



CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

THIS CITY WORKS FOR YOU

## ELECTRICITY SERVICES

Submit Completed Form to:

Customer Support Services : North		
Test & Metering Building Ndabeni Electricity Complex 1 Melck St Ndabeni Cape Town	Ndabeni Electricity Complex 1 Melck St Ndabeni MAITLAND 7405	Telephone: (021) 5064819/20  Facsimile: (021) 5064836
or Customer Support Services : East		
Block A Bloemhof Centre Bloemhof Street Bellville	Private Bag X44 BELLVILLE 7535	Telephone: (021) 9187058/669  Facsimile: (021) 9187088
or Customer Support Services : South		
First Floor Wynberg Electricity Depot Rosmead Avenue Wynberg Cape Town	Wynberg Electricity Depot Rosmead Avenue WYNBERG 7800	Telephone: (021) 7635664/93  Facsimile: (021) 7628029

**Name of Electricity Business Partner Account Holder and Number:**

(Only if embedded generation is to be connected with a City of Cape Town Electricity consumer's network)

Name:		Title:	
No:			

**Business Partner Contact Details:**

	<b>Office</b>	<b>Mobile</b>
Telephone number		
Facsimile number		
E-mail address		

**Project Name and location:**

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**APPLICATION FOR THE CONNECTION OF EMBEDDED GENERATION** Page 2

**Construction Schedule:**

Projected construction start date	
Construction power requirements	
Projected in-service date of embedded generator	

**Mode of Embedded Generation:**  
(Tick appropriate box)

Energy from Embedded Generation to be used within a consumer's electricity network and no excess to be exported to City of Cape Town Electricity's distribution network	<input checked="" type="checkbox"/>
Energy from Embedded Generation to be used within a consumer's electricity network and excess to be exported to City of Cape Town Electricity's distribution network	<input type="checkbox"/>
Energy from Embedded Generation to be used solely for exporting to City of Cape Town Electricity's distribution network	<input type="checkbox"/>
Energy from Embedded Generation to be used solely for wheeling to third party through City of Cape Town Electricity's distribution network	<input type="checkbox"/>

**Energy Source for Embedded Generation:**  
e.g. Coal, Gas, Biogas, Hydro, Wind, Photo-Voltaic, etc.

**Type of Energy Conversion:**  
e.g. Synchronous Generator, Induction Generator, Inverter, Fuel-cell, Dyno set. Include operating characteristics.

**Site Plan:**  
(Tick appropriate box)

Site plan to show scaled map with existing services	<input checked="" type="checkbox"/>
Future site development plans	<input type="checkbox"/>

**Land Use Zoning:**

**Preliminary design:**

Circuit diagram and design showing generators, transformers, proposed point of common coupling, isolating and interfacing devices with City of Cape Town electrical network, protection schemes, consumer network, operating characteristics, etc.	<input type="checkbox"/>
Earthing arrangements	<input type="checkbox"/>

**APPLICATION FOR THE CONNECTION OF EMBEDDED GENERATION** Page 3

**Total Capacity of Embedded Generation (kVA and PF):**  
 (Attach schedule for each unit if more than one generation unit and location)

**Total Export Generation Capacity (kVA and PF):**  
 (Maximum power intended for export into City of Cape Town Electricity's distribution network)

**Make & model of generating unit:**

**Electrical Parameters of Embedded Generation:**  
 (All units in parallel, to be used for fault-level studies)

Rated voltage	Maximum MVAR limit	Inertia constant

Maximum peak short circuit current (A)	Single or multiphase

Neutral to earth resistance in ohms	Xd – Synchronous reactance in p.u.	X'd – Direct axis transient reactance in p.u.

X''d – Direct axis sub-transient reactance in p.u.	X2 – Negative sequence reactance in p.u.	X0 – Zero sequence reactance in p.u.

**Electrical Parameters of generator and unit transformers:**

Voltage and power ratings	Winding configuration

Neutral earth resistor or reactors

Positive and zero sequence impedances in p.u.	
R1	X1
R0	X0

**Expected consumption of electricity:**  
 (Details to be clarified with City of Cape Town)

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

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**Protection Details:**

Method of synchronising: (Auto/Manual, make and type of relay, etc.)	
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Method of anti-islanding: (Details of scheme, relays to be used, etc.)	
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Method of generator control: (AVR, speed, power, PF, excitation system requirements etc. relays to be used)	
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Other main protection to be applied: (O/C, E/F, over/under voltage, over/under frequency, reverse power, back-up impedance, generator transformer back-up earth fault, HV breaker fail, HV breaker pole disagreement, etc.)	
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Recording of Quality of Supply devices	
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**Has a Power Purchase Agreement been entered into with a recipient (Required before connection to Distribution System):**  
(If YES, supply details)

**Proposed Generation Power Level:**  
(During periods defined by Eskom's Megaflex Tariff)

	TOTAL		EXPORT
Peak Periods	<input type="text"/> kW		<input type="text"/> kW
Standard Periods	<input type="text"/> kW		<input type="text"/> kW
Off-Peak Periods	<input type="text"/> kW		<input type="text"/> kW

**Proposed Total Monthly Energy Generation:**  
(Attach schedule if monthly generation is not consistent, e.g. linked to availability of prime energy source)

TOTAL		EXPORT
<input type="text"/> kW		<input type="text"/> kW

**Has Incentive Capital Funding Been Obtained For This Installation:**  
(State source(s) and amount)

**Has a subsidy been granted for production of energy from this installation:**  
(State source(s) and amount)

**List of Regulatory Approvals, Requirements and Normative References:**

(Tick appropriate box or N/A)

