APPLICATION FOR INSTALLATION OF SMALL SCALE EMBEDDED ELECTRICITY GENERATION

Work Order No: _____ File Reference: 16/2/1

This application form for the connection of small scale embedded generation is for small scale embedded generators to be installed by residential, commercial or industrial customers. It is applicable to all forms of embedded electricity generation, including renewable energy and cogeneration.

- A separate "Electricity Supply Agreement" form must also be completed, except for installations where reverse power blocking is to be installed.
- If the embedded generator is to be configured as a standby supply after islanding from the municipal electrical grid, the generator will have to be connected to the existing internal wiring of the property. In such a case, the property owner must obtain a certificate of compliance from a qualified electrician and complete COMMISSIONING REPORT as per appendix 3.

New Installation		Revised application		System upgrade		Change of ownership	
Other: *(specify)*							
Erf No:		Township/Ward		Account No:			
Initials & Surname:				Title:			
Postal Address:				E-mail address :			
		Postal Code:		Fax No:			
Street (Physical) Address / Location:				VAT Registration No:			
Contact No:	Home		Work		Cell phone		
Indicate:	Residential		Business		Industrial	Group development	
Other: *(e.g. farm – specify)*							

Planned construction schedule:

Projected construction start date	
Projected commencement date	

Motive for small scale embedded generation: (Tick appropriate box)

Energy to be used for own electricity grid and no excess to be exported to municipal electrical grid.		Energy to be used for own electricity grid and excess to be exported to municipal electrical grid.		Energy to be used solely for exporting to municipal electrical grid.		Energy to be used for wheeling to third party through municipal electrical grid.	

Type of generation: (Tick appropriate box)

Photo-voltaic		Concentrated Solar Power		Small Hydro		Landfill Gas		Bio-mass		Bio gas		Wind		Co-generation		Fossil fuel generation	
Expected Life of Embedded Generation Project																		years	

Battery storage:

No		Yes		kWh	

Type of energy conversion: (Tick appropriate box and include operating characteristics).

Synchronous generator		Asynchronous /Induction generator		Inverter		Fuel-cell		Dyno set	

Site location:

Latitude(dd mm sss)	S			°			'				"	
Longitude(dd mm sss)	E			°			'				"	

For commercial/industrial only (show location and dimensions of intended installation infrastructure in relation to the existing property point of connection and buildings.)	

Site land use zoning:
(Attach copy of zoning certificate)

Preliminary design[1]:
(to be attached)

Circuit diagram & design showing major components, proposed point of common coupling, isolating & interfacing devices with municipal grid, protection schemes, customer grid, operating characteristics.

[1] For guidance here, it is recommended that an installer/supplier be consulted.

Earthing arrangements i.e. TN-C-S	

Generator Info: Total capacity of small scale embedded generation (kVA and PF[2]): (Attach schedule for each unit if more than one generation unit and location)	Three phase		Single phase		kVA		Amps	
Make			Model					
Total Export Generation Capacity ((kVA) and PF) (Maximum power intended for export into Municipal grid)					kVA		Power Factor	

Property distribution board main circuit breaker size:	Ampere (A)		Three phase		Single phase	

Proposed consumption and generation levels: (Complete the table below)

Month	Estimated imported energy for month (kWh) (Electricity bought from utility once SSEG is installed)	Estimated exported energy for month (kWh)(Electricity generated by SSEG & not utilised for own use)	Estimated maximum instantaneous exported power (kVA)	Day of week that maximum power export occurs	Time of day maximum power export occurs
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Total			N/A	N/A	N/A

Brief explanation of the reasons for the general load profile and electricity export profile as demonstrated above:

Point of Common Coupling: (Isolation point to be used to connect/disconnect embedded generation from the Distribution Network, attach single-line diagram showing arrangement including consumer network).	

Network Connection Point: (In the case of applicant not being an existing consumer only, attach single-line diagram showing arrangement).	

[2]This will mainly apply to systems that make use of rotating machines e.g. wind power, hydro or diesel generators. For static power converters (e.g. inverters with a solar PV system), the power factor is generally 1 and the kWp of the system will be the same as the kVA.

Protection Details: (Attach data sheets)

Method of synchronizing: (Auto/Manual, make and type of relay etc.)	
Method of anti-islanding: (Details of scheme, relays to be used etc.)	
Method of generator control: (AVR, speed, power, PF etc. , relays to be used)	
Other protection to be Applied: (O/C, E/F, over/under voltage, over/under frequency, reverse power etc.)	

