In 2012 the Nelson Mandela Bay Metropolitan Municipality (NMBMM) council passed a resolution to source 10% of the total electricity consumption in the municipality from renewable energy sources, with an emphasis on local projects. The resolution included that the municipality would “wheel” such power from private producers to willing buyers. Once NERSA approval was obtained the first, non-exclusive, 20-year wheeling agreement was signed between the Municipality and Amatola Green Power (AGP). To date 5 000 MWh are wheeled each year, from private renewable energy developers to willing buyers, through the municipal network.

Project Overview

Based on the 2012 council agreement, NMBMM developed their framework Wheeling Agreement. This is a generic agreement that states the maximum private power that will be accepted for wheeling by the municipality and the conditions under which the municipality will wheel the power. The agreement allows for a maximum of 10% of the municipality’s total energy consumption to come from privately traded renewable power and at least 80% of this must come from local developers.

Only electricity traders registered with NERSA may apply to wheel power. Traders are charged a standard grid charge. This was initially set at 7% of the value of the power traded. However, realising that this was too low to cover the network costs, NMBMM, with GIZ support, undertook a detailed Cost of Supply study. Based on this, the grid charge is being adjusted, to around 20% of the value of the power wheeled.

Amatola Green Power (AGP) is the first private sector energy trader licensed by NERSA to buy and sell renewable energy in South Africa. Through a first contract, AGP sources an annual 5 GWh from Electrawinds’ Coega wind turbine project and sells this to BHP Billiton through a long-term Power Purchase Agreement (PPA).

Although this currently only represents a small fraction of total annual electricity demand in the municipality, it has opened the way for further power generation projects: private development of an additional 24 turbines is underway and a 10MW PV installation at Coega will come on line in 2015. Renewable energy developers are now able to secure finance for project development more easily thanks to Power Purchase Agreements that are facilitated through the wheeling framework agreement.
Schematic of the wheeling framework (electricity flows and contracts)

- **Green Power Trader**
- **PPA**
- **NMB Distribution Network**
- **Private buyer**
- **Renewable energy generator**

**Contracts**

- **PPA**
- **Wheeling Agreement**

**Electricity flow**

- **The trader pays wheeling charges to the municipality**
- **The trader pays the producer per kWh of electricity generated**
- **The buyer pays the trader per kWh of electricity contracted**

**The buyer**

- **Private buyer**
- **Renewable energy generator**

- **NMB Municipality**
**Technical Description**

**The wheeling agreement**

Wheeling is the term for the transportation of energy over the grid from one party (the seller) to another party (the buyer). Wheeling deals with the use of the network and the cost of delivering the energy. Wheeling charges (also referred to as network use charges) reflect the costs of using the network. These costs typically include deep connection costs, maintenance, operations, refurbishment, customer services, administration, as well as surcharges, such as electrification and rural subsidy charges. However the specific form of each wheeling contract would determine exactly which, and how, charges are applied.

Wheeling transactions refer to the financial accounting treatment of the energy on the electricity bill. In March 2012, NERSA’s Regulatory Rules on Network Charges for Third-Party Transportation of Energy were approved. Discussions are ongoing, however, to update the rules around the broad principle that:

“Wheeling of energy shall be allowed, subject to the generator receiving its approvals from NERSA to sell to a third party and the signing of the network service provider’s Connection and Use-of-System Agreement.”

Concerns have been raised by municipalities in an ongoing process of engagement with NERSA. In particular, it was noted that the regulations open up a degree of free market in electricity distribution yet the impact of this on the municipal ability to operate and maintain the grid, and potentially carry additional charges, have not been thoroughly investigated and secured. Discussions to finalise the rules are on-going between NERSA, Eskom, AMEU (the association of municipal electricity distributors), and representatives from private developers and main electricity consumers.

A further challenge to municipal wheeling is that the majority of municipal distributors do not properly unbundle their use of system charges (i.e. tariffs are bundled – including grid system and energy costs). Very few municipalities undertake Cost of Supply studies, which quantify the various use of systems costs, might enable cost reflective wheeling charges to be determined.

A wheeling transaction does not stipulate the technical standards relating to grid connection. All generators who feed into a distribution network have to comply with the national Grid Code in terms of the technical connection requirements.

**Project Business Model**

When the first wind turbine started producing power at the Coega Industrial Development Zone in Nelson Mandela Bay there was no framework through which such power could be transacted, or traded. In order to support the first green power development in its area, NMBMM agreed to purchase the power. In order to not fall foul of the MFMA (Municipal Finance Management Act) requirement that municipalities source the lowest cost service, NMBMM offered to buy the electricity at a rate below Eskom megaflex rates. The developer was able to recoup its costs through selling the ‘green’ component of the power to a private company through a Green Credits Agreement. In this arrangement, the company continues to buy their electricity from the municipality, but in addition buys the ‘green premium’, directly from the generator. This ‘green’ certificate can count towards triple bottom line accounting requirements and marketing of a green image. The municipality, though supportive, could not engage in the kind of long-term power purchase agreements (PPAs) so vital for raising development finance for ongoing renewable energy project development.

In 2013, with the signing of a wheeling agreement between NMBMM and AGP, the possibility of long-term PPAs was opened up. AGP was licensed by NERSA in 2009 to trade green power - buying power from renewable energy generators and sell this on to willing buyers. Customers of AGP pay between R0.80 and R1.40 per kWh of electricity purchased and generators are paid between R0.62 and R1.05 per kWh supplied. The customers enter into long-term (10, 15 to 20 years) contracts. AGP operate on a “take

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*The first wind turbine in Coega*

Source: Nelson Mandela Bay Municipality
or pay basis” which means that if a customer says they will purchase a certain amount of green energy and actually use less, they will still be required to pay for the energy that they did not use. With a contract in place, committing a willing buyer to ten or fifteen years of power purchase from the generator, at an established price, the project risk for the developer is substantially reduced and financiers are more willing to loan the necessary funds for the project investment.

The trader (AGP) is charged directly by the municipality for the wheeling of the green power at the established use of network charge as set out in the Wheeling Agreement between AGP and NMBMM. NMBMM initially set this network charge at 7% of the value of the power delivered in the trading agreements (calculated on Eskom mega-flex rates). The municipality has since undertaken a detailed Cost of Supply study and have updated the Wheeling Agreement to set the network charge in the region of 20% of the value of the power wheeled over the grid. This will cover all network costs, but does not cover the full cost of service - billing and other services that raise revenue for the municipal Rates and Service Accounts. The municipality has agreed to forfeit this portion of the traditional revenue generated as it strongly believes that the opening up the grid to local power producers will compensate the loss through the stimulus to local economic development.

The municipality’s framework wheeling agreement is based on the idea of attracting and supporting local renewable energy development. The Coega Industrial Development Zone is situated within the NMB Municipality and has been established as the green technology manufacturing hub of South Africa and there are also plans to build up to 1200 MW of renewable energy here. These projects have the potential for job creation associated with parts manufacture, plant development and maintenance.

### Project Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2005</td>
<td>The project has its roots in the municipality’s “Windy City” renewable energy initiative. The municipality identified various renewable energy options that would be workable.</td>
</tr>
<tr>
<td>February 2009</td>
<td>NERSA awarded AGP with a license to trade Green Power within the framework of the voluntary willing buyer, willing seller market (License No TRDo1/ELC/09).</td>
</tr>
<tr>
<td>March 2010 - May 2010</td>
<td>Construction to commissioning: the first wind turbine was completed at Coega.</td>
</tr>
<tr>
<td>October 2010 – May 2013</td>
<td>Power Purchase Agreement between NMBMM and Coega wind farm to purchase their power at just below Eskom rates.</td>
</tr>
<tr>
<td>January 2011</td>
<td>Green Credits Agreement was signed between Electrawinds and BHP Billiton, who purchased the ‘green’ component of the power produced.</td>
</tr>
<tr>
<td>2012</td>
<td>NMBMM Council resolution to source 10% of its total electricity demand from renewable energy, with an emphasis on local renewable supply.</td>
</tr>
<tr>
<td>2012 – 2013</td>
<td>Wheeling agreement developed, involving the City’s Electricity and Energy, legal and financial departments and numerous engagements with NERSA.</td>
</tr>
<tr>
<td>June 2013</td>
<td>NMBMM wheeling agreement signed with Amatole Green Power.</td>
</tr>
<tr>
<td>June 2013</td>
<td>NMBMM start wheeling power from Coega wind farm through to the willing buyer (BHP Billiton).</td>
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Challenges, enablers and lessons learnt

Although it took some years to get the broad framework in place, and enormous amounts of discussion and engagement with NERSA, this framework has the ability to now fast track renewable energy development in the area. The motivating force for NMBMM is that of local development. In addition the municipality believes that there are important, direct financial benefits of having a portion of its power coming from local, renewable source electricity: demand charge reductions on power purchased from Eskom, no environmental levy, and no carbon tax when that comes into effect. Grid stability is also improved.

Supporting local renewable energy project development

The NMBMM Wheeling Agreement demonstrates that the municipality may play a substantial role in stimulating local renewable energy development. Long term wheeling and Power Purchase agreements make a project bankable for the generator and support the generation license application process. The regulatory framework allows for the development of wheeling agreements by municipalities. These agreements establish a green energy trading market framework. Without this, the Coega wind farm would not have been able to develop and expand. It is opening up the way for further, local renewable energy development. This, as demonstrated by the Coega wind farm, generates local jobs in construction and professional engineering and ultimately will act as a stimulus for the whole local economy.

Capacity building

Valuable practical experience and data has been developed. Thus, in NMBMM the wheeling agreement is helping the municipality to learn more about connecting renewable energy projects to the grid and to track and monitor the existing generators. The wheeling framework encourages proper metering and enables the municipality to check the quality of supply. In this way the municipality can also identify barriers to renewable energy development and be responsive and supportive, where possible, for example in grid connection and metering processes.

Establishing Cost of Supply

Unbundling tariffs through cost of supply studies can facilitate a much more dynamic tariff setting process, which will help municipalities not only with wheeling of power, but with a range of processes related to efficiency and renewable energy development, such as establishing small-scale renewable energy feed-in rates.
**Location**

Nelson Mandela Bay  
Eastern Cape

**Start of operations**

Wheeling agreement came into effect  
June 2013

**Project delivery model**

20 year wheeling framework agreement supporting privately financed renewable energy generation and purchase

**Electricity production**

The municipality wishes to provide 10% of the total municipal consumption, i.e. approx. 318 GWh, through privately traded renewable energy

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