Process and pricing for the third party transportation of energy (wheeling) over Eskom networks due to a bilateral trade

(Information Brochure)

September 2012
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Information brochure on process and pricing for the third party transportation of energy (wheeling) over Eskom networks due to a bilateral trade

This information brochure is a general guideline on the process and pricing for the third party transportation of energy (wheeling) over Eskom networks due to a bilateral trade. All references to a generator contained in this document shall refer to a non-Eskom generator.

1 What is bilateral trade and wheeling of energy?

Bilateral trading involves generators and buyers (typically large customers) entering into bilateral contracts for the sale of electricity. Wheeling will occur when there is a bilateral trade and involves the transportation of electrical energy over the networks of a party that is not the owner of that energy. The wheeled power is injected by the “seller” (a generator) into the network of the party owning the network and extracted by the “buyer” (an electricity consumer) at a point of delivery (POD) on the network.

A wheeling arrangement does not directly reduce the capacity required on the network and therefore charges are payable for the cost of the delivery of the energy to the buyer.

In a wheeling arrangement, a dedicated physical network connection between the buyer and the seller does not typically exist. Therefore the electrical energy is not directly transmitted between the two parties.

The “wheeling” transaction results in a financial reconciliation on the Eskom bill for the energy bought under the bilateral trade and includes the use-of-system charges associated with the delivery of the energy (wheeling charges).
There are several types of wheeling arrangements, namely:

- A generator sells the energy it produces directly to a buyer and not to a utility (e.g. Eskom).
- A Municipality wheels energy from its own reticulation to Eskom customers within close proximity to the Municipal reticulation or vice versa. These wheeling arrangements could be historical or it could be uneconomical or not feasible for Eskom or Municipality to build in its own network to supply its customers.
- Wheeling in the cross-border context is defined as outlined in the SAPP rules.

This brochure covers provides a guideline in terms of the first bullet above.

2 Does NERSA allow wheeling?

NERSA has published a document called “Regulatory rules on network charges for the third party transportation of energy” wherein bilateral trade is allowed. This document also provides the rules associated with the cost of wheeling.

NERSA will comply with the requirements of the Electricity Regulation Act in order to issue a licence to a generator and to allow the third party transportation of energy.

Eskom submits its charges to NERSA each year for approval. From 2013/14, this will include use-of-system charges for generators.

In order to understand these requirements please contact NERSA at tel: (012) 401-4600 or www.nersa.org.za
3 Does Eskom allow wheeling?

Eskom will allow wheeling of energy subject to certain conditions. These are:

- The generator must have obtained a licence from NERSA including an approval for the wheeling transaction.
- Either the buyer or the generator must be an Eskom customer. Eskom will not need to be involved where there is wheeling between a generator and buyer situated within one or between two municipal networks i.e. where there is not export of energy onto the Eskom network.
- A generator will be required to have signed a connection and use-of-system agreement with Eskom. In cases where the generator is within a Municipal area of supply, a connection and use-of-system agreement will need to be concluded with the Municipality.
  - The connection and use-of-system agreement will reference the wheeling arrangement and list the names of the buyer of the energy.
- The account(s) will be adjusted in terms of Eskom’s policy on the reconciliation of accounts (see Eskom brochure on reconciliation of accounts).
  - The buyer of the energy must agree to allow Eskom to do the wheeling reconciliation by signing an amendment to their electricity supply agreement. This will only be possible where an electricity supply agreement is in place.
- The third party access to the grid will be implemented for generators that do not exceed 300 MW (currently being revised).
- A generator will not connect at low-voltage (<1 kV).

4 What are the charges payable for wheeling?

- All generators and loads, whether wheeling or not, will pay the NERSA approved standard tariff use-of-system related charges for generators and for loads. There are no special “wheeling charges” and the charges for the generator and the buyer are treated independent of any wheeling transaction.
- The charges payable are:
  - The generator will pay use-of-system charges based on the generator’s location or voltage and the MW capacity. The standard tariffs are not linked to the selling arrangement i.e. standard charges are payable by the generator. Refer to section Error! Reference source not found. dealing with generator use-of-system charges
  - A load will pay use-of-system charges based on location,
voltage and the MVA capacity. The charges payable are not linked to any purchasing arrangement, so whether purchasing energy from Eskom or through a bilateral trade, the charges payable for the use of the network will be standard charges. Unless the generator is located on site, a wheeling transaction does not reduce the buyer’s network cost i.e. the network and its capacity exists to deliver the customer’s demand irrespective from whom the energy is bought. Refer section 6 for more detail of the charges.

### 5 What are the charges payable by generators?

- All generators, whether selling wheeled energy or not, will be required to pay NERSA approved use-of-system charges namely: network charges, losses, reliability service charges, and service and administration charges. The generator use-of-system charges will be published on the Eskom tariff book from the beginning of MYPD3.

- An illustration of these charges is as per diagram below:

![Diagram of charges](image)

### 6 What are the use-of-system charges payable by the buyer?

All loads connected to the network of Eskom (network provider) will be required to pay NERSA approved use-of-system charges. These use-of-system charges are as follows:

- The cost of providing reliability services for the energy supplied by Eskom and the generator based on the total energy consumed by the customer (Eskom owned and the wheeled energy).
  - Reliability service charges recovers the cost of providing ancillary services by the System Operator and this cost is payable by all users of the network – generators and consumers alike.
  - This cost is currently included in the energy rates, but is expected in the future to be explicit.

- Network charges on all energy delivered to the consumer over Eskom’s networks based on the customer’s full utilised capacity and maximum demand as the wheeling arrangement does not reduce the capacity to be reserved on the network for the customer. There is no “special deal” for wheeled energy. These
network charges are:
  o Transmission network charge and Distribution network access charge on highest of NMD or maximum demand for energy transmitted over the Eskom network.
  o Network demand charge on monthly demand on peak and standard periods.

- The cost of losses for the energy supplied by Eskom and by the generator, i.e. the total energy delivered, at the standard tariff loss factors (as the financial credit is given at the energy rate excluding losses) at the TOU rates applicable to the voltage of the supply and the transmission zone.
  o Technical losses are network related costs. These costs are based the published loss factors and are currently included in the energy charges.
  o The buyer will pay for losses at the published loss factors for all the energy supplied at the metering point.
    ▪ Eskom will not calculate the actual cost of losses from the generator to the consumer. There is usually no actual electricity flow between the parties and therefore it’s not possible to measure the actual cost of losses. All users of the network pay equitable amounts for losses at the standard published tariff loss factors which are applied irrespective of whether they buy energy from Eskom or not.
  o The benefit or cost of losses due to the generator’s location (as applicable) will accrue to the generator – not the load.
  o With regard to rights of access, the load purchasing energy from a generator will not be treated differently from a load purchasing energy from Eskom.

- Contribution to socio-economic subsidies will not be avoided by a wheeling arrangement. The subsidies are payable on all energy delivered by the network provider (Eskom owned and the wheeled energy).
- Service and administration charges will be raised based on the size of supply of the consumer.

The cost of the energy supplied by Eskom will be charged at standard tariff rates. This will include all the tariff components associated with the standard tariff the buyer is allocated.

It must however be noted that the energy wheeled is credited on the buyer’s bill at the Megaflex rate that excludes losses and reliability.
<table>
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<tr>
<th>with my account?</th>
<th>service charges. A detailed explanation of this principle is contained in section 8. Please visit <a href="http://www.eskom.co.za/tariffs">www.eskom.co.za/tariffs</a> for the latest tariff schedules.</th>
</tr>
</thead>
</table>
| **8 What are the principles regarding the credit provided on the buyer's account for the wheeled energy?** | **●** An agreement setting out the wheeling arrangement will have to be signed between Eskom and the buyer, before a wheeling transaction can be implemented. This is usually done through an amendment to the electricity supply agreement.  
  ○ The generator may nominate more than one buyer and each buyer will have to have signed the above agreement.  
  ○ The buyer of the energy will have their Eskom bill adjusted by the energy produced by the generator as follows:  
    ○ The energy adjustment for the Eskom customer will be based on the Megaflex time-of-use periods, consolidated on a monthly basis sent out by the generator.  
    ○ Half-hourly meter reading data will be obtained for the energy produced by the generator at the generator point of connection. This data will be used to adjust the customer's bill as well as billing the generator for use-of-system charges.  
    ○ The impact on network losses associated with the generator is not linked to adjustments made to the buyer's bill as the impact of system losses are addressed in the dedicated charges to recover the cost of losses.  
    ○ To simplify the adjustment, any financial credit given for the wheeled energy is calculated on the Eskom Megaflex TOU rates excluding losses and reliability services. The energy purchased from the generator is not simple netting off of the energy. This is to ensure that the recovery of non-energy related costs that are included in kWh based charges are recovered.  
    ○ Megaflex is currently used as this is a published tariff and best aligned to the wholesale cost.  
    ○ Eskom will supply the buyer any energy not provided by the generator, in terms of the supply agreement signed with Eskom.  
    ○ Any energy to be supplied in excess of the supply agreement due to generator failure may in future be subject to Energy Conservation Scheme (ECS) penalties or be charged at a standby rate (where promulgated or applicable). |
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<th>9</th>
<th>Is there a credit on demand related charges if there is a wheeling transaction?</th>
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<tbody>
<tr>
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<td>There is no “credit” given for any demand related charges due to the wheeling transaction – only energy only related charges</td>
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<th>10</th>
<th>How do supply interruptions impact a wheeling arrangement?</th>
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<td>A wheeling transaction does not reduce the capacity to be reserved for the customer on the network and therefore the Notified maximum demand (NMD) should provide for capacity associated with the total energy to be delivered over the Eskom network.</td>
</tr>
</tbody>
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<th>11</th>
<th>What agreements must be signed with Eskom?</th>
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</table>
| | For the generator:  
| | o the connection and use-of-system agreement must be in place  
| | For the buyer  
| | o An electricity supply agreement must be in place  
| | o An amendment to the electricity supply agreement for the reconciliation of the wheeling energy will be signed. |

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<th>12</th>
<th>Are wheeling generators subject to dispatch?</th>
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</table>
| | Generators, including those wheeling energy identified by the System Operator as a “qualifying generator” will be required to provide a day-ahead schedule in terms of the dispatch and scheduling rules (under development). This is required so that the System Operator can optimally dispatch those generators where it has legal rights to dispatch.  
| | For a wheeling generator’s the System Operator will, however, not have a legal right of dispatch.  
| | The System Operator will, however, in compliance with the Codes have rights under certain operating conditions. |

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<th>13</th>
<th>What happens if the</th>
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<td>If the generator is in a municipal area and selling energy to a buyer in an Eskom area, the municipality will have to agree to allow wheeling. Eskom will have to sign an amendment</td>
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agreement with the municipality, so as to add back the energy on the municipal account sold to the Eskom connected customer. The buyer of the energy will in turn have to sign an amendment agreement with Eskom, so that the energy costs can be subtracted from their supply account.

- If the generator is in an Eskom area and the buyer is connected to a municipal network, the municipality will have to agree to allow wheeling. Eskom will sign an amendment agreement with the municipality, where the energy related cost will be subtracted from the municipal bill. The buyer of the energy in turn, should have an agreement with the municipality to subtract the energy cost from the buyer’s bill. The methodology/approach, however, will be subject to each municipal policy on the matter.

If the buyer is within one municipal network and the generator within another municipal network or vice versa, Eskom does not need to get involved as there is no delivery or supply of energy over the Eskom network. This can be done through engagement/agreements with the municipality onto whose network the energy is generated, the generator and the buyer of the energy.

### Example of how a wheeling transaction charge will be raised on the buyers’ account

#### Network charges

The network charges payable will be for the full cost of demand measured at the Eskom meter. The network charges payable are the Transmission network charge and the Distribution network access and demand charge,

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<th>Calculations</th>
<th>High Demand Season</th>
<th>Charge</th>
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| Network charges                      | KVA                | R
| Transmission network charge          | 56,400             | 4.82    | R 271,848 |
| Distribution network access charge   | 56,400             | 9.61    | R 542,004 |
| Distribution network demand charge   | 52,000             | 18.28   | R 948,000 |
| At Total network charges             |                    |         | R 1,762,852 |

#### Energy charges

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Eskom will raise the full charges for all the energy measured at the Eskom meter and then subtract the energy bought from the generator at the energy charge, excluding losses and reliability services.

The other charges payable are:

It is to be noted that the electrification and rural subsidy is payable on the total energy measured at the meter.

Assuming an average winter/summer months mix (the above calculations reflect only the cost during the high demand season), the annual average cost of wheeling based on the above assumptions and a load factor of 80% is:

A copy of the above spreadsheet is available on request.
| 15 Example of how a wheeling transaction charge will be raised on the generators account | Depending on the size, location (zone) and supply voltage of the generator, the following use-of-system charges will be raised:
- Network charges
- Losses
- Reliability service charges
- Service charges
- Administration charges
An example of these charges will be published as soon as these charges are finalised for the 2013/14 submission. |
| 16 How does a generator apply for connection to the Eskom network? | The following sets out the high level process for the generator connection to the Eskom network:
- Generators must complete an application in order to receive cost estimates and quotes for connection
- The cost estimate.quote will provide the scope and the required connection charge. Early termination guarantees may be raised to cover upstream costs
- Generators will have to sign a connection and use-of-system agreement with the network provider before any construction work will commence
- If there is bilateral trade, the energy being sold to the buyer will have to be deducted on the buyer’s electricity account – this will require an amendment to the supply agreement having to be signed, detailing how the adjustment is done and what charges are payable
- Construction will commence after acceptance of the quote, payment of connection charges and signing of the connection agreement
Please visit the following website for more information on the application process: [http://www.eskom.co.za/c/73/info-site-for-ippss/](http://www.eskom.co.za/c/73/info-site-for-ippss/) |