Intended Recipient of Embedded Generation Output: (Own use, Overstrand Municipality Electricity Consumer, Overstrand Municipality Electricity)	

Recording of quality of supply devices	

List of regulatory approvals, requirements and normative references[3]: (Tick appropriate box or mark not applicable N/A)

Electricity Regulation Act, Act 4 of 2006 and Electricity Regulation Amendment Act, Act 28 of 2007	
Occupational Health & Safety Act, No. 85 of 1993 as amended	
South African Distribution Code (all parts)	
South African Grid Code (all parts)	
South African Renewable Power Plants Grid Code	
Overstrand Municipality Electricity Supply By-Law	
SANS 474 / NRS 057: Code of Practice for Electricity Metering	
SANS 10142- Parts 1 to 4: The wiring of premises (as amended and published)	
NRS 048: Electricity Supply – Quality of Supply	
NRS 097-1 : Code of Practice for the interconnection of small scale embedded generation to electricity distribution networks: Part 1 MV and HV	
NRS 097-2 : Grid interconnection of small scale embedded generation: Part 2: Small scale small scale embedded generation	

Clearance by other Municipal departments

FUNCTION	SECTION	COMMENTS	NAME	SIGNATURE	DATE
Zoning/subdivision	Town Planning				
Building structure plans	Building Department				
Noise impact & air pollution	Environmental Services				

Note:

1. Electricity Services will require prior approval from these departments. Applications to connect to the municipal electrical grid will not be considered until all relevant approvals have been obtained.
2. Photovoltaic (PV) SSEG applications will require approval from only Town Planning and Building Departments if:
   a) Roof top installations: PV panel(s) in its installed position projects more than 1.5m, measured perpendicularly, above the roof and/or projects more than 600mm above the highest point of the roof;
   b) Installations on the ground: PV panel(s) in its installed position projects more than 2.1 metres above the natural/finished ground level.

[3]Note: It is the responsibility of the ECSA registered professional engineer/technologist to ensure compliance through their professional sign-off of the installed system in Appendix 1 – SSEG Installation Commissioning Report.

Installer Details

Installer:					
Accreditation/qualification:					
Professional registration:			Reg. No.		
Address:					
			Postal code:		
Contact person:					
Telephone no:	Work:		Cell:		
Fax:		E-mail address:			
Additional Comments					

Signed (Installer): _____ Date: _____

(Note: Sign-off by an ECSA registered professional is optional at application stage, however it is recommended that an ECSA registered professional engineer or professional technologist that is familiar with the technical details of the intended generation technology, complete this application form)

ECSA registered professional

Name & Surname	Registration number:	Registration category:

Additional Comments

Signed (ECSA registered professional): _____ Date: _____

I request the Overstrand Municipality Electro Technical Department to proceed with the review of this small scale embedded generation interconnection application. I understand that:

- I will have to pay for both in-house and outsourced engineering studies conducted as part of this review, should these be required; and
- A quotation for such work will be provided beforehand, giving me the opportunity to cancel or modify the application should I wish to do so.

I further consent to Overstrand Municipality providing this information to the National Transmission Company and other Distributors as required.

Application completed by:

Name & Surname:	Title:

Signed (Applicant): _____ Date: _____

Signed (Property Owner): _____ Date: _____

Submit completed form to: Electro Technical Department

FOR OFFICE USE

Date Application Received:					Application Reference No:	
Further Information Required: (e.g. Competent Person detail required i.t.o. Occupational Health and Safety Act, General Machinery Regulations: Supervision of Machinery, Section 2)	YES		NO		Date Received:	
Load Flow Analysis Required:	YES		NO		Date Complete:	
Fault Level / Protection Grading Study Required:	YES		NO		Date Complete:	
Approved in Principle:	YES		NO		Date Applicant Advised:	
Copy of COC received:	YES		NO		Date COC received:	
Installation inspected by Municipality:	YES		NO		Date inspected:	
Smart meter installed and programmed:	YES		NO		Date installed and programmed:	
Installation certified for commissioning:	YES		NO		Date applicant informed that installation may be commissioned:	

Installation inspected by: Electrician (Name): _____ Staff no: _____

Signature Electrician: _____ Date: _____

ANNEXURE A

Responsibilities of Embedded Generators to Overstrand Municipality, Electro Technical Department	
1	The Embedded Generator shall enter into a connection agreement with Overstrand Municipality Electricity (Distributor) before connecting onto the Distribution System.
2	The Embedded Generators shall ensure that the reliability and Quality of Supply complies with the terms of the connection agreement.
3	The Embedded Generator shall comply with the Distributor's protection requirement as well as protection of own plant against abnormalities, which could arise on the Distribution System.
4	The Embedded Generator shall be responsible for any dedicated connection costs incurred on the Transmission System or Distribution System as a result of connection of the Embedded Generation facility to the Distribution System.
5	The Embedded Generator shall be responsible for synchronizing the generating facility to the Distribution System within pre-agreed settings.
Connection Point Technical Requirements	
1	The Embedded Generator shall be responsible for the design, construction, maintenance and operation of the equipment on the generation side of the connection point.
2	The Embedded Generator shall be responsible for the provision of the site required for the installation of the Distributor's equipment required for connecting the generating facility.
3	The technical specifications of the connection shall be agreed upon by the participants based on the Distribution System Impact Assessment Studies.
4	A circuit breaker and visible isolation shall be installed at the connection point to provide the means of electrically isolating the Distribution System from the generating facility.
5	The Embedded Generator shall be responsible for the circuit breaker to connect and disconnect the generator plant.
6	The location of the circuit breaker and visible isolation shall be decided upon by the participants.
Protection Requirement for Embedded Generators **General Protection Requirements**	
1	The Embedded Generator's protection shall comply with the requirements of Overstrand Municipality.
2	Additional features including inter-tripping and generator plant status to be agreed upon by the participants.
3	The protection schemes used by the Embedded Generator shall incorporate adequate facilities for testing and maintenance.
4	The protection scheme shall be submitted by the Embedded Generator for approval by Overstrand Municipality Electro Technical Department.
Specific Protection Requirements	
1	Phase and Earth Fault Protection (a) The protection system of the Embedded Generator shall fully coordinate with the protective relays of the Distribution System. (b) The Embedded Generator shall be responsible for the installation and maintenance of all protection relays at the connection point.
2	Over/under Voltage and over/under Frequency Protection The Embedded Generator shall install over/under voltage and over/under frequency protection to disconnect the generating facility under abnormal network conditions as agreed between the Distributor and the Embedded Generator.
3	Faults on the Distribution System The Embedded Generator shall be responsible for protecting its generation facility in the event of faults and other disturbances arising on the Distribution System.
4	Islanding (a) The Embedded Generation facility shall be equipped with loss of mains detection protection system to prevent the generator from being connected to a de-energized Distribution System. The Distributor shall take reasonable steps to prevent closing circuit breakers onto an islanded network. (b) For unintentional network islanding, the Embedded Generator and the Distributor shall agree on methodology for disconnecting and connecting the Embedded Generator.

Quality of Supply Requirements	
1	Frequency Variations The Embedded Generation facility shall remain synchronized to the Distribution System while the network frequency remains within the agreed frequency limitations at all time.
2	Power Factor The power factor at the connection point shall be maintained within the limits agreed upon by Overstrand Municipality Electro Technical Department.
3	Fault Levels The Embedded Generator shall ensure that the contractually agreed fault level contribution from the generation facility shall not be exceeded at any time.
Telemetry	
1	The Embedded Generator shall have the means to remotely report any status change of any critical function that may negatively impact on the Quality of Supply of the Distribution System.
Operational Responsibilities of Embedded Generators	
1	The Embedded Generator shall ensure that its generating units are operated within the capabilities defined in the Connection Agreement entered into with the Distributor.
2	The Embedded Generator shall reasonably cooperate with the Distributor in executing all the operational activities during an emergency generation condition.
3	The Embedded Generator shall assist the Distributors in correcting Quality of Supply problems caused by its equipment connected to the Distribution System.
4	All customers must declare any co-generating plant (whether licensed or not) and specify the interlocking mechanism to prevent inadvertent parallel operation with the Distributor's network.
5	Embedded Generators shall have the required protection to trip in the event of a momentary supply loss causing an island condition to prevent paralleling out of synchronism due to auto-reclose functionality on the Distributor's Network.
Fault Reporting and Analysis/Incident Investigation	
1	The Embedded Generators shall report the loss of generation (as agreed by the participants) to the Distributor within 15 minutes of the event occurring. Notice of the intention to reconnect such shall be given with at least 15 minutes advance notice to enable the Distributor to take any necessary action required.
Outage Scheduling and co-ordination	
1	Embedded Generators with the maximum capacity greater than 1MW shall furnish the Distributor with information on planned outages in order for the Distributor to properly plan, and coordinate its control, maintenance and operation activities.
Standards to abide by	
1	NRS 097 :GRID INTERCONNECTION FOR EMBEDDED GENERATION
2	NRS 048 :ELECTRICITY SUPPLY: QUALITY OF SUPPLY
Additional Requirements	
1	Where the 11 kV side of the generator transformer is Star, an NER must be fitted.
2	Where the 11 kV side of the generator transformer is Delta, an NECR must be fitted.