14 November 2025

TO: ALL AMEU MUNICIPAL ELECTRICITY UTILITY MEMBERS

Re: AMEU POSITION PAPER ON THE SAFETY COMPLIANCE FOR LOW VOLTAGE SMALL-SCALE EMBEDDED GENERATION ("SSEG") INSTALLATIONS UP TO 1 MVA

1. DISCLAIMER

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2. BACKGROUND

In recent years, South Africa has witnessed significant developments in the electricity energy landscape, particularly concerning Small Scale Embedded Generation **("SSEG")** LV installations of up to 1 MVA. These installations have gained traction as a viable solution to electricity shortages and a means of promoting renewable energy sources, such as solar and wind power. However, the rapid growth of the SSEG market has introduced complexities in safety compliance requirements, leading to potential confusion among stakeholders, including developers, installers, municipalities, and end-users.

Recognising these emerging challenges, the leadership of the **AMEU** has determined that it is essential for the organisation to also formulate a clear and robust position regarding safety compliance for SSEG LV installations up to 1 MVA. This initiative stems from the responsible mandate of the AMEU to promote awareness and education, as well as to enhance the safety and well-being of all parties involved in the electrical energy ecosystem.

To arrive at a comprehensive and informed position, the AMEU engaged with highly credible and respected subject matter experts and professionals within the SSEG field. This consultation was critical in capturing diverse insights and recommendations, ensuring that the AMEU's stance reflects reasonable best practices and current safety standards relevant to these installations. The organisation is acutely aware of its duty to the public and stakeholders and thus emphasises the importance of compliance with stringent safety measures.

Moreover, the AMEU's position is designed to also withstand possible or potential scrutiny from a competent court of law, adhering to the principle of a ***"reasonable person test."***

This legal rigor underscores the necessity for accountability and diligence in all safety compliance matters, reinforcing the belief that safety is non-negotiable in the context of electrical installations.

Importantly, the position articulated by the AMEU aims to address not only regulatory compliance but also to institute reasonable safety measures that can prevent as a worst-case scenario injury and loss of life associated with SSEG LV installations up to 1 MVA. By proactively outlining these safety measures, the AMEU seeks to foster a culture of safety, responsibility, and excellence in the electricity energy landscape, ultimately contributing to a more reliable and secure electrical supply for all South Africans.

Notwithstanding the benefits and potential benefits that this AMEU Position Paper is intended to provide and present to municipal electricity utilities all AMEU municipal electricity utilities members as individual independent organs of state still have the prerogative and choice of each coming up (if they choose to do so) with their respective own positions regarding safety compliance for low voltage SSEG installation up to 1 MVA.

3. INTRODUCTION

The increasing uptake of Small-Scale Embedded Generation **("SSEG")** LV installations, particularly in the context of renewable energy sources, necessitates stringent compliance with safety regulations. This position paper seeks to outline the responsibilities of the Municipality concerning compliance as per the Occupational Health and Safety **("OHS") Act** and associated regulations, with a focus on electrical safety. It emphasises the necessity of adhering to established standards to mitigate risks associated with electrical installations.

4. DUTY OF THE MUNICIPALITY UNDER THE OHS ACT

The OHS Act Electrical Installation Regulations impose a clear mandate on municipalities as licensed electricity distributors regarding the connection of electrical installations. Specifically, it states that no installation shall be permitted to connect to the electricity grid unless it complies with the provisions of the OHS Act (as amended).

4.1 Electrical installation Regulations

Under Regulation 5, it is stipulated that all electrical installations must conform to recognised health and safety standards. The responsibility falls on the Municipality to ensure that no authorisations are given for installations that do not meet these standards.

The applicable standards include SANS 10142-1 for 230V/400V AC supplies and SANS 10142-2 for up to 3 MVA. These standards are exceptions that grant certification power to a "registered person." Moreover, other standards for medium and high voltage installations must also be considered and certified by competent persons.

5. DEFINITIONS RELEVANT TO SSEG COMPLIANCE

In understanding compliance, it is vital to delineate key definitions:

5.1 Certificate of Compliance ("CoC")

A formal document issued by a registered person that certifies an electrical installation complies with safety standards defined by the relevant regulations.

The safety standards include those outlined in SANS 10142, amongst others.

5.2 Registered Persons

Certified professionals such as installation electricians and master installation electricians who are authorised to evaluate and certify installations.

6. COMPLIANCE REQUIREMENTS UNDER THE ELECTRICAL INSTALLATIONS REGULATIONS

6.1 Design and construction

Under Regulation 5, installations must adhere to strict safety standards. The Municipality (Licensed Electricity Distributor) must not authorise any installations that do not conform to these standards. This includes both AC and DC wiring, which must be treated separately from the commissioning of inverters.

The Municipality must ensure that it does not assume legal responsibility for compliance; rather, it should assist the SSEG installation owner in proving compliance before connection can occur.

6.2 Certificate of Compliance ("CoC")

Regulation 7 mandates that a valid CoC, accompanied by an approved test report, is required for all electrical installations. The absence of such documentation generates considerable risk and liability.

That said a CoC is not the sole requirement. It must be accompanied by appropriate documentation that verifies compliance, which currently lacks a standardised test report for SSEG installations.

6.3 Connection permission

According to Regulation 8(2), no completed electrical installation should be connected to the electricity supply without inspection by a registered person and issuance of a CoC. This reinforces the legal obligation of the Electricity Distributor to ensure safety before connection.

7. RESPONSIBILITIES OF REGISTERED PERSONS

Per Regulation 9, only registered persons are authorised to issue a CoC, contingent upon thorough inspection and testing.

This applies to installations below 1000V for AC and 1500V for DC connections at the point of supply. Registered persons are accountable for verifying compliance per relevant standards.

8. COMPETENCY OF REGISTERED PERSONS

The issue of competency is paramount. As outlined in Regulation 11, individuals seeking registration must demonstrate adequate knowledge of applicable regulations.

Currently, no registered person can sign a CoC for SSEG installations as SANS 10142-1 does not encompass these requirements. An alternative route will need to be established until appropriate standards are developed.

9. GENERATOR REQUIREMENTS AND ASSOCIATED SAFETY STANDARDS

9.1 Embedded Generation (EG)

A significant aspect of safety in SSEG installations involves understanding embedded generation, which refers to systems generating power in parallel with the electricity grid. The lack of established standards inclusive for inverters, particularly in **SANS 10142-1**, heightens the complexity of ensuring safe installations.

NRS 097-2 Series - *Small-Scale Embedded Generation Specifications* should also be recognised, as it is pertinent to safety considerations in these LV SSEG installations. These specifications set out the technical requirements for the utility interface, the embedded generator and the utility distribution network with respect to embedded generation. The specification applies to embedded generators smaller than 1 MVA connected to Low-Voltage **(LV)** networks. In the definition of **"utility"**, reference is made to the "electricity distribution supply authority". In South Africa this may be Eskom, or the municipal electricity service provider.

9.2 By-laws and DoEL Directive compliance

Municipalities retain the authority and accountability to impose additional requirements for SSEG installations beyond the standard CoC under the OHS Act (as amended). This includes stipulations for integration, generation plant, and synchronisation specified in the Department of Employment and Labour **("DoEL") Directive** identified as ***OHS Directive No: OHS-EIMeD 1/19*** which came into effect since 29 August 2019.

Municipalities must ensure overall system safety by incorporating additional necessary requirements for SSEG installations.

9.3 LV SSEG installation impact on Power Quality (PQ)

In addition to the test report completed by a registered person, it is essential that SSEG installations also comply with power quality requirements and the RPP Grid Code provisions applicable to Category A (systems up to 1 MVA at LV). These requirements ensure safe operation, maintain acceptable power quality levels, and support network stability. For example, the RPP Grid Code Section S12 includes control function requirements such as the Absolute Production Constraint, which limits maximum output under specified conditions, and the Power Gradient Constraint, which regulates the rate at which power generation may increase or decrease to avoid sudden fluctuations on the network

10. THE WITHDRAWAL OF SANS 10142-1-2:2021 (EDITION 1) BY SABS IN FEBRUARY 2022 AND ITS IMPACT

SANS 10142-1-2:2021 (Edition 1) must be considered alongside SANS 10142-1 and fully complied with regarding the remainder of the installation. SANS 10142-1-2 addresses the installation from the Point of Supply to the terminals of the embedded generator.
Currently, SANS 10142-1 does not contain an approved test report for the generation, integration, and synchronization of Small-Scale Embedded Generation **(SSEG)** systems, which creates a deficiency or gap within the industry. The standard **SANS 10142-1-2:2021 (Edition 1) — *The Wiring of Premises, Part 1-2: Additional Special Requirements for Low Voltage Small-Scale***

Embedded Generator Installations Connected to the Grid, published in November 2021, aimed to as we understand address this gap but was withdrawn by the South African Bureau of Standards **("SABS")** in February 2022.

As the AMEU, we remain uncertain about the status of this withdrawn standard, though we expect SABS to reinstate it in the future. However, we still do not have clarity regarding when this will occur.

Therefore, it is essential that a qualified and appropriately experienced registered professional person(s) with the Engineering Council of South Africa **("ECSA")** takes responsibility for addressing this deficiency by ensuring that the necessary verification and testing are carried out in accordance with sound engineering norms, standards, practices, and principles.

The AMEU will reassess this requirement upon the reinstatement or republishing of the SANS 10142-1-2 (or an equivalent) standard by SABS, which we expect will potentially include the relevant test report and associated verification procedures mentioned above.

11. LEGAL LIABILITY AND COMPLIANCE RISKS

Accepting CoCs without confirming the competency of the issuing registered person poses potential legal risks to both the electricity distributor and the public. In the event of an incident, the question of liability could lead to substantial repercussions.

This highlights the Municipality's discretionary power in defining the category of "competent persons," underscoring the need for clarity in liability and responsibility.

12. NERSA REGISTRATION REQUIREMENTS FOR LOW-VOLTAGE SMALL-SCALE EMBEDDED GENERATION SYSTEMS

In accordance with the Electricity Regulation Act,2006 (as amended) and specifically Schedule 2 of the Act as administered by the by the National Energy Regulator of South Africa **("NERSA")**, all businesses and households utilizing embedded generation systems with a capacity of less than 100 kVA, including solar PV systems, must register with the relevant municipality (the licensed electricity distributor), even if they do not export electricity to the grid. However, customers who are entirely off-grid and not connected to the municipality's network are not required to register, if they can demonstrate that their systems function independently of the municipality's electricity supply. Embedded generation systems with a capacity greater than 100 kVA must be registered directly with NERSA.

As a licensed electricity distributor, a municipality ensures that all customer connections, whether for energy use or generation, comply with the technical codes, standards, and safety conditions as required by NERSA.

13. RECOMMENDATIONS

13.1 Mandatory training, development and testing

Establish a comprehensive training and development programme that includes specific competency testing for registered persons in SSEG installation inverter testing and commissioning. Technical requirements for training and development must/should align with the standards and practices that will be assessed during certification.

The AMEU (in collaboration with other relevant stakeholders) as an interim measure will consider assisting in the rollout of this this initiative until the Department of Employment and Labour **("DoEL")** considers taking over this initiative or function.

13.2 Standardised testing reports

Develop a standardised test report format for SSEG installations to ensure compliance is verifiable. The AMEU (in collaboration with other relevant stakeholders) **as an interim measure** will consider also assisting in developing such test reports until the Department of Employment and Labour **("DoEL")** considers taking over this function

13.3 Strengthened enforcement:

Enhance inspection protocols developed by inter alia the Department of Employment and Labour **("DoEL")** and/or SA Bureau of Standards **("SABS")** that will verify compliance before allowing electricity grid connections.

13.4 Public awareness:

Increase the level of awareness regarding the importance of compliance with electrical installation laws and the necessity for valid CoCs. The AMEU (in collaboration with other relevant stakeholders) will also consider assisting in promoting such a public awareness campaign.

14. CONCLUSION

The compliance of SSEG LV installations up to 1 MVA with the safety standards is crucial in protecting the safety of the public and electricity utility personnel and maintaining the integrity of the electrical infrastructure. The Municipality's proactive approach to enforcing these regulations and enhancing the competency requirements for electricians will play a vital role in effectively mitigating risks associated with electrical installations. Robust compliance protocols will foster a safer environment for both municipal staff, customers, electrical workers, and the public.

END:

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