Midstream Electrical Supplies

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ALSO REFER TO THE COMPLETE DOCUMENT RELATED TO THE REQUIREMENTS FOR SMALL-SCALE EMBEDDED GENERATION (SSEG-M)

SUMMARISED DOCUMENT

Requirements and application process to become a small-scale embedded generator in Midstream

· Small-scale embedded generation (SSEG) refers to power generation under 1MVA, such as PV systems which are located on residential properties where electricity is also consumed.
· This document does not apply to Off-grid SSEG. For Off-grid SSEG, please refer to the declaration for off-grid small-scale embedded generation form (SSEG-OG-D)

The essential reason for SSEG is to provide power to the individual customer based on his own needs.

Hence most of the electricity generated by a SSEG is consumed directly at the site but times arise when generation exceeds consumption and typically a limited amount of power can flow in reverse - from the customer onto the utility grid. A SSEG therefore generates electricity that is “embedded” in the local electricity distribution network in that it is connected to the utility network on the customer’s side of the utility electricity meter. It is essential that all customers wishing to install a grid tied SSEG, regardless of generation capacity, complete the relevant sections of the application process in full, and that written approval is received from MES before system installation commences.

1. General Requirements: Residential

1.1. Compliance with the Law

MES will not require SSEG’s smaller than 100 kVA to obtain a generating licence.

1.2. Generation size limitations

The maximum energy permissible to be fed back onto the grid is a 1200kWh/month per phase and the maximum connection is listed below in the table as per national standards.

No. of Phases	Service connection Service Circuit Breaker Size (A)	Maximum Total Generation Capacity of SSEG (kVA)
1	60A or 80A	4.6
3	60A or 80A	13.8

1.3. Applicable technical standards

Most of the technical requirements for SSEG's are covered in the following standards.

1.3.1 NRS 097-2: Grid interconnection of embedded generation:

- NRS 097-2-1 (Part 2: Small-scale Embedded Generation, Section 1)
- NRS 097-2-3 (Part 2: Small-scale Embedded Generation, Section 3)
- Sections 2 and 4 are for future development

1.3.2 South African Renewable Power Plant Grid Code

See Appendix 1 in the main document (SSEG-M) for the complete list.

1.4. Grid Connection

Small Scale Embedded Generation (SSEG) in Midstream is primarily to assist the private individual in maintaining their daily routine / lifestyle during load shedding or power outages. A grid-tied connection should therefore never be installed for the purpose of co-generation only.

MES will only permit systems to connect to the grid if the system comprises of its own battery backup system of minimum 3kWh, thus enabling the customer to continue his lifestyle during load shedding or power outages.

The consumer grid tied connection must have a contactor with detecting abilities that will automatically disconnect the SSEG from the grid as soon as the grid power fails and must only be able to switch back onto the grid after a minimum period of 20 minutes. If the system doesn't have the ability to delay the switch back, then MES will install equipment for the customer's account.

1.5. Cost and Contract:

NERSA is the regulatory authority for energy in South Africa and MES must adhere to their standards. Solar Generation is relatively new, and NERSA is continuously updating respective regulation. It should therefore be noted that their regulation may supersede what has been agreed between MES and the SSEG.

This contract period is only valid for 1 year as the rules and regulations in respect of solar installations may have changed or been adjusted. It is important to certify the quality of supply into the MES grid annually. It is therefore required that a SSEG customer must submit the commissioning test certificate for grid tie form (SSEG-CERT) annually to our offices. This entails that a qualified person must test your system annually and by issuing the Certificate of Compliance for this installation he or she takes full responsibility for the quality of power to be injected into the grid for the contract period.

MES will purchase from SSEG's based on the Eskom tariff structure excluding VAT. The Eskom standard energy charge will be used as the baseline. Refer to the yearly SSEG-GT-A form for the applicable tariffs.

2. Step by Step guide to apply for permission to install Grid-Tied SSEG (Quick Guide)

Note: For detailed explanation on each step please refer to SSEG-M: Requirements for SSEG document.

MES support green power and we trust you will continue your journey. Should you wish to continue please read and complete all our forms.

• Summary of **documents** requirements as explained in main document (SSEG-M) for grid-tied connection:

Grid-tied application (If you want to put power back onto the MES grid)	Prior to installation	1.	Complete application for the connection of grid-tied small-scale embedded generation (Form: SSEG-GT-A)--- Electrical contractor must be registered at MES.
		2.	Supply the PV specifications and NRS certification of the proposed system
		3.	Copy of planned circuit diagram
		4.	HOA approval
		5.	Hand in application with all required documentation (1-4 above)
		6.	MES issue pre –installation approval letter. (SSEG-L1) Installation commences.
	Installation complete, ready for inspection	7.	Book MES inspection
		7.1	Copy of Final Test Certificate required (Form: SSEG-CERT)
		7.2	Copy of Final Electrical installation Certificate of Compliance required
		7.3	Copy of Final as-built Circuit diagram
		8.	MES issue approval letter on compliance. (Form: SSEG-L2)
		9.	Connect SSEG to grid
		10.	Transaction of reverse power will show on the monthly electricity bill (No VAT applicable)

• Summary of **documents** requirements as explained in main document (SSEG-M) for off grid connection:

Off Grid application	Declaration for off-grid small-scale embedded generation (Form: SSEG-OG-D)
	Supply the PV specifications and NRS certification of the proposed system
	Copy of planned circuit diagram
	HOA Approval
	Book MES inspection
	Complete commissioning / test certificate (Form: SSEG-CERT)
	Copy of Electrical installation Certificate of Compliance required
	Copy of Final as-build Circuit diagram
	MES issue approval letter on compliance (SSEG-OG-D)

• Summary of **technical** requirements as explained in main document (SSEG-M):

Appendix 1	Relevant standards and regulations	E.g. NRS 097-2-1 to 097-2-3
Appendix 2	HOA Approval	Architectural and aesthetical rules for solar panels
Appendix 3	Inverter certificate	Accredited body to certify.
Appendix 4	Interlocked change-over switch	As per SANS requirements
Appendix 5	Battery backup system	>3kWh
Section A, point 1.1	Back on grid generation size limitation	Single phase – 4.6kVA Three phase – 13.8kVA
Section A, point 1.2	SSEG system generation capacity	< 100 kVA

• Summary of **other** requirements as explained in main document (SSEG-M):

Customer must always first comply to current regulatory requirements and national standards
MES Contract valid for 1 year, Customer must submit test certificate to certify the quality of supply and adherence to latest regulations to renew contract for another 1-year period.
Maximum of 1200kWh per month per phase will be credited
Ensure that the system only switch back on after 20 minutes after a power outage
SSEG tariff applicable will be based on Eskom standard rate tariff.

• Summary of **non-compliance / illegal connection** as explained in main document (SSEG-M):

Islanding	If no change over switch is installed (Appendix 4)
Wheeling	Transportation of electricity from SSEG to third party
No HOA approval	Refer to your specific HOA rules and regulations
Poor quality of reverse power	Quality of supply is outside required tolerances
Power on grid before final approval	Final approval letter from MES required before customer is permitted to push power back on grid
Installation does not comply to SANS requirements	No approval letter will be issued until installation adheres to SANS and other national standards. MES re-inspection fee will be charged.
Non-professional sign off	ECSA-registered professional engineers to sign of installation