

**GEORGE**

# Wheeling Policy

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## **1. INTRODUCTION**

This policy describes the process and requirements for Renewable Power Producers (RPPS) to wheel electrical energy on the George municipality (George) distribution grid (Grid). The policy sets the requirements to enable wheeling and energy trading in George`. The guideline sets the parameters of capacity allowed on the network and does not limit or restrict the number of consumers. This policy will be regularly reviewed and amended, as technical capacity is built through approved applications by RPPS.

## 2. DEFINITIONS

Electro-technical department	The Electro-technical directorate of George.
Distribution	The conveyance of electricity through a distribution power system excluding trading. 'distribute' and 'distributing' have corresponding meanings;
Distribution power system	A power system that operates at or below 132kV;
End user	A user of electricity or a service relating to the supply of electricity
Energy regulation act (ERA)	National Energy Regulator Act, 2004 (Act 40 of 2004);
Energy credit	The monetary value of energy sold by RPPS or traders and provided to consumers via George's grid
Eskom grid	The transmission or distribution power system owned by Eskom.
Generator	A person who generates electricity.
George's grid	The distribution power system in George's licensed supply area.
Grid	An electrical power system used to transport electrical energy. Also referred to as network.
Off taker	A George electricity consumer and the purchaser of third-party electrical energy. Also referred to as end-user.
Reticulation	Trading or distribution of electricity and includes services associated therewith;
The Constitution	The Constitution of the Republic of South Africa, 1996.
RPPS	(Renewable Power Producer) A generator who generates power using renewable energy sources either in Eskom or George Grid.
Trader	A licensed entity engaged in trading.
Trading	The buying or selling of electricity as a commercial activity;
Wheeling	The transportation of electrical energy through a network not owned, controlled, or leased by such party.

### 3. SCOPE OF GUIDELINE

The guideline will cover the following:

- **Legal and regulatory framework**

In an uncertain and constantly changing energy regulatory environment, it is important to review and update the guideline to ensure compliance with national legislation.

- **Requirements to wheel energy on the George Grid (Annexure A)**

These requirements will be constantly reviewed, as technical capacity is built over time.

- **Wheeling scenarios.**

The different wheeling scenarios will be explained in this section.

- **Application process.**

The application process will be explained, as well as the information requirements from RPPS.

#### 4. LEGAL AND REGULATORY FRAMEWORK

The Constitution states that a municipality has the “executive authority” with respect to electricity reticulation and “has the right to administer” electricity reticulation (S156). The Constitution further states that the public administration of service should be provided “impartially, fairly and equitably and without bias” (S229).

The municipality must, however, adhere to national legislation regarding the administration. The applicable act is the Energy regulation act (ERA). The act states that “A transmission or distribution licensee must, to the extent provided for in the licence, provide non-discriminatory access to the transmission and distribution power systems to third parties” S21(3).

Furthermore, in S21(4) the act states that access must be provided on the conditions set out in the licence of the distributor as it relates to, but is not limited to the following:

- Access being allowed or refused.
- Compliance with any rule, code or practice made by the regulator.

The licence conditions consist of financial, legal, and technical conditions. There are various technical conditions mentioned in the licence but the one specifically applicable to wheeling is NRS 048 (quality of supply).

George is thus obligated to allow RPPS access to the Grid but must still adhere to its licence conditions. According to the ERA, George may grant or refuse access on the conditions of the licence. It is therefore the stated intention of George to impose additional conditions on wheeling entities only insofar as it will ensure the quality of supply to its consumer base.

The additional requirements will be mostly technical in nature. George aims to develop the technical capacity with pilot projects and foresees the requirements being amended regularly. The municipality does not want to take unnecessary technical risks by enabling wheeling. The project will rely on standards already developed for small scale embedded generators (SSEG’s). This will ensure minimal technical risk for George and compliance with all relevant technical standards.

In summary, George will allow non-discriminatory access to the municipal grid by RPPS in full compliance with national legislation and the rules or codes published by the regulator. In addition, it will create requirements for RPPS to ensure the municipal compliance to its licence conditions.

## 5. WHEELING SCENARIOS

The tariff applicable and the technical requirements depend on the location at which the generator is connected. The two options are:

1. Generator connected to the Eskom grid.
2. Generator connected to the George grid.

In both scenarios the off taker must be connected to George Grid.

Both traders and generator will be allowed to wheel electricity. Both must adhere to NERSA's rules and regulations in terms of licensing and registration as well as national legislation.

For the initial period a generator alone cannot wheel to more than one consumer. A trading licence issued by NERSA would be required to wheel to more than one consumer.

For illustrative purpose, figures 1 to 4 were created to show the contractual agreements as well as the billing that will take place.

Municipality connected generator with one consumer

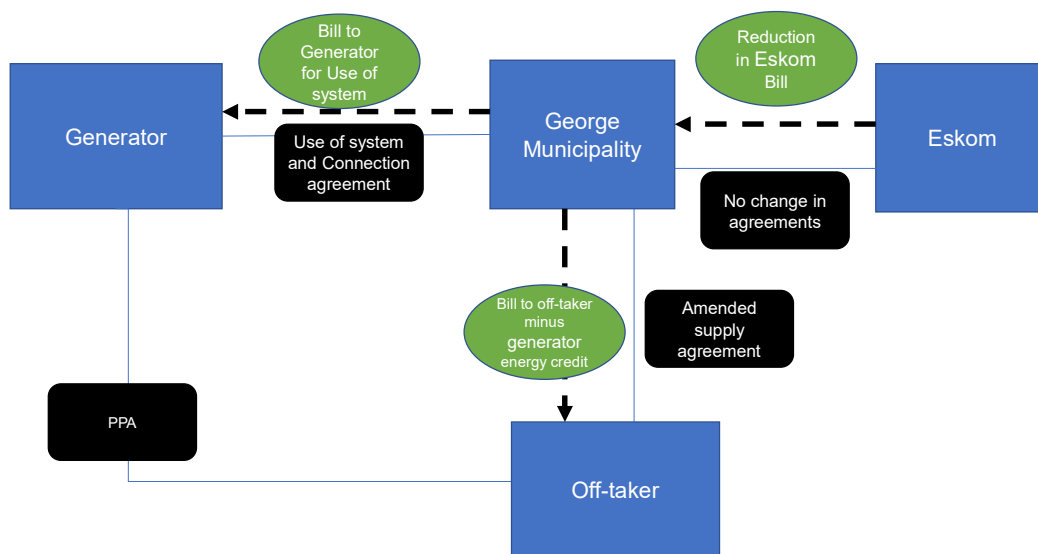


Figure 1 Generator connected to Municipality (no trader)

Municipality connected generator with trader

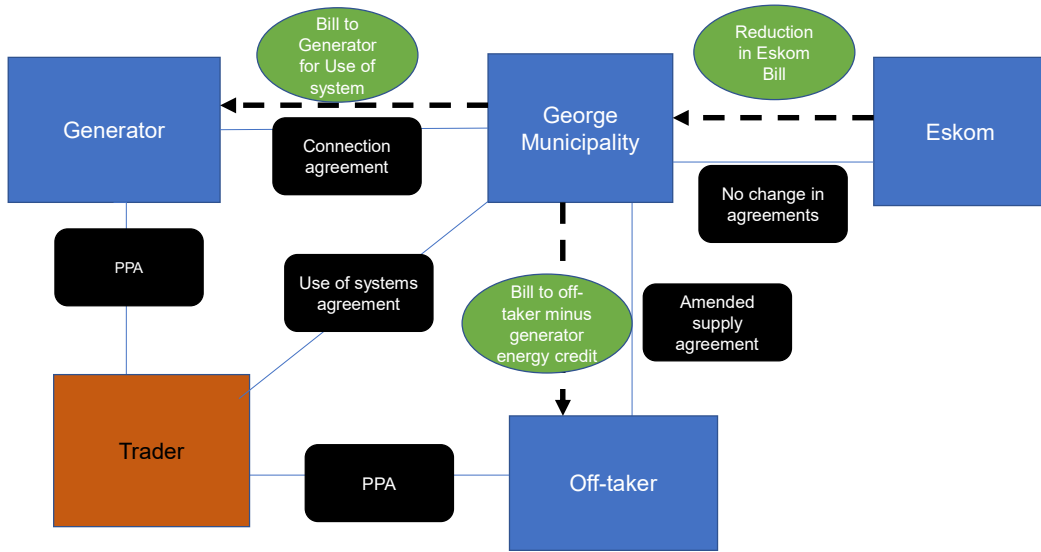


Figure 2: Generator connected to Municipality (trader)

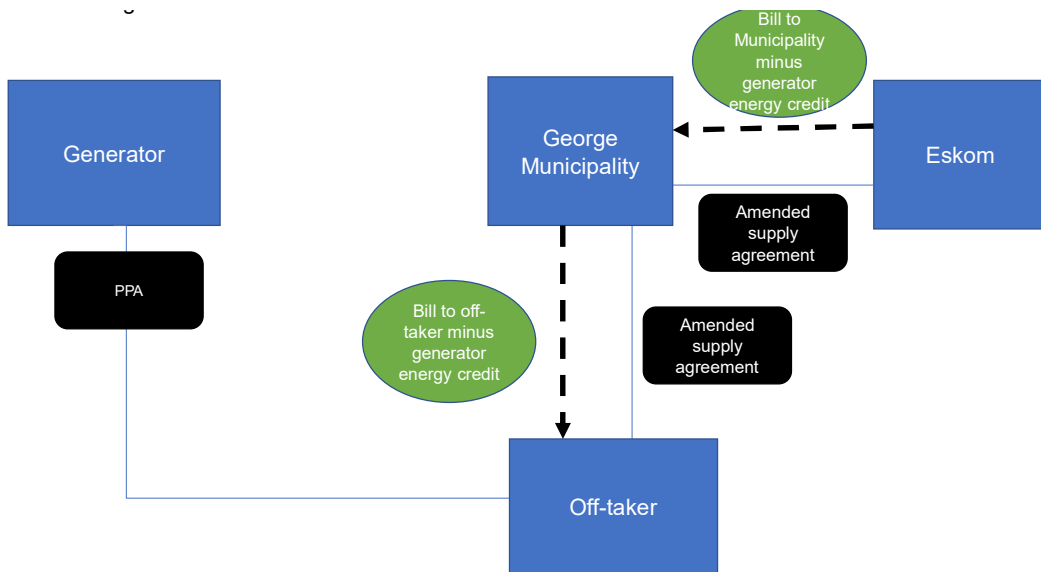


Figure 3: Generator connected to Eskom (no trader)



Eskom connected generator with trader

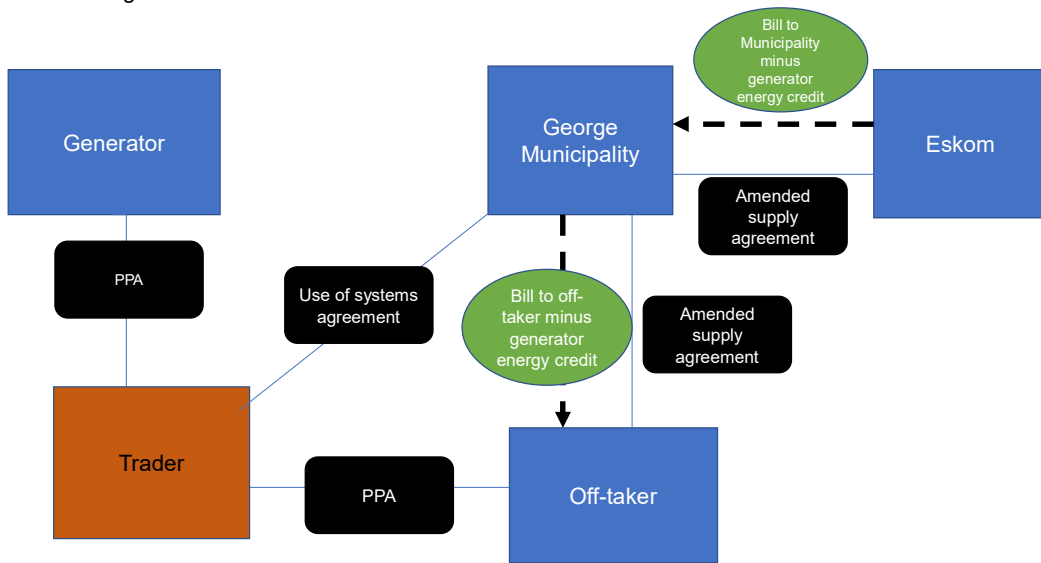


Figure 4: Generator connected to Eskom (trader)

## **6. APPLICATION PROCESS**

The application process will be handled on a case-by-case basis. The applicant is to inform the Electrotechnical department as soon as possible, when considering entering a wheeling arrangement. All the requirements in Annexure A should be met.

The contracts mentioned below must be signed before wheeling can take place.

1. Generator registration at municipality. The proposed generator/ current generator will need to register as an SSEG or adhere to the relevant generator criteria with George and comply with the connection requirements. This requirement is in addition to registration or licensing requirements as imposed by NERSA (by the generator) in terms of the Electricity Regulation Act.
2. Amended supply contract with the off taker. The consumer will need to amend its supply agreement with the municipality.
3. Use of systems agreement between the trader/generator and the municipality.

The above-mentioned use of system agreement must be drafted by the applicant, until such time when George has standardized contracts.

## **ANNEXURE A: REQUIREMENTS OF THIRD-PARTY ENERGY PROVIDER**

The requirements are listed in two sections. The first section is only applicable if the generator is connected to the George Grid. The second section is applicable to all applicants.

### **George connected Generator.**

**1. Generator tariff**

The generator must be on the applicable time of use tariff for consumption.

**2. Generator connection agreements**

The generator must adhere to the generation connection requirements for the connection of the generation facility.

**3. Generator connection Voltage.**

Generators must connect at 11kV or higher to the George Grid.

### **Applicable to all:**

**1. NERSA licenced / registered**

Only NERSA licenced / registered generators will be allowed to wheel.

**2. Limit on total capacity.**

The allocation of George's wheeling capacity will be done on a basis to ensure that competitive market will prevail, and lowest possible prices can be achieved. This value will be determined by the Director. The Municipality will review this allocation when required.

**3. Limit on capacity per applicant**

1 MVA maximum export capacity allocation will be allowed per applicant per site for the initial period. This value cannot be exceeded unless approved by the Director. The Municipality will review this allocation when required.

**4. Minimum connection size of the off taker.**

The off taker must be on a tariff category 2 or 3 (commercial or bulk/industrial) tariff.

**5. Contractual agreements**

The use of systems agreement will be developed on a case-by-case basis and must adhere to the current requirements set in the Policy.

**6. Revenue neutrality**

The tariffs must be at least surplus (lost revenue – cost savings) neutral for the municipality. Any additional charges for wheeling added by Eskom to the municipality's account will be for the off taker's account.

**7. Off taker requirements.**

The off taker must be approved by George and the off-takers supply agreements must be amended.

**8. Billing reconciliation period.**

The billing will be reconciled on 30-minute periods. No banking will be allowed. This means that any kWh wheeled which exceed the power consumer by the off taker in any ½ hour period will be considered over wheeling.

**9. Any off taker may not receive any electrical energy from more than one RPP or one energy trader, other than the municipality, as applicable .**

**10.No energy banking,**

Any electrical energy not consumed by the off taker will not be credited i.e., no banking of energy will be allowed. This means that George will receive this energy free of charge.

## ANNEXURE B: ACCOUNTING

Accounting for wheeling will be done as follows:

### **Municipal Grid connected Generator:**

#### **Eskom bill to the Municipality:**

- Eskom's bill will automatically reduce because less energy will flow from Eskom to the municipality as the energy will be generated by the Generator connected after the Eskom meter.
- The amount of energy reduction in the Eskom bill will include the reduction in the losses as the flow of energy through the networks closest to the Eskom supply will reduce.
- There will however **not** be a clear adjustment in the Eskom bill, the consumption quantities will simply be lower.

#### **Generator Bill.**

- The generator will be billed for the standard George applicable TOU tariff charges including
  - Standard Basic charge
  - Demand and Access charges in respect of:
    - the maximum capacity it wants to take from the Grid and based on the actual demand used
    - or in cases where the network capacity is exceeded based on the wheeling demand.
- The generator will pay for any energy used at the standard energy charges but will not be credited for any energy wheeled.

#### **The Off taker**

- The bill at the standard tariff applicable to the off taker will be the same as before the wheeling and thus firstly reflect all the energy going through the off-taker meter.
- An additional Basic charge will be levied to cover the additional costs relating to the implementation of the wheeled energy approach of the off-taker.
- An energy credit will be applied for the wheeled energy at the Eskom Megaflex energy charges (all kwh charges) as applied to George by Eskom to the network where the consumer is connected.
- The energy credit will reflect:
  - the total kWh wheeled
  - Minus the amount of kWh wheeled which exceed the amount consumed during every half hour period. (over wheeled energy)
- No credit is applied in respect of demand and access charges.

### **Municipal Grid connected Generator wheeling to Eskom consumer:**

- This will not be allowed. The main reason is because such generator will be using the capacity available on the George Grid to install generators to benefit George consumers.

#### **Eskom connected Generator:**

##### **Eskom bill to the Municipality:**

- Eskom will charge an additional basic charge for wheeling to the generator.
- Eskom will credit the account by the amount of wheeled energy as provided by the generator at the TOU energy charges of the Eskom WEPS tariff but not in respect of:
  - The losses factor.
  - Ancillary service charge and electrification and rural subsidy charge.
- No adjustments in Maximum Demand or Access charges.

##### **Generator Bill.**

- Eskom will charge the Generator.

##### **The Off taker**

- The bill at the standard tariff applicable to the off-taker (in future on TOU) will be the same of before the wheeling and thus firstly reflect all the energy going through the off-taker meter.
- Two additional Basic charges will be levied to cover the additional costs relating to the wheeling:
  - The municipal wheeling Basic charge.
  - The Eskom wheeling basic charge.
- An energy credit for the wheeled energy will be the same as that by which Eskom credits the account to George. (WEPS TOU energy rate excluding losses) These amounts will be per TOU period and will not be reconciled per half hour period but per month.
- In cases where there is over wheeling in any TOU period, the benefit will be for George. No banking will also be allowed between the different TOU periods.





**Example situation for 2020/21 tariffs, generator connected to the George grid:**

Generator connected at 11 kV in the George Grid. The end-user is connected to the 11 kV network. The generator will have to be on the applicable TOU tariff. All calculations are done for a low season scenario.

The Municipal bill to Generators refers to a situation in which the generator is not currently an off taker, in the alternative, an adjustment to the invoice to the generating entity will be applicable.

