

Shell South Africa (Pty) Ltd.
P. O. Box 1541
BRITS
0250

Date:
27 May 2013

Enquiries:
Tel +27 12 725 2271
Cell. +27 83 667 7740
E.mail. Theresa.smith@eskom.co.za
Quote Ref No: HE89162520

Dear Mr. Taylor

BUDGET QUOTATION FOR NEW SUPPLY OF 250KVA, AT INSTALLATION SHELL SOUTH AFRIKDA PTY LTD.

With reference to your application for a budget quotation, dated 14 February 2013 regarding the above new point of supply of 250kVA, we have pleasure in providing you with a budget quotation to make the supply of electricity available.

This budget quotation provides detailed terms and conditions to be met and gives cost estimates to a confidence level of 85%. Should you require a more accurate quotation, you should apply for a final quotation. The final quotation will detail all conditions to be met and will give costs to a confidence level of 95%. Final costs can only be provided after the detailed design and tender processes have been completed.

BACKGROUND

- 1.1 Subject to paragraph 2.2 and subject to any conservation and/or rationing programme or scheme which may be introduced, adopted or implemented by NERSA, the Department of Energy or any other regulatory body from time to time, and subject generally to Eskom's generation capacity and conditions on its transmission and/or distribution systems, the notified maximum demand will be **250kVA** at a supply voltage of 400V.
 - 1.1.1 Notified Maximum Demand (NMD) means the Maximum Demand notified in writing by the customer and accepted by Eskom, that the customer requires Eskom to be in a position to supply on demand during all time periods. It is normally the capacity that Eskom will reserve for a customer for the short term, i.e. the following year.
 - 1.1.2 You are required to submit a 12 (twelve) month electricity consumption forecast as well as an annual maximum demand forecast for 7 (seven) years for your electrical installation to Eskom.
- 1.2 Any load registered above the NMD referred to in paragraph 1.1 above, where an increase in the NMD has not been requested by you and accepted by Eskom, is subject to the NMD rules as amended from time to time with the approval of the National Energy Regulator of South Africa. Such unauthorized increase in load shall constitute a material breach of the terms and conditions pertaining to your electricity supply and shall entitle Eskom to terminate or reduce the supply of electricity to your electrical installation.

Northern Region
Customer Services
Gobie Street Extension 1 Newlands 0049 PO Box 36099 Menlo Park 0102 SA
Tel +27 12 421 3111 Fax +27 12 421 3385 www.eskom.co.za

Directors: PM Makwana (Chairman) BA Dames (Chief Executive) CJ Campbell LCZ Cele SD Dube BL Fanaroff
LG Josefsson (Swedish) HB Lee (Korean) WE Lucas-Bull B Mehlomakulu J Mirenge (Rwandan)
JRD Modise PS O'Flaherty* U Zikalala (*Executive Director) **Company Secretary:** B Mbomvu
Eskom Holdings SOC Limited Reg No 2002/015527/06



- 1.3 If an increased load is requested in the future, various terms will change and a conversion fee will be payable, even if the network itself may not require an upgrade. The provision of an increased supply in future will be dependent on Eskom achieving a reasonable reserve margin through either national electricity savings and/or the addition of generating capacity. Capacity will be allocated to customers in accordance with capacity allocation criteria. Due to the current energy and capacity constraints in South Africa, Eskom may not be able to make an increased supply available within your expected timelines.
- 1.4 Should a reduction in the NMD be requested, such reduction will be subject to 12 (twelve) months' written notice.
- 1.5 The words and expressions in this document shall have the meanings ascribed to them in the South African Grid Code and the Distribution Code. These documents are obtainable from the National Energy Regulator of South Africa's website at: www.nersa.org.za then find links to *Electricity & Compliance Monitoring*.

TECHNICAL

2.1 Design Criteria

Pole number: CKR45/41A

NMD: 250kVA; Voltage: 400V

*Equipment to be supplied by Eskom:

250kVA Transformer; Metering kiosk, Programmable meter & remote

2.2 Supply of Electricity under Emergency Conditions, Energy and/or Capacity Constraints

- 2.2.1 **It is specifically recorded that this budget quotation is provided at a time when Eskom is experiencing electricity generation, transmission and distribution constraints and also stability constraints of its interconnected power system. It must be noted that capacity is going to be severely constrained for the next 7 (seven) to 10 (ten) years and that electricity must be used as efficiently as possible.**
- 2.2.2 **From time to time Eskom may have a shortage of generation capacity and may not be able to meet the energy and capacity required by all its customers.**
- 2.2.3 **Nothing set out in this budget quotation shall be construed as limiting the right of Eskom to temporarily interrupt or reduce the supply of electricity to its customers or to require customers to reduce their demand for the supply of electricity.**
- 2.2.4 **Should NERSA, the Department of Energy or any other regulatory body in future introduce (for purposes of managing energy supply to Eskom's customers, generation capacity or network capacity constraints on Eskom's electricity system) any programme or scheme whereby Eskom's customers are required to reduce their consumption, or terminate their consumption of electricity, you will be required to participate and reduce your electricity consumption as required in terms of such programme or scheme and the terms and conditions as set out in this budget quotation shall be amended accordingly for the duration of such programme or scheme.**
- 2.2.5 **You will be required to collaborate in determining the portion of your load which Eskom will reduce through its under-frequency load shedding scheme.**

2.3 Network Performance

2.3.1 Quality of Supply

- (a) Eskom is required to provide a standard of quality of supply, which complies with the national standard NRS048 as is required by the National Energy Regulator of South Africa (NERSA). A summary of the quality provisions in this standard is set out in the attached Annexure 'A'.
- (b) You will be required to comply with the quality of supply limits determined in accordance with Eskom's Apportioning of Quality of Supply Procedure, ESKPVAAN6, a copy of which can be made available on request. A table with the threshold requirements is set out in the attached Annexure 'A'.
- (c) Eskom will use its reasonable endeavours to furnish you with a reliable and continuous supply of electricity. However, Eskom does not guarantee that the continuity and voltage quality of the supply will always be maintained under all contingencies. In particular, the potential that your supply will be affected in circumstances as set out in paragraph 2.2 is highly likely. It is incumbent on you to take adequate measures to protect your business and plant against any damage and / or losses that could arise from voltage interruptions, voltage dips or any other variations in the voltage quality.
- (d) Eskom generally contracts with customers for a standard supply in terms of which no specific voltage dip or interruption limits will be specified in the contract. Indicative levels of voltage dip and interruption performance may be obtained on request from Eskom. Dip and interruption performance is managed according to the requirements of the NERSA Power Quality Directive, whereby customer concerns are addressed on a case-by-case basis. In order to ensure greater levels of assurance on interruption (and in some cases dip) performance, customers may elect to:
 - Pay for the necessary infrastructure required to supply electricity at higher levels of reliability;
 - Pay for additional monitoring equipment to effect monitoring of performance at the supply point.

2.3.2 Scope of works

In order to make the new supply available it is necessary to do the following work:

- (a) Standard equipment
 - Install a new 250kVA transformer out of line complete with programmable metering.

2.4 Land development

2.4.1 Survey input required.

2.5 Additional Technical Requirements

- 2.5.1 Notwithstanding the above scope of work, in the interim period, should another more viable technical and economical option present itself, Eskom reserves the right to exercise that option and to provide you with a new quote.
- 2.5.2 A suitable road must be freely available at all times to afford Eskom access for the purpose of reading the meters and maintaining the circuits. You will be required to maintain the said access road in a good state of repair.
- 2.6.3 You will be responsible for ensuring that your installation complies with the Occupational Health and Safety Act (Act 85 of 1993), or relevant safety legislation. You are also required to forward to Eskom the details of your 16.2 Appointee (delegated employer) or a Certificate of Compliance duly completed and signed by a registered electrical contractor.
- 2.6.4 The power factor of the supply taken by you shall at no time be allowed to be below 0,9 lagging and may never be leading.
- 2.6.5 The technical details of the supply should be discussed and finalised in conjunction with Eskom's nominated Project Engineer or Customer Executive at the start of the detailed design phase.
- 2.6.6 Please be advised that this supply may be interrupted due to weather conditions and other circumstances. You are responsible to protect your plant against possible quality of supply problems. It is therefore advisable to protect all sensitive equipment against dips or surges, as Eskom does not accept liability for any losses incurred during such interruptions.
- 2.6.7 All equipment up to the point of supply at the point of delivery shall be provided, installed, operated and maintained by Eskom.
- 2.8.8 You will, at your own expense, provide, erect, connect up, operate and maintain all circuits required to connect your electrical installation with the points of supply/delivery and all equipment necessary for controlling such circuits to the reasonable satisfaction of Eskom for the protection of the equipment of Eskom against overload, faults and lightning on the electrical installation. The protection settings for your fault and overload equipment shall be agreed with Eskom to ensure appropriate protection grading.

2.9 Energy Efficiency

You are required to use energy efficient technologies and equipment in accordance with good practice in the Agricultural sector, and also to ensure that the new load to your electrical installation complies with the energy efficiency specifications attached hereto. (Annexure 'C')

- 2.10 You will be required to comply with the provisions of the Distribution Code.

FINANCIAL

3.1 Tariff details

- 3.1.1 Subject to the provisions of the Electricity Regulation Act (Act No 4 of 2006), as amended from time to time, the prices to be charged monthly will be as set out in the Pricing Annexure attached to this quotation. The applicable tariff will be Nightsave Rural (Annexure 'D').
- 3.1.2 The prices are also subject to Eskom's obligation to adjust the prices it charges for electricity supplied for the duration of any rationing and/or conservation program/scheme introduced, adopted or implemented by NERSA, the Department of Energy or any other regulatory body or in accordance with any obligations imposed upon Eskom under the provisions of the Electricity Regulation Act.
- 3.1.3 These prices will be valid until Eskom's next price increase or tariff restructuring, becomes operative. Please note that deviations to Eskom's existing standard tariffs, based on consumption levels, may be brought about in line with any rationing and/or conservation program/scheme introduced, adopted or implemented by NERSA, the Department of Energy or any other regulatory body or in accordance with any obligations imposed upon Eskom under the provisions of the Electricity Regulation Act.

3.2 Connection Charges

- 3.2.1 In addition to the standard tariff charges referred to in paragraph 3.2, connection charges are payable to recoup the cost of providing the connection not recovered through the standard tariff.
- 3.2.2 Connection charges are cost based charges, charged in accordance with the investment criteria contained in the South African Grid Code and Distribution Code as follows:
- The dedicated least economic network costs associated with providing the supply are recovered through a standard connection charge.
 - The cost of additional dedicated assets plus a pro-rata share of the upstream supply associated with providing a requested premium quality of supply (a more reliable connection than the one provided for in the investment criteria) are recovered through a premium connection charge.
- 3.2.3 You will be required to pay these connection charges, not included in the tariff, through a Connection Fee at the time of accepting the budget quotation and the balance through a connection charge as per an agreed payment schedule with Eskom.

Where long lead time material / construction will be involved, you may be permitted to phase the capital payments to reach Eskom before Eskom incurs any item of cost. Should you negotiate a phasing option with Eskom, you will be required to provide an acceptable guarantee at the time of accepting the budget quotation.

The connection charge is subject to revision should the notified maximum demand or the scope changes.

- 3.2.4 The methodology used to calculate Connection Charges can be found at www.eskom.co.za/tariffs under the link "Pricing Documents".
- 3.2.5 The following explanations have reference to the charges in this Paragraph 3. The applicable charges are set out in Table 2 and are separated for Distribution and Transmission related charges where applicable.

3.2.5.1 Connection Fee

The Connection Fee is the minimum up-front contribution towards the connection charge that is payable on acceptance of the budget quotation.

If acceptance of the budget quote is cancelled before survey or any physical construction work has been done, the Connection Fee plus quotation fee less any actual costs incurred will be refundable. If the survey or construction has started, the full fee will be forfeited.

3.2.5.2 Standard Connection Charge

A Standard Connection Charge is payable for costs associated with a standard connection. The Standard Connection Charge comprises the Standard Connection Fee and the Standard Up-front Connection Charge.

3.2.5.3 Up-front Connection Charge

The Up-front Standard and Premium Connection Charges, together with the Connection Fee make up the Total Connection Charge.

3.2.5.4 Distribution Connection Charges

Distribution Connection Charges are raised on connection costs associated with the Distribution network.

3.3 Security – electricity accounts

3.3.1 Security for the due payment of monthly electricity accounts is required as set out in Table 2 below. The Security should be sufficient to cover the estimated electricity accounts for 3 (three) consecutive months. The security may be provided in cash or by means of a bank guarantee, and must be provided on acceptance of the budget quotation. A blank guarantee form is can be requested from Eskom.

3.4 Summary of charges

3.4.1 The estimated figures for the items under this Paragraph 3 are as follows:

Table 2: Summary of charges payable

CHARGE	ESTIMATED VALUE
Total Distribution Standard connection charge	R 214 618.42 + VAT = R 244 665.00
<i>The above connection charges are payable as follows:</i>	
UP-FRONT PAYMENT	
Distribution Connection fee	R 19 868.42 + VAT = R 22 650.00
Up-front Distribution Standard Connection Charge	R 194 750.00 + VAT = R 222 015.00
Security	R215,667.68 (VAT Inclusive)

Note: The above values are based on connection charges calculated from shared network costs (where applicable) plus the capital costs given in Tables 1 (a) & (b) and are stated in 2013 Rand values, including overheads, escalation and IDC, and based on an assumed connection date of 9 months after payment. The values quoted will be finalised once supply is made available. The associated costs will be escalated by the Producer Price Index (PPI) and will depend on the year in which the actual capital expenditure takes place. As a result the Connection Fee and the Connection Charge as set out in this quotation will change.

3.5 Capital cost variance

- 3.5.1 Prices quoted are for **budget** purposes only. A final quotation will be provided on request and only after a detailed design and tender process. This **budget** quotation has a cost confidence level of 85% and the total project costs may vary by this quoted cost x 100/85 or, alternatively, this quoted cost / 1,15. The 85% confidence level is subject to material and labour costs not increasing at a rate greater than PPI.
- 3.5.2 Eskom will be entitled to recover the variance of 15% from you in the event of actual costs quoted in this Paragraph 3 exceeding the budgeted amounts and will refund you the actual variance should the budgeted and paid amounts be more than the final actual expenditure.

4. LEGAL

- 4.1 The electricity supply from Eskom shall be subject to Eskom's Standard Conditions of Supply.
- 4.2 You will be required to enter into a written electricity supply agreement with Eskom. Such agreement shall include the provisions of paragraphs 2.2 and 2.9 above and together with all its relevant appendices, shall constitute the entire agreement between you and Eskom and shall supersede all preceding negotiations, arrangements or agreements with you in respect of the subject matter of the written agreement.
- 4.3 You will be liable to pay any charges, taxes and/or levies, which may be imposed in terms of any existing and/or future legislation or as approved by NERSA.
- 4.4 The following conditions will have to be met before supply can be made available:
- 4.4.1 that Eskom obtains, according to its requirements, suitable way-leaves and/or servitudes, at no cost to itself, for its power lines and cables across the desired route;
 - 4.4.2 that the various authorities grant approvals, with no further cost implications to Eskom, for the erection of the power lines / cable along the desired routes;
 - 4.4.3 that you will provide and maintain in good order at your expense a site and such accommodation, as Eskom may reasonably require for accommodating its equipment;
 - 4.4.4 that any required environmental impact studies are completed on time;
 - 4.4.5 that long lead-time materials which may need to be ordered, are delivered on time;
 - 4.4.6 that no *force majeure* event, including but not limited to; events recognised as *casus fortuitus*, any laws, decrees, regulations of Governmental authorities, changes in law, wars (whether declared or undeclared), riots, commotion, disorders, industrial action, epidemics, floods, earthquakes or similar natural disasters, strikes, lock-outs or other labour disputes and embargoes, or by reason of *force majeure* invoked by a third party, occurs;
 - 4.4.7 that Eskom management approves this investment; and
 - 4.4.8 that Eskom has the necessary capital required for this project.

Should the above conditions not be met, the quotation will lapse but may be extended by, among others, modifying the terms set out herein.

- 4.5 This offer is valid for a period of 30 (thirty) days from the date of signature of this letter, after which the terms and conditions will be re-evaluated and possibly revised. You are kindly requested to advise us of your unconditional and unequivocal acceptance of this budget quotation in writing within this period; failing which this budget quotation will lapse and not be capable of acceptance.

- 4.6 Your acceptance of this budget quotation shall not create a binding commitment on Eskom to provide supply of electricity, unless the budget quotation is accepted by you, the connection charges as set out in Section 3 are paid in full and a subsequent electricity supply agreement referred to in paragraph 4.2 is signed by both parties.
- 4.7 Should you accept this budget quotation, but reject the final quotation (*if applicable*) but/or cancel the project at any point prior to connection, you will be liable for costs incurred on the project, which have not been recovered through previous payments.
- 4.8 Following acceptance of the budget or final quotation, should you instruct Eskom to effect a scope change, Eskom reserves the right to cancel this quotation and to provide you with a revised quotation. Any additional costs that Eskom will incur as a result of the scope change will be payable in cash, prior to Eskom proceeding with the project.
- 4.9 Eskom will proceed with the project and commence with design as soon as possible after receipt of your unconditional and unequivocal acceptance in writing of the foregoing conditions and when the connection charges have been paid in full and the Security have been provided. Please state this Quotation Reference Number (reflected on page 1) when making payments. The Acceptance Letter is attached for completion and signature (see Annexure 'B').
- 4.10 Upon acceptance of the budget quotation, the estimated connection date on which Eskom will make supply available will be agreed with you.
- 4.11 The terms and conditions of this quotation are subject to the provisions of the South African Grid Code and Distribution Code, the Electricity Regulation Act (No 4 of 2006) and the rules and regulations issued thereunder, including any rules and regulations pertaining to a conservation or a rationing programme or scheme, and of Eskom's Licences and Schedule of Standard Prices, as amended or re-enacted from time to time and any other applicable laws.
- 4.12 Eskom's bank account details for direct deposits or bank transfers are:

Bank:	ABSA
Eskom regional bank account number:	2310000119
Eskom regional branch code:	335645
CC&B Account number (your new Eskom account number where applicable):	
Reference number (state number reflected on page 1)	HE89162520

For any information, enquiries or confirmation, please contact Theresa Smith at telephone number (012) 725 2271.

I thank you for the opportunity of allowing Eskom to provide this service and trust that your favourable reply will reach this office shortly.

Yours sincerely

.....
 Abie Kettledas
 CUSTOMER SERVICE AREA MANAGER (NORTH WEST)

.....
Date

Copies: (Internal)
 Customer File

Please distribute this information to all your personnel whom this may concern.

ANNEXURE 'A'

SUMMARY OF POWER QUALITY PROVISIONS IN ESKOM CONTRACTS

Note: NRS 048-2, as revised from time to time, defines the minimum levels of power quality to be supplied by Eskom - as specified by the National Energy Regulator of SA. The standard applies where no specific contractual power quality clauses have been included in the contract with a customer. The information provided below is intended for information purposes only. In the case of any discrepancies between this and the NRS 048-2 standard, the provisions in the standard shall apply. In all cases, contractual provisions relating to power quality will take precedence.

Table 1: Definitions for supply voltage categories (nominal voltages)

High voltage (HV)	above 33kV to 132kV
Medium voltage (MV)	above 1kV to 33kV
Low voltage (LV)	230V/400V to 1kV

Eskom Obligations (Voltage Quality) and Typical Performance Levels (Dips and Interruptions)

Table 2: Standards defining the minimum levels of quality of the voltage waveform

Parameter	HV	MV	LV
Supply frequency	50Hz \pm 2.5%		
Declared supply voltage	Nominal voltage (unless another declared voltage is specified in the contract)		Standard voltage: 230V single phase 400V three phase
Voltage deviation	\pm 7.5% (note 1)		\pm 10%
Unbalance	2%	2% (networks supplying predominantly 3-phase loads) 3% (networks supplying predominantly single-phase loads)	
Flicker	(note 2)		Plt = 1
Harmonics (THD)	4%	8%	8%
Harmonics (2nd)	-	2%	2%
Harmonics (3rd)	2.5%	5%	5%
Harmonics (5nd)	3%	6%	6%
Harmonics (7nd)	2.5%	5%	5%
Harmonics (11th)	1.7%	3.5%	3.5%
Harmonics (13th)	1.7%	3%	3%

Note 1. Specifically specified by Eskom in accordance with the Electricity Regulation Act.

Note 2. The levels at higher voltage levels may in some cases be > Plt = 1.

Note 3. When determining conformance to the above minimum levels of, the measurement and assessment requirements related to compatibility levels in NRS 048-2 are applied.

Table 3: Characteristic voltage dip performance levels (no standard is specified in NRS 048-2)

Remaining Voltage u % of U_d	Duration t			Network Voltage	Number of Dips per Year (95%)					
	$20 \leq t < 150$ (ms)	$150 \leq t < 600$ (ms)	$0.6 \leq t < 3$ (s)		Dip Window Category					
	X1	S1	Z1		X1	X2	T1	S1	Z1	Z2
$90 > u \geq 85$				$>44 \leq 132$ kV	35	35	25	40	40	10
$85 > u \geq 80$				>132 kV	30	30	20	20	10	5
$80 > u \geq 70$										
$70 > u \geq 60$	X1	S1	Z1							
$60 > u \geq 40$	X2		Z2							
$40 > u \geq 0$	T1									

Network Voltage	Number of Dips per Year (50%)					
	Dip Window Category					
	X1	X2	T1	S1	Z1	Z2
$>44 \leq 132$ kV	13	10	5	7	4	2
>132 kV	8	9	3	2	1	1

Note 1. Voltage dip performance varies significantly from one network to another, the above show South African network dip performance.
 Note 2. Statistics indicate the number of dips not exceeded at 95% and 50% of sites, based on several years of SA measurement data.

Characteristic interruption performance levels

The number of Interruptions varies significantly from network to networks – more specific information may be requested from Eskom for your site. In terms of NRS 047, Eskom is required to notify customers of planned interruptions at least 48 hours prior to such. The tables below show characteristic interruption performance statistics in South Africa. In the case of networks different from those described, performance may be between these values.

Table 4 — Number of sustained interruptions per annum experienced by up to 50 % (and up to 95 %) of LV and MV customers

MV supply network Characteristics:	Unplanned interruptions (number)	Planned interruptions, (number)
> 80% underground or aerial cable	3 (6)	< 1 (3)
> 80 % overhead line (> 1km lines)	18 (75)	4 (11)

NOTE 1 The values for 50 % of customers reflect the number of events per annum that are generally not exceeded in the case of 50 % of customers in South Africa.
 NOTE 2 The values for 95 % of customers reflect the number of events per annum that are generally not exceeded in the case of 95 % of customers in South Africa.
 NOTE 3 Characteristic values for category C networks will generally be between those of category A and category B networks.

Table 5 — Duration (hours) of individual sustained interruptions for up to 50 % (and up to 95 %) of the interruptions experienced by LV and MV customers.

MV supply network characteristics:	Unplanned interruptions (Duration in hours)	Planned interruptions (Duration in Hours)
> 80% underground or aerial cable	3,5 (18)	4 (9)
> 80 % overhead line (> 1km lines)	2,5 (12)	3 (14)

NOTE 1 The values for 50 % of interruptions reflect the duration of interruptions that are expected not to be exceeded in the case of 50 % of interruptions experienced by customers in South Africa.

NOTE 2 The values for 95 % of interruptions reflect the duration of interruptions that are expected not to be exceeded in the case of 95 % of interruptions experienced by customers in South Africa.

NOTE 3 Characteristic values for category C networks will generally be between those of category A and category B networks.

Customer Responsibilities and Obligations

Requirements for normal plant operation

A customer plant should be designed to operate normally under the range of conditions in Table 2. Note that, unless otherwise specified in the contract, these levels are defined at the customer connection point. Additional voltage quality problems generated within the plant should be taken into consideration in the specification of customer process equipment.

Recommended voltage dip immunity requirements

In order to limit plant downtime due to voltage dips, NRS 048-2 implies a minimum immunity requirement for customer equipment associated with the shaded area in Table 3. Eskom further recommends that at least SANS 61000-4-11 immunity test classes 2 or 3 be specified by customers for more sensitive process equipment. The design of the customer plant should in all cases take expected dip performance into consideration in the design of the process immunity to dips.

Equipment/process protection requirements

A customer plant should be protected against damage that may be caused by levels of quality outside of those specified in Table 2, as well as against damage caused by voltage dips, interruptions, and voltage transients that may arise on the Eskom system. It should be specifically noted that no minimum standards apply for lightning and switching surges – it is the customer's responsibility to take the necessary precautions against such phenomena.

Disturbances caused by customer plant

The impact of a customer plant on the quality of the supply voltage (and hence on other customers) must be minimized.

Levels of disturbance caused by LV equipment connected to the public supply system must meet the following standards:

- SANS 61000-3-2 (Harmonics: LV equipment \leq 16A)
- SANS 61000-3-4 (Harmonics: LV equipment $>$ 16A)
- SANS 61000-3-3 (Flicker: LV equipment \leq 16A)
- SANS 61000-3-5 (Flicker: LV equipment $>$ 16A)

Levels of disturbance caused by installations will be based on the requirements of standards such as NRS 048 Part 4, and Eskom Standard ESKPAAN6.

Table 6: Limits on allowable levels of disturbance by a customer plant

Parameter	HV	MV	LV
Power factor	Better than 0.9	lagging and not leading	
Unbalance	(note 1)	0.3% (3-phase supplies)	
Flicker (Pst)	(note 1)	0.36	
Harmonics (THD)	(note 1)	1%	
Rapid voltage changes: r = no. changes / hour	Magnitude (%)	Magnitude (%)	
r < 1	3	4	
1 < r ≤ 10	2.5	3	
10 < r ≤ 100	1.5	2	
100 < r ≤ 1000	1	1.25	
Note 1. These are specifically calculated at each customer supply point.			

Quality Management

Eskom ascribes to the quality management requirements of NERSA. The details of this may be found in Eskom's power quality charter.

ANNEXURE 'B'

ACCEPTANCE LETTER

Mr Taylor
Private Bag X19

Eskom Holdings Limited (Reg No: 2002/015527/06)
Mev. Theresa Smith
Officer Customer Relations
Tel. number : 012 725 2271
Fax number : 086 539 9768
PO Box 856
BRITS
0250

Dear Ms T. Smith

ACCEPTANCE OF BUDGET QUOTATION FOR NEW SUPPLY OF 250KVA, AT SHELL SOUTH AFRICA PTY LTD.

I/We herewith unconditionally accept the terms and conditions as set out in your quotation letter, Ref No HE89162520 dated 27 May 2013.

I/We further irrevocably accept the estimated figures for the items below as follows:

CHARGE	ESTIMATED VALUE	TICK with √
Total Distribution Standard connection charge	R 214 618.42 + VAT = R 244 665.00	
<i>The above connection charges are payable as follows:</i>		
UP-FRONT PAYMENT		
Distribution Connection fee	R 19 868.42 + VAT = R 22 650.00	
Up-front Distribution Standard Connection Charge	R 194 750.00 + VAT = R 222 015.00	
Security	R215,667.68 (VAT Inclusive)	

My monthly accounts and future correspondence must be addressed as follows:

.....
.....
.....code.....

SIGNED for and on behalf of the **CUSTOMER** on 2013

..... in my capacity as (who confirms that s/he is duly authorised to sign for and on behalf of the Customer).

.....

As Witnesses :

1. 2.

ANNEXURE 'C'

GENERIC ENERGY EFFICIENCY SPECIFICATION SHEET

CONTENTS

Terminology

Revisions and Amendments

1. Forward
2. Purpose and Objectives
3. Compliance Procedure
4. Audit
5. Energy Efficiency Requirements

TERMINOLOGY

The following abbreviations and terminologies have been used in the text of the document:

EECC	Energy Efficiency Compliance Certificate
ECSA	Engineering Council of South Africa
HVAC	Heating, Ventilation and Air Conditioning
VSD	Variable Speed Drive
SABS	South African Bureau of Standards

REVISIONS AND MODIFICATIONS

Eskom reserves the right to issue revisions, modifications and amendments to this specification without prior notice or prejudicial liabilities.

1. FOREWORD

This document describes energy efficiency requirements together with an independent compliance procedure that must be met by all applicants for new or additional electricity supplies that involve:

- 1.1 Electricity supply greater than 100kVA.
- 1.2 A new electricity supply or an extension to an existing supply.
- 1.3 Customers supplied from the interconnected grid and its extension into neighbouring countries.

The document describes the purpose and objectives of these requirements and the independent compliance procedure. It provides the various specific minimum energy efficiency requirements that must be met in order to qualify for a new or additional electrical supply as defined above before.

2. PURPOSE AND OBJECTIVES

The energy efficiency and independently certified compliance requirements for electricity supplies are now a prerequisite to achieve the following objectives:

- 2.1 To ensure the right fuel or energy source is used for end use applications. Wherever viable and practical to do so, alternative energies and technologies when available, should be deployed in preference to grid electricity. Examples include solar energy for heating water; liquid and solid fuels for thermal applications such as cooking and industrial heat applications.
- 2.2 To assist all new electricity customers or customers taking additional supply to obtain maximum value from their expenditure on energy.

- 2.3 To assist Eskom in managing current electricity supply constraints in the country In particular also to ensure that electricity will not be wasted in some applications, resulting in other potential customers being deprived of electricity.
- 2.4 To avoid wasteful and misuse of scarce national energy resources while inculcating ever higher standards of energy efficiency practices in support of Government energy policy.
- 2.5 To encourage the deployment of all energy resources in a prudent and environmentally responsible manner.

3. COMPLIANCE PROCEDURE

It is essential to ensure a minimum level of energy efficiency has been applied to all new or additional electricity supply applications. Without independent certification that this has taken place, it will not be possible to connect new supply applications. It is in the mutual interest therefore of all electricity users to work together with their respective distributors to achieve the objectives described in Section 2 above.

New customers or existing customers wishing to obtain an extension to an existing supply are encouraged to continually use energy accounting practices and methodologies to ensure sustained energy savings. Such customers are also required to adhere to all relevant South African Energy Efficiency Codes and Standards of Best Practice together with relevant Building Regulations, Health and Safety Legislation and all other pertinent statutory requirements.

All applicants for an electricity supply under these arrangements must submit to Eskom an **Energy Efficiency Compliance Certificate (EECC)** provided by an ECSA Registered Professional Engineer or a Certified Energy Manager, accredited by South African Association for Energy Efficiency or other independent authorities that may from time to time be approved by Eskom. Exemption: Although still required to comply with this specification new or additional supplies not exceeding 1MVA, are exempted from providing an EECC.

On receipt of the EECC, which will be accepted as satisfactory proof of compliance, Eskom will connect and energise the supply. Should minor refinements be necessary to energy efficiency elements of the application then Eskom will require that these be attended to within a reasonable period after connection.

4. AUDIT

Eskom, in the Electricity Supply Agreement with the customer, also reserves the right to audit the manner in which electricity is used after a power supply is provided to ensure ongoing compliance to the general principles of energy efficiency described in this document.

5. ENERGY EFFICIENCY REQUIREMENTS

5.1 Context and Application

The various energy efficiency requirements described in this section are regarded as the minimum standards necessary to qualify for a new electricity supply as previously defined. While this is not an exhaustive list of best energy efficiency practices, an applicant and their professional energy advisors will be expected to enhance levels of energy efficiency and electricity conservation where ever it is practical and prudent to do so.

The requirements listed below are intended as an overall set of guidelines to assist power supply applicants and their energy advisors in producing the necessary Energy Efficiency Compliance Certificate (EECC). Being a general set of requirements, not all the criteria will be applicable to every customer – customers must therefore select and comply only with those criteria that are reasonably applicable to their specific installation.

5.2 Lighting

- No incandescent or other inefficient lighting technologies may be used.
- In all applications, the most efficient lamp must be used to attain the required levels of illumination.
- Occupation sensors must be utilised where practically possible.
- Automatic lighting control systems with relevant occupancy sensors to be deployed in low traffic building areas such as stairwells, store areas and underground secure parking areas.
- Non occupied office space lighting to be put off at night or level of illumination reduced to conserve electricity.
- Use daylight whenever possible in lieu of artificial light.
- External lighting for pathways, pedestrian areas etc to deploy renewable solar lighting where ever practical to do so.
- All relevant new building codes of practice and health and safety legislation to be fully adhered to.

5.3 Electrical appliances

- All electrical appliances to be SABS approved.
- Electronic equipment such as computers, computer peripherals photocopying machines to be switched OFF at night and other times when not is use, when it is safe and efficient to do so.
- All heavy duty electrical appliances that require periodic servicing and maintenance, according to manufacturers instructions, are covered with an appropriate service contract.

5.4 HVAC

- Employ only high efficiency HVAC systems and make use of occupancy sensors where practical.
- Make use of most-efficient HVAC control systems to create optimum working environment using minimum energy.
- Ensure new HVAC plant have regular maintenance and service contracts in place with professional service companies.

5.5 Water-heating

- Employ solar water heating and heat pump technologies only.
- Insulate hot water pipes and hot water storage tanks.
- Properly functioning thermostatic controls are a core feature of all hot water systems and must be properly maintained
- Thermostats must be set at the most efficient level.
- Low flow shower heads must be used, where applicable.

5.6 High-efficiency motors

- High-efficiency motors are available up to 90kW rating and these must be used in all applications of 90kW or less.
- Variable speed drives (VSD) should be used in all parts of the process where output and/or quality of product will not be compromised.

5.7 Steam Generation

- Steam must not be generated using electricity. Alternative energy sources such as solid fuel, heavy fuel oil and other liquid fuels should be deployed. In exceptional cases where environmental considerations preclude the use of alternative fuel, electricity may be used only with the explicit approval of Eskom.
- Optimum insulation thickness must be used for the boiler and all steam and condensate pipe work.
- Regular service and boiler maintenance contracts should be in place.

5.8 Electrical infrastructure

- Use appropriate electrical conductor size on new installations to reduce distribution losses.
- Optimise plant and large motor power factors to reduce maximum demand and to ensure a power factor of 0.9 lagging or better at all times.
- Exploit off peak electricity tariffs where they are available and it is practical to do so.
- Deploy automatic electricity control technology where ever it is prudent and practical to do so. Examples include automatic time control clocks and thermostatic controls.

5.9 Compressed Air

- Employ a compressor load management systems if 2 or more compressors are to be used.
- Design pneumatic systems to minimise losses and wastage.
- Where practical and if alternative more efficient technologies / tools exist, preference should be given to these over pneumatic applications.

5.10 Buildings

- Insulate walls, ceilings and roofs.
- Increase light reflectance on walls and ceilings.
- Use daylight whenever possible in lieu of artificial light.
- Employ a load management system to interrupt non-essential load when possible.
- Use energy efficient glass or 3M film and shade windows from direct sun.
- Design the electrical installation to ensure that non-essential loads are grouped on the same circuits. This will facilitate future remote shedding of these non-essential circuits by Eskom (using smart meter technologies)
- Where possible, orientate the building to maximize energy efficiency.

5.11 Lifts and Escalators

- Escalators to switch to crawl or OFF when not in use.

5.12 Process efficiency

- Avoid the use of electricity in any thermal process application, unless only possible with an electrical technology.
- Optimise process to ensure maximum efficiency; benchmark against best practices.
- Where possible, waste heat must be recovered and used elsewhere in the process.
- Prior to ordering manufacturing equipment, where possible, procure machinery which uses forms of energy other than electricity.

5.13 Cooking and Food Preparation

- Use gas for cooking instead of electric hotplates.
- Deploy electric micro wave rather than conventional electric cooking where ever possible to do so.
- Deploy highly insulated containers for hot water dispensers for beverages.

5.14 Renewable Energy

- Any opportunity to use renewable forms of energy must be used.
- Renewable energy may be used alone or in combination with limited electricity top up for various end use applications. Examples include solar hot water systems and solar lighting.

5.15 Co-generation

- Co-generation should be considered where possible and where sufficient quantities of waste heat and/or process by-product are available or when superheated steam can be generated and the low pressure steam used for process heating.
- Electricity so generated may either be used locally to offset own consumption, sold to any other party and wheeled across the networks of Eskom or it may be sold to Eskom / a distributor in terms of a Power Purchase Agreement (PPA).

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I/We hereby unconditionally accept the above energy efficiency specifications and confirm my full compliance.

SIGNED for and on behalf of the **CUSTOMER** on 2011

..... in my capacity as (who confirms that s/he is duly authorised to sign for and on behalf of the Customer).

.....

As Witnesses:

- 1. 2.