



Provision of Electricity Services

The provision of electricity services is set out in the City of Cape Town Electricity Supply By-law of 2010. The City of Cape Town is the Service Authority and the Service Provider (distribution network provider and electricity supplier) for the Cape Town Supply Area. The by-law allows for the retail wheeling of electricity through the City's network by a third party licensed electricity supplier to customers within the City Supply Area.

Wheeling Model

Wheeling refers to the financial transactions representing the transportation of third party electrical energy (kWh) over the municipal/Eskom distribution network. It allows a third party supplier to sell this electrical energy to a customer within the City's network. The sale is governed by a bilateral power purchase agreement (PPA) which exists within a market environment, as opposed to a regulated environment, as the price of the energy is set between the parties and not by the City/Eskom or the National Energy Regulator of South Africa (NERSA).

The City has developed a wheeling model to allow this market environment to function alongside the regulated environment. A key consideration in the model development is that energy balancing at the distribution network level occurs at the combined market and regulated environment. As the energy in the market environment will initially be small compared to that in the regulated environment, balancing energy (whether surplus or deficit) in the market environment will effectively be provided from the regulated environment. The City will thus effectively take on the role of supplier of last resort to the market environment by being the supplier of deficit energy and the taker of surplus energy².

The City has implemented the first phase of the wheeling model (bilateral wheeling) and will soon start testing pooling wheeling, through a pilot, in November 2025.

Principles

Principles that underpin the model are:

- Wheeling is being implemented to facilitate the consumption and supply of renewable energy in the City of Cape Town.
- Energy will be wheeled ex green benefits and the City will not be responsible for the verification or certification of green benefits.
- Customers participating in wheeling (market environment) will be treated separately from other City customers (regulated environment) to ensure that there is no cross-subsidization of energy costs or arbitrage between these two environments.
- Wheeling for Participants will only be implemented at medium and high voltage levels ie 11 kV to 132 kV.
- Participants must be on a "Time of Use" electricity tariff structure;
- Generators may be embedded or outside the City's network.

Customers to whom energy is wheeled must enter into suitable supplemental Electricity Wheeling and Use of System contractual arrangement with the City;

¹ A future electricity retail market supplier would need to hold a NERSA Trading License. The need for individual traders to hold a NERSA Trading License still needs to be determined.

² In order to protect both the market and regulated environment, customers will not be able to arbitrage between the two environments. The City will only be obligated to supply deficit energy to market environment customers and will not be obligated to provide any compensation for excess (un-wheeled) generation.

Energy balancing

Energy is accounted for in near-real time over each $\frac{1}{2}$ hourly metering integration period and energy balancing will be done over the same period³. In an established market environment, surplus energy would be cheap, while deficit energy would be expensive, with these prices passed onto customers willing to take or forgo this energy to achieve energy balancing. Until the market environment matures, the City will supply deficit energy at regulated tariffs, while surplus energy will be taken at the feed in surplus energy tariff rate up to a maximum of 5MVA. In line with the current regulatory environment, these transactions for bilateral wheeling, will be done directly with the customers and not with the third party trader.