Eskom energy bill to Municipality		Municipal bill to Generator		Municipal bill to off taker	
<b>Total (before wheeling)</b>				<b>Total (before wheeling)</b>	
Ancillary service 2500000 kWh @ R0.0043	R 10 750.00			Basic @ R 2187.32 per month	R 2 187.32
Electrification and rural subsidy 2500000 kWh @ R0.0917	R 229 250.00				
				Demand 950 kVA @ R 70.26 per kVA	R 66 747.00
				Access 1000 KVA @ R 61.61 per kVA	R 61 610.00
<b>Energy (Low Season)</b>				<b>Energy (Low season)</b>	
Peak Energy 500000 kWh @ R1.1886	R 594 300.00			Peak Energy 50000 kWh @ R1.2231	R 61 155.00
Standard Energy 1000000 kWh @ R0.8179	R 913 900.00			Standard Energy 140000 kWh @ R0.936	R 131 040.00
Off-peak Energy 1000000 kWh @ R0.5189	R 614 900.00			Off-peak Energy 200000 kWh @ R0.81	R 162 000.00
	<b>R 2 363 100.00</b>				<b>R 484 739.32</b>
<b>Total (with wheeling)</b>		<b>Total (with wheeling)</b>		<b>Total (with wheeling)</b>	
Ancillary service 2305000 kWh @ R0.0043		Basic @ R 2187.32 per month	R 2 187.32	Basic @ R 2187.32 per month	R 2 187.32
Electrification and rural subsidy 2305000 kWh @ R0.0917	R 9 911.50	Wheeling admin @ R 250 per month	R 250.00	Wheeling admin @ R 250 per month	R 250.00
	R 211 368.50	Demand 580 kVA @ R 70.26 per kVA	R 40 750.80	Demand 950 kVA @ R 70.26 per kVA	R 66 747.00
		Access 600 KVA @ R 61.61 per kVA	R 36 966.00	Access 1000 KVA @ R 61.61 per kVA	R 61 610.00
<b>Energy (Low Season)</b>				Energy charge	
Peak Energy 475000 kWh @ R1,1886	R 564 585.00			Peak Energy 50000 kWh @ R1.2231	R 61 155.00
Standard Energy 930000 kWh @ R0.8179	R 856 647.00			Standard Energy 140000 kWh @ R0.936	R 131 040.00
Off-peak Energy 900000 kWh @ R0.5189	R 563 010.00			Off-peak Energy 200000 kWh @ R0.81	R 162 000.00
		<b>Wheeled energy</b>		Wheeling energy credit	
		Peak Energy 25000 kWh		Peak Energy 25000 kWh @ R1.1886	-R 29 715.00
		Standard Energy 70000 kWh		Standard Energy 70000 kWh @ R0.8179	-R 57 253.00
		Off-peak Energy 100000 kWh		Off-peak Energy 100000 kWh @ R0.5189	-R 51 890.00
	<b>R 2 205 522.00</b>		<b>R 80 154.12</b>	<b>Total Bill</b>	<b>R 346 131.32</b>
<b>Change in bill (new-old)</b>	<b>-R 157 578.00</b>			<b>Change in bill (new-old)</b>	<b>-R 138 608.00</b>
				George Net change	R 18 970.00

The off taker's final bill from the municipality only can be calculated as follows:

- A: Eskom Megaflex (including electrification and rural subsidy and ancillary services charges)
- B: Energy generated by the generator
- C: George applicable tariff
- D: Total energy consumed by off taker (total through off taker meter)
- E: Off taker final bill from municipality

$$E = (C*D)-(A*B)$$

**Example situation for 2020/21 tariffs, generator connected to the Eskom grid:**

Generator connected at 11 kV in the Eskom grid. The end-user is connected to the 11 kV network. The end-user must be on the appropriate tariff as well. All calculation is done for a low season scenario.

The off taker's final bill can be calculated as follows:

- A: Eskom WEPS (excluding electrification and rural subsidy and ancillary services charges and losses)
- B: Energy generated (and credited from municipalities account) by the generator
- C: George applicable tariff
- D: Total energy consumed by off taker (total through off taker meter)
- E: Off taker final bill from municipality
- F: Additional Eskom wheeling charges

