is any generator, such as solar PV, wind, hydro or diesel, which is connected to the distribution network, either directly, or behind the customer's meter – in which case it is 'embedded' because it is connected to the customer's wiring which is in turn connected to the distribution network.

6.2 **Small-scale embedded generation (SSEG)** refers to an embedded generator with maximum power generation up to 1MVA/MW peak output capacity, such as PV systems or small wind turbines which are located on residential, commercial or industrial sites where electricity is also consumed. SSEG is in contrast to large-scale wind farms and solar parks that generate large amounts of power, typically in the multi-MW range. Most of the electricity generated by an SSEG is consumed directly at the site but times arise when generation exceeds consumption and power is allowed to flow in reverse - from the customer onto the utility grid.

7. SCOPE OF THE POLICY

7.1 This policy document provides a framework for the approval and registration of Embedded Generators of electricity as well as the regulation thereof relative to the requirements of the Municipality and all other Policies, By-laws and Legislation applicable thereto.

7.2 The policy is applicable to all customers wishing to install systems categorised as Embedded Generators.

7.3 The policy focuses on SSEG. However, larger EG are also included, but detailed guidance in other documentation (as published) must be referred to.

7.4 The policy covers the following for SSEG:

a) The conditions under which SSEG will be accepted onto the Municipal distribution network
b) The Application and Commissioning process
c) Contractual arrangements between the SSEG customer and the Municipality
d) Metering and tariffs for SSEG
e) The policy covers all prospective EG customers in the municipal distribution area connected to the municipal distribution network.

7.5 Wheeling of power across the municipal network is excluded from this policy. Other policies (as published) should be referred to in such cases.

8. POLICY PRINCIPLES

8.1 Customers are not allowed to connect any EG to the municipal grid without the written consent of the Municipality. Customers found to have illegally connected EG to the grid (either before or after their electricity meter) will be instructed to have the installation disconnected from the grid. Should the customer fail to have the EG disconnected from the grid, the Electricity department reserves the right to disconnect the electricity supply as stipulated within the Electricity By-laws.

8.2 The document '*REQUIREMENTS FOR EMBEDDED GENERATION: Conditions and application process to become an embedded generator in Bela-Bela Local Municipality*' (hereinafter 'REQUIREMENTS document') specifies technical, procedural and other conditions and parameters that must be adhered to. The latest version of this 'REQUIREMENTS' document must be consulted, and adherence to the provisions therein complied with.

8.3 Customers who wish to connect SSEG to the municipal grid are required to follow the application procedure as detailed in the REQUIREMENTS document.

8.4 Customers or developers wishing to install larger generators than 1MVA must engage the municipality to establish the standards, specifications and processes that need to be complied with. Such larger generators fall under conditions and requirements that differ from SSEG.

8.5 Any existing EG systems or applications submitted prior to the adoption of this Policy will have to demonstrate compliance with this Policy through following the procedures specified herein.

8.6 Existing legislation specifies system sizes that need to register with NERSA, and those that require a license from NERSA. As of July 2022, systems over 100kW require NERSA registration, and those over 100MW require a NERSA license, although such requirements change periodically. Anyone wanting to connect systems within the specified ranges must produce the necessary registration or generating license, or exemption letter from NERSA before they will be given permission to connect their generators to the municipal grid. Should this legislation change, SSEG customers will be required to comply with the new regulations at their own cost.

8.7 All embedded generation systems installed within the Municipality's grid must be signed off on commissioning by appropriate personnel. SSEG procedures in this regard are defined in the REQUIREMENTS document. Larger generator procedures in this regard will be clarified by the municipality on enquiry.

9. MUNICIPAL MANAGER AS RESPONSIBLE AND ACCOUNTABLE OFFICER

9.1 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.

9.2 The Municipal Manager shall from time to time report to the Mayor on 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.

9.3 All the necessary power and authority is hereby delegated to the Municipal Manager to enable him/her to fulfil his/her functions, responsibilities and obligations in terms hereof, including appropriate revisions of the REQUIREMENTS document or other relevant documents to keep up to date with this fast-changing field, with full authority to further delegate any specific responsibility.

10. IMPLEMENTATION of SSEG

10.1 Application process

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.

10.2 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.

10.3 Metering

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

10.4 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.

10.5 SSEG 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 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, but no financial compensation will be given.

10.6 Standards

All SSEGs are to comply with the following standards:

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

b) 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:

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

11. IMPLEMENTATION OF LARGE-SCALE EMBEDDED GENERATION

11.1 Generators larger than 1MVA need to follow processes different to that of SSEG, as various standards, codes and procedures relevant to these generators need to be adhered to, including Grid Code compliance and other impact assessments. The **GUIDE FOR PROCESSING GENERATOR APPLICATIONS OVER 1MW** (as published and amended) is relevant in such circumstances. Prospective generators falling into this category need to approach the municipality for guide documentation and conditions applicable to them.

a) NRS 048: Electricity Supply – Quality of Supply
b) SANS 10142-1, including SANS 10142-1-2: The wiring of premises (as amended and published)
c) SANS 474 / NRS 057 : Code of Practice for Electricity Metering
d) Municipality Electricity Supply by-law

NOTE: The **"REQUIREMENTS"** document has specific information regarding compliance with the above standards or specifications.

11. EFFECTIVE DATE OF POLICY

This Policy will become effective from the date of approval by the Municipal Council, subsequent public participation.

Tariffs contemplated within this Policy will be formulated as part of the annual budget approval process, and will become effective pursuant to the dates stipulated therein. Tariffs are subject to NERSA approval.

12. REVIEW OF THE POLICY

The policy should be reviewed as and when necessary.

13. ENQUIRIES

All enquiries related to the content of this policy should be directed to the Divisional Manager: Electrical.

ANNEXURES

1. *REQUIREMENTS FOR SMALL-SCALE EMBEDDED GENERATION: Conditions and application process to become an embedded generator in Bela-Bela Local Municipality*
2. APPLICATION FOR THE CONNECTION OF EMBEDDED GENERATION