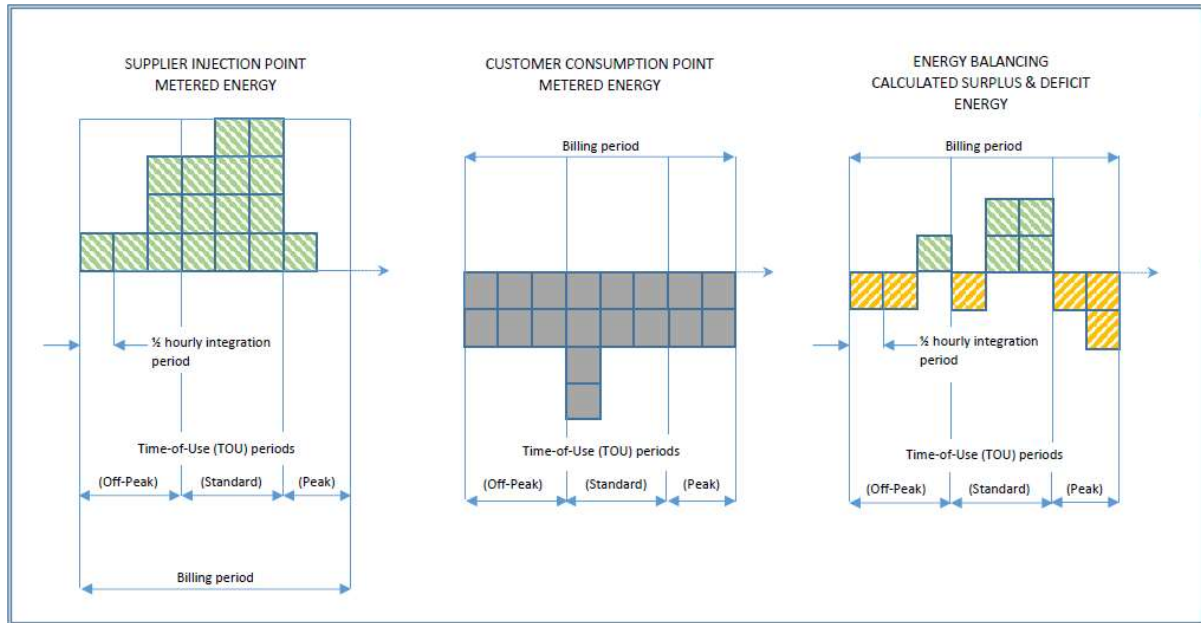


Figure1: Energy balancing example

Customer Greening

In order to allow customers to green the electrical energy used in production, the City will purchase surplus energy wheeled to the customer. This purchase will be from the customer at a time-of-use feed-in tariff ex green benefits to allow the green benefits to be retained by the customer to green the deficit energy purchased. As the total energy wheeled by the trader should balance the total energy consumed by the customer, the surplus energy purchased should not exceed the deficit energy supplied. Due to seasonal and other variations in green energy production, this balancing will be enforced over a 12-month period with surplus energy in excess of deficit energy taken at zero price. This has the same effect as a form of energy banking which takes the real time price of the energy into account.

Tariff Application

The wheeling tariffs are designed so that the City charges the customer for the full network cost for their total consumption and the energy cost for deficit energy. The application is illustrated in Annexure A, using the energy balancing example in Figure 1 and the City's 2024/2025 consumptive tariffs.

³ Half hourly metering data is a prerequisite requirement at each customer and supplier metering point (including Eskom supplied data for external wheeling suppliers).

Wheeling pilot research project

After the successful completion of phase one of the wheeling pilot study and the introduction of bi-lateral wheeling, the City is continuing with phase two to test "Pool" wheeling i.e. one-to-many, many-to-one & many-to-many. This will continue for another year, and details on the outcomes of the pilot will be shared once they become available.

Cost Allocation

Full allocation of costs needs to be visible via future tariff design. A separation of energy costs, wire services costs and subsidies (to residential and indigent consumers, to public lighting and to the rates account) need to be reflected as separate tariff components. All tariffs will be TOU initially as a precursor to real time pricing.

Annexure 1:**TARIFF APPLICATION EXAMPLE****Notes:**

- Energy [kWh] amounts relate to the Energy Balancing example in Figure 1 :
- 2024/2025 Low demand (September to May) Tariffs excl. VAT are used
- The Service charge (R344. 60/day) is excluded from the example
- Customer Greening is not applied in the example.

	Energy ^A injected by trader [kWh]	Energy ^A used by customer [kWh] also known as Wheeling Use of System	Surplus Energy ^B [kWh] also known as Wheeling Excess Energy Feed-in	Deficit Energy ^B [kWh] also known as Wheeling Deficit Energy	City Tariff Application (Customer pays City)	Eskom WEPS refund to City
Aggregated over Off Peak	5 000	6 000	1 000	2 000	Total R 4427,70 [6 000 x R0.5686] = R 3411,60 [2 000 x R0.8025] = R 1605,00 [1 000 x R0.5889] = - R 588,90	5 000 × R0.8025 = R 4 012,50
Aggregated over	11 000	8 000	4 000	1 000	Total R 2143,20 [8 000 x R0.6223] = R 4986,40 [1 000 x R1.2652] = R 1265,20 [4 000 x R1.0271] = - R 4108,40	[11 000 × R1,2652] = R 13 917,20
Aggregated over Peak (low)	1 000	4 000	0	3 000	Total R 8267,30 [4 000 x R0.6881] = R 2752,40 [3 000 x R1.8383] = R 5514,90 [0 x R1.5698] = R 0,00	[1 000 × R1,8383] = R 1 838,30

A: metered B: calculated per ½ hourly period