$$E = (C*D)-(A*B)+F$$

Eskom bill to Municipality		Municipal bill to off taker	
<b>Total (before wheeling)</b>		<b>Total (before wheeling)</b>	
Ancillary service 2500000 kWh @ R0.0043	R 10 750.00	Basic @ R 2187.32per month	R 2 187.32
Electrification and rural subsidy 2500000 kWh @ R0.0917	R 229 250.00	Demand 950 kVA @ R 70.26per kVA	R 66 747.00
		Access 1000 KVA @ R 61.61per kVA	R 61 610.00
<b>Energy (Low Season)</b>		<b>Energy (Low season)</b>	R -
Peak Energy 500000 kWh @ R1.1886	R 594 300.00	Peak Energy 50000 kWh @ R1.2231	R 61 155.00
Standard Energy 1000000 kWh @ R0.8179	R 817 900.00	Standard Energy 140000 kWh @ R0.936	R 131 040.00
Off-peak Energy 1000000 kWh @ R0.5189	R 518 900.00	Off-peak Energy 200000 kWh @ R0.81	R 162 000.00
<b>Total</b>	<b>R 2 171 100.00</b>		<b>R 484 739.32</b>
<b>Total (with wheeling)</b>		<b>Total (with wheeling)</b>	
		Basic @ R 2187.32per month	R 2 187.32
Ancillary service 2500000 kWh @ R0.0043	R 10 750.00	Wheeling admin @ R 250per month	R 250.00
Electrification and rural subsidy 2500000 kWh @ R0.0917	R 229 250.00		
		Demand 950 kVA @ R 70.26per kVA	R 66 747.00
		Access 1000 KVA @ R 61.61per kVA	R 61 610.00
<b>Energy (Low Season)</b>		<b>Energy (Low Season)</b>	
Peak Energy 500000 kWh @ R1.1886	R 594 300.00	Peak Energy 50000 kWh @ R1.2231	61155
Standard Energy 1000000 kWh @ R0.8179	R 817 900.00	Standard Energy 140000 kWh @ R0.936	131040
Off-peak Energy 1000000 kWh @ R0.5189	R 518 900.00	Off-peak Energy 200000 kWh @ R0.81	162000
<b>Wheeling charges / credits</b>		<b>Wheeling credits</b>	
Eskom wheeling fee @R 4272.73	R 4 272.73	Eskom wheeling fee @R 4272.73	R 4 272.73
Peak Energy 25000 kWh @ R1.0758	-R 26 895.00	Peak Energy 25000 kWh @ R1.0758	-26895
Standard Energy 70000 kWh @ R0.744	-R 52 080.00	Standard Energy 70000 kWh @ R0.744	-52080
Off-peak Energy 100000 kWh @ R0.4697	-R 46 970.00	Off-peak Energy 100000 kWh @ R0.4697	-46970
	<b>R 2 049 427.73</b>		<b>R 363 317.05</b>
<b>Change in bill (new-old)</b>	<b>-R 121 672.27</b>	<b>Change in bill (new-old)</b>	<b>-R 121 422.27</b>
		<b>Net change</b>	<b>R 250.00</b>

For reference:

**George tariff 3C and Eskom Megaflex and WEPS 2020/21 tariff**

Tariffs			
<b>Eskom megaflex tariff</b>			
Ancillary service	0.0043		per kwh
Electrification and rural subsidy	0.09		per kwh
<b>Energy</b>	<b>High season</b>	<b>Low season</b>	
Peak	3.6441	1.1886	per kWh
Standard	1.1040	0.8179	per kWh
Off-peak	0.5995	0.5189	per kWh
<b>Eskom WEPS excluding losses</b>			
Ancillary service	0.0043		per kwh
Electrification rural	0.09		per kwh
<b>Energy</b>	<b>High season</b>	<b>Low season</b>	
Peak	3.2979	1.0758	per kWh
Standard	0.9991	0.744	per kWh
Off-peak	0.5425	0.4697	per kWh
<b>George Tariff 3C</b>			
Basic	R 2 187.32		per month
Wheeling admin	R 250.00		per month
Eskom wheeling fee	R 4 272.73		per month
Demand	R 70.26		per kVA
Access	R 61.61		per kVA
<b>Energy</b>	<b>High</b>	<b>Low</b>	
Peak	3.186	1.2231	per kWh
Standard	1.233	0.936	per kWh
Off-peak	0.864	0.81	per kWh



