

Date: 28 March 2024

Dear SAPVIA and PV GreenCard Members

Subject: SAPVIA Response to the NRS Association and AMEU Pr Eng SSEG Sign Off Recommendation

As the voice for the solar PV industry, SAPVIA has noted the NRS notice dated the 11th of March 2024 and the AMEU decision dated the 13th of March regarding the interim recommendation with relation to ("SSEG") solar PV infrastructure design, test, commissioning and professional sign-off reporting requirements.

The NRS association's technical specifications and recommendations are designed to guide and inform municipal electricity utilities, CENTLEC or City Power for example, and Eskom distribution technical requirements. The NRS specifications enable interoperability between utility infrastructure and electrical equipment and has been invaluable to the electricity supply industry since its inception.

The above notwithstanding, it is important for end users, financiers, insurance providers, solar PV installers and electrical contractors to clearly understand the role, impact, and limitations of the NRS association technical specifications and recommendations on the solar PV industry.

We explain this, in this letter.

The Existing legislative, regulatory and standards framework governing Solar PV installations

The requirements for the solar PV installation industry, alongside all electrical installation works, fall under the existing legislative, regulatory and standards framework of the Occupational Health and Safety Act ("OHSA"), the electrical installation regulations ("EIR") and the incorporated health and safety standards. Section 5(3) of the EIR clearly stipulates when a supplier requirement is applicable to an electrical installation, shown below:

- (3) Items of an electrical installation not covered by an incorporated health and safety standard, and the conductors between the point of supply and the point of control, shall be installed in accordance with the by-laws or regulations of the supplier concerned.



☎ 011 553 7264
 ✉ rethabile@sapvia.co.za
 🌐 www.sapvia.co.za

The NRS association technical specifications and recommendations inform supplier requirements, by-laws and regulations as defined in the EIR. However, the NRS association recommendations only become binding and enforceable after they have been incorporated in a municipal by-law or municipal regulation, as mentioned in section 5(3) of the EIR, above.

The NRS recommendations may also become contractually enforceable if included in a municipal electricity supply agreement, however this relationship is between the supplier and the end user.

Furthermore, the scope of the supplier requirement is limited exclusively, and thus only applicable, to items of the installation not covered by an incorporated health and safety standard. That could be an equipment standard (i.e. “what is installed”) or an installation standard (i.e. “how it is installed”). Table 1 shows a list of incorporated health and safety standards applicable to all solar PV installations in south Africa.

SANS Code	Description	Standard Type	SANS 10142 Normative reference
SANS 10142-1:2021 (Ed. 3.01)	The wiring of premises Part 1: Low-voltage installations	Installation	
SANS 60364-7-712:2018	Low voltage electrical installations Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems	Installation	Yes
SANS 61215:2015 (Ed. 1.00)	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval	Equipment	Yes
SANS 61646:2016 (Ed. 1.00)	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval	Equipment	Yes
SANS 62930:2021	Electric cables for photovoltaic systems with a voltage rating of 1,5 kV DC	Equipment	Upcoming





The SANS 10142-1 installation standard is the incorporated health and safety standard with the additional standards listed above becoming applicable by virtue of being a normative referenced standard within the incorporated health and safety standard. Equipment standards relating to solar PV inverters and battery energy storage systems have not been incorporated to date. The current section of SANS 10142-1 that is relevant for solar PV installations is related to alternative supplies. Section 7.12.7 and section 7.12.7.1 as can be seen below:

7.12.7 Additional requirements for photovoltaic (PV) and similar installations that provide a supply as an alternative to the main supply.

7.12.7.1 The photovoltaic installation shall comply with SANS 60364-7-712 and the solar panels shall comply with SANS 61215 (for poly and mono crystalline) or SANS 61646 (for thin-film).

The SANS 10142-1-2 installation standard, currently in development, aims to remove any ambiguity in the 10142-1 installation standard pertaining specifically to grid interconnected or grid interactive alternative supplies, like solar inverters.

Project De-risking

Any construction or electrical project contains an element of risk, however, standards are designed to mitigate that risk and transfer liability to a person best suited to deal with that risk. In an electrical installation context that person is a registered person in terms of the Electrical Installation Regulations. In situations where there is uncertainty regarding the project risk, a professional engineer would be best suited to quantify, mitigate and ultimately take liability for that project's design risk.

In the current legislative, regulatory and standards framework the portion of a Solar PV installation not adequately covered by an incorporated health and safety standard, and presenting the "unknown" project risk, is the inverter selection, grid interaction of the inverter and battery selection.

In this context, the NRS 097-2-1 specification has proved invaluable to guide the solar PV industry to adequately de-risk inverter selection and grid interaction. Thus, only leaving the battery selection as the uncertain project risk.

In the current context, the sign off responsibility for municipal by-laws or regulations can be designated by the supply authority in accordance with the requirements set out in EIR 5(3).



Finally, the question of recourse for non-compliance available to the supplier and end user must also be considered. The recourse options available for non-compliance with electrical installation standards are well defined and understood by the industry. Unfortunately, the recourse mechanisms for non-compliance with municipal by-laws and regulations remain unclear.

Certified PV GreenCard Installation companies

The PV GreenCard programme is an industry led skills development, quality assurance, and small business support initiative. The programme focuses on skills development and training to:

- build solar PV installer capacity to
- improve installation quality standards and
- promote compliance in line with local and international best practice.

The PV GreenCard programme falls under the auspices of the OHSA, EIR and SANS framework. As such, all certified PV GreenCard installation companies are registered electrical contractors that have at least a registered person in its employ.

Certified PV GreenCard installation companies issue, through the registered person, a COC in terms of the OHSA for all solar PV installations and are required to issue a PV GreenCard As-Built report alongside the COC. The As-Built report is a commissioning document capturing system design, performance, and equipment selection and serial number information for the relevant system. The As-built report also captures additional compliance information relating to wind loading, lightning protection, and surge protection.

The PV GreenCard As-Built report could serve as supporting documentation as it captures the equipment selection information and serial numbers as well as photographs of the installation.

The way forward

SAPVIA is of the opinion that an electrical contractor employing an installation electrician or master installation electrician has the competency to sign off the supplier requirements in terms of equipment selection, as laid out above. As most of the project risk and liability sits with the electrical contractor having issued a COC for the electrical installation, introducing an additional person who has only design competence and not actual installation competence to share in a small portion of the project risk is nugatory.



Additionally, the interactive nature of equipment selection and installation methodology introduces a grey area in terms of liability. In the event of a system failure or incident where an electrical contractor issued a COC and a Pr Eng signed off on the equipment selection an investigation would have to be undertaken to identify the root cause of the incident and the entity responsible for that portion of the project would be held liable. This situation could be avoided if a single entity, namely the electrical contractor, is held responsible for both the regulatory and municipal sign off requirements.

The Pr Eng design responsibility should only apply to systems larger than 100KVA as such systems would still require a similar COC by a registered person but often has more intricate design aspects that the Pr Eng should take responsibility for.

SAPVIA encourages municipalities and suppliers to explicitly enforce compliance with the existing SANS 60364-7-712 Solar PV installation standard over and above the implicit compliance requirements as part of the SANS 10142-1 installation standard.

SAPVIA remains committed to working with all stakeholders to advance the goals of standardisation, compliance, and quality solar PV installations across South Africa.

SAPVIA supports the role of the NRS association and the AMEU to provide guidance and recommendations to the South African electricity supply industry and remains open to engagement to advance the joint goals of electrical safety and sustainability of the South African Solar PV industry.

Kind regards

Dr. Rethabile Melamu

SAPVIA Chief Executive Officer