	✓
Electricity Regulation Act, Act 4 of 2006 and Electricity Regulation Amendment Act, 2006	
Department of Environmental Affairs & Tourism in terms of Environment Conservation Act, No. 73 of 1989 and National Environmental Management Act, No. 107 of 1998, (as amended)	
Explosives Act, No. 26 of 1956 as amended	
Occupational Health & Safety Act, No. 85 of 1993 as amended	
Compulsory Specifications Act (Act 5 of 2008)	
South African Distribution Code (all parts)	
South African Grid Code (all parts)	
City of Cape Town Electricity Supply By-Law	
IEC 60068-2-1 : Environmental Testing – Part 1 Cold	
IEC 60068-2-2 : Environmental Testing – Part 2 Dry Heat	
IEC 60068-2-30 : Environmental Testing – Part 30 Damp heat, cyclic (12h + 12h cycle)	
IEC 60255-3 : Electrical relays Part 3 : Single input energizing quantity measuring relays with dependent and independent time	
IEC 60255-6 : Electrical relays Part 6 : Measuring relays and protection equipment	
IEC 60255-21 : Electrical relays Part 21 : Vibration, shock, bump and seismic tests on measuring relays and protection equipment (all sections)	
IEC 60255-22 : Electrical relays Part 22 : Electrical disturbance tests for measuring relays and protection equipment (all sections)	
IEC 61727: Photovoltaic (PV) systems - Characteristics of the utility interface	
IEC 62271-100: High voltage alternating current circuit breakers	
IEC 62116: Test procedure of islanding prevention measures for utility-interconnected photovoltaic inverters	
IEEE 1547 : IEEE Standard for interconnecting distributed resources with electrical power systems	
IEEE 1547.1, IEEE Standard conformance test procedures for equipment interconnecting distributed resources with electric power systems	
NRS 029 : Current transformers for rated a.c. voltages from 3,6kV up to and including 420kV	
NRS 030 : Electricity distribution – Inductive voltage transformers for rated a.c. voltages from 3,6kV up to and including 145kV for indoor and outdoor applications	
NRS 031 : Alternating current disconnectors and earthing switches (above 1000V)	
NRS 037-1 : Telecontrol Protocol for stand-alone remote terminal units	
NRS 048-2 : Electricity Supply – Quality of Supply Part 2 : Voltage characteristics, compatibility levels, limits and assessment methods	
NRS 048-4 : Electricity Supply – Quality of Supply Part 4 : Application guidelines for utilities	
NRS 048-7 : Electricity Supply – Quality of Supply Part 7 : Application practices for end-users	
NRS 054 : Rationalized User Specification – Power Transformers	
NRS 057 (SANS 474) : Code of Practice for Electricity Metering	
NRS 097-1 : Code of Practice for the interconnection of embedded generation to electricity distribution networks : Part 1 MV and HV	
NRS 097-2 : Grid interconnection of embedded generation : Part 2 Small scale embedded generation	
SANS 1019 : Standard voltages, currents and insulation levels for electricity supply	
SANS IEC 60529 : Degrees of protection provided by enclosures (IP Code)	
SANS IEC 61000-4 : Electromagnetic compatibility (EMC) : Test and measurement techniques (all sections)	

**CLEARANCE BY OTHER CITY OF CAPE TOWN DEPARTMENTS**

FUNCTION	SECTION	COMMENTS	NAME	SIGNATURE	DATE
Zoning/Subdivision / Building Structure Plans	Planning and Building Development Management (Area offices)				
Noise impact assessment and ventilation	City Health Specialised Services Cape Town Civic Centre, 22 <sup>nd</sup> Floor 021-4003781				
Air pollution and quality (Fuel burning)	City Health Specialised Services 246 Voortrekker Road, Vasco 021-5901419				

**INSTALLER DETAILS**

Installer:			
Accreditation/Qualification:			
Professional Registration:		Reg No.	
Address:			
			Postal code:
Contact person:			
Telephone no:	Office:		Mobile:
Facsimile:	E-mail address:		

**Any other additional information:**

I request City of Cape Town to proceed with a preliminary review of this embedded generation interconnection application and I agree to pay the cost associated with completing this review and written consent of City of Cape Town.

I further consent to City of Cape Town providing this information to the National Transmission Company and other Distributors as required.

I declare that this installation has been designed to comply with the requirements of City of Cape Town Electricity Services.

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**Application Completed By:**

Name:	Title:

**Professional Registration category:  
(Pr Eng or Pr Tech Eng)**

	Reg no:	
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**Signed (Applicant):**

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**Date:**

**Signed (Business Partner):**

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**Date:**

**COMMENTS: CITY OF CAPE TOWN ELECTRICITY SERVICES**

A representative of City of Cape Town Electricity Services will wish to witness the commission and installing notices on the circuits when generation is present.	Yes / No				
As representative of City of Cape Town Electricity Services, I hereby provide permission in principle for the embedded generation units.	Yes / No				
<u>Comments</u>					
Director: Cape Town Electricity Services	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;">Contact:</td> <td style="width: 40%; padding: 5px;">Date:</td> </tr> <tr> <td style="height: 30px;"></td> <td style="height: 30px;"></td> </tr> </table>	Contact:	Date:		
Contact:	Date:				



FOR OFFICE USE

Date Application Received:

Application Reference No.

Further Information Required:

Date Received:

Load Flow Analysis Required:

Date Complete:

Fault Level / Protection Grading Study Required:

Date Complete:

Approved in Principle:

Date Applicant Advised:

Copy to System Control:

Date Completed:

Copy to Area Engineering Support:

Date Completed: