

SOME FREQUENTLY ASKED QUESTIONS

What is Green Electricity or Green Power?

Green Electricity – also called Green Power – is electricity which is derived from *renewable energy resources* and which is generated in a *sustainable manner*. The Association of Issuing Bodies (<http://www.aib-net.org/>) defines green electricity as that generated by wind, solar, water (small hydro, wave, tide), geothermal, biomass. It excludes electricity generated from nuclear energy and landfill waste.

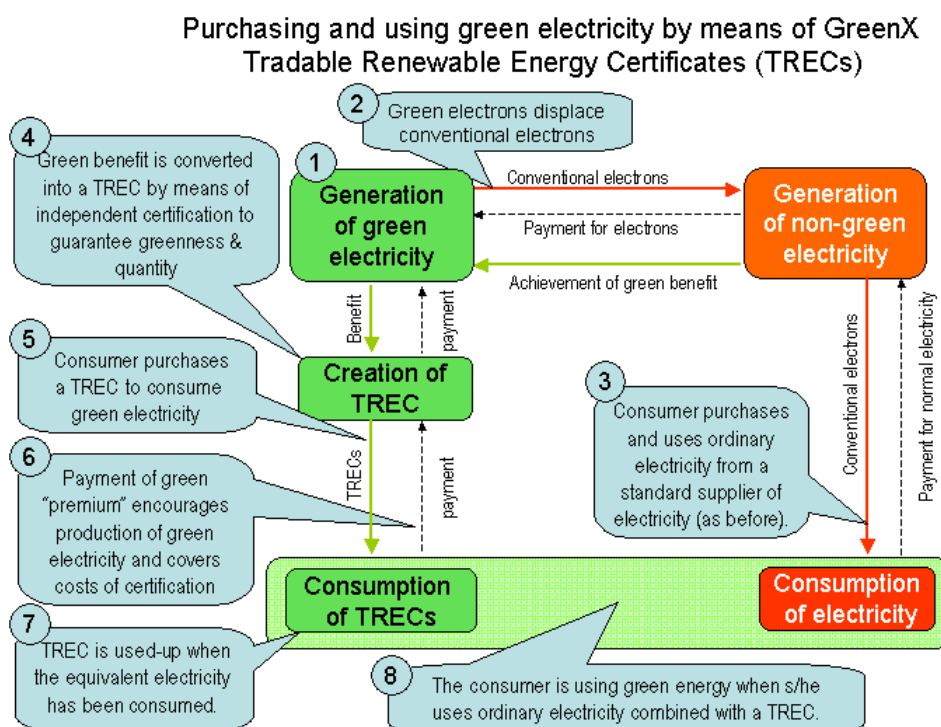
What are TRECs and how do they work?

Tradable Renewable Energy Certificates (TRECs) represent the non-energy value of units of certified green electricity. In essence, a TREC is an auditable financial instrument that reflects the attributes of green energy independently of the actual units of energy – i.e. the ‘greenness’ value is separated from the electrons. TRECs are normally denominated in 1 MWh units.

A green generator (suitably registered as such) produces electricity which is supplied into the national grid for distribution and is consequently ‘mixed up’ with undifferentiated electricity such as from coal, nuclear and diesel generated electricity. However, under a TREC system, the green generator is also issued a certificate (a TREC) at the time of generation which certifies the quantity and type of green electricity produced. This certificate can be marketed and sold separately from the associated electricity which has gone into the grid. Discerning customers are then able to purchase the certificate(s) and, when electricity is consumed from the grid it may be re-combined together with the purchase of the green certificate, effectively allowing for green electricity to have been used. The TRECs are redeemed at

this point and the customer is able to claim the benefits (environmental and others) of the Green Power at this stage.

The flow diagram below illustrates the process which enables customers to procure green electricity by means of a TREC system.



Why the TREC approach?

The choice by customers to use renewable resources of energy directly avoids climate change emissions and stimulates the development of a more sustainable energy economy. However, many potential RE customers are unable to generate their own renewable energy on (or adjacent to) their premises and consequently TREC's provide an effective mechanism of transferring the value because the certificates allow the consumption to be physically separated from the generation while maintaining the value – effectively it is not necessary to have a renewable generator on one's premises in order to realise the benefits of green electricity.



The approach is designed to stimulate investment in new renewable energy projects by providing a revenue stream for developers thus stimulating the renewable energy generation industry. Furthermore, the TREC approach directly matches buyers and sellers in the most efficient and cheapest way, and finally enables customers to use any quantity of green electricity up to 100%. The green benefits experienced by the consumers are as real as they would be with direct local supply.

What are the benefits of purchasing TRECs?

TRECs provide internationally accepted proof of an enterprise's procurement choice in terms of energy. Using green electricity, as reflected in terms of TRECs, makes a significant contribution to a company's sustainability targets and triple bottom line reporting. TRECs have the additional practical advantage that there is no physical impact on the customer – no additional equipment required. It is the cheapest way to procure renewable energy as it optimises the use of existing transmission and distribution infrastructure.

By outsourcing the local carbon and resources issues to achieve economy of scale, the TREC based certificate system allows generation to be at optimal sites and the benefits to accrue at a customer site anywhere. Further, greater system diversity provides protection against future fossil fuel price uncertainty as well as supply security in the economy.

How does a generator get registered in order to produce TRECs?

Renewable energy generation plant may be registered as a Green Power Generator (known as a Renewable Energy Production Device) by completing the Renewable Energy Declaration process and the Registration of a Renewable Energy Production Device. This document is completed on the basis of a technical inspection of the generation system under the



auspices of the South African Tradable Renewable Energy Certificate Issuing Body (SATIB). Currently SATIB is in the process of being formed - the Department of Minerals and Energy (DME) in South Africa commissioned a study to examine the industry and confirm the appropriate governance mechanism and this initiative is being formalised by the SA National TREC Team which is convened by the DME.

(http://www.dme.gov.za/energy/renew_TRECS.stm).

How are TRECs priced?

Currently, electricity generation in South Africa is predominantly undertaken by the state utility, Eskom, and is based on low-grade coal and diesel production. Until recently, Eskom electricity has been amongst the cheapest electricity worldwide. Although the differential is reducing, the costs of renewable energy generation are still higher than that supplied by Eskom. Consequently, TRECs are priced at the differential between the cost of new renewable energy generation (say large-scale windpower generation) and the Eskom supplied cost for existing coal-fired plant. This premium provides a revenue stream to stimulate the investment in new RE generation infrastructure.

Normal administration and marketing costs are added to arrive at the final TREC price. The cost of Eskom power will rise significantly in the near future as the costs of investment in new capacity are factored into the pricing structure. This will have the effect of reducing the apparent premium on Green Power.

Is there an independent governance body and, if so, what is its role?

The green electricity certificate industry is in its infancy in South Africa. The first Green Power transactions for venues of the World Summit on Sustainable Development in 2002 were effected through a register provided by the National Electricity Regulator (now NERSA). Since then, the DME commissioned a TREC study to determine the most effective way to stimulate the growth in renewable energy generation. This study made recommendations for the establishment of a TREC Issuing Body and this is currently in the process of formalisation. The Issuing Body will ultimately be the governance authority for the industry. It will be based on the European Association of Issuing Bodies (AIB). In the meantime, the registration of Production Devices is undertaken by suitably qualified energy consultancies and the central certificate register is maintained by Nano Energy.

Where does GreenX Energy source TRECs?

TRECs can be sourced from any green generator that has completed the Renewable Energy Declaration process and has been registered as a Renewable Energy Production Device as laid out in the Principles and Rules of Operation of the AIB.

GreenX Energy currently sources TRECs which are based on electricity generated in the sugar industry in South Africa. Green electricity is produced from burning of bagasse (fibrous residue from the sugar production process) in boilers to produce steam which is converted into electricity in turbine alternators. Bagasse is a renewable energy source as the sugar cane plant is an annual crop which absorbs carbon dioxide in its growth cycle. Each turbine has a calibrated meter which records the production output.



Currently, GreenX Energy is negotiating to purchase wind generated TRECs from a new wind turbine in Namibia, as well as TRECs generated from a rural solar electrification project, and also looking at sourcing TRECs from a small hydro plant.

Who are some of GreenX Energy's clients?

GreenX Energy numbers amongst its client base multinational corporations such as oil major, BP, and pharmaceuticals giant, Johnson & Johnson. The agreements vary in duration but generally extend for between 3-6 years. Longer term contracts are attractive because they recognize the essence of green electricity - price consistency over a long period.

In addition, GreenX Energy supplies TRECs to numerous conferences that desire to operate on Green Power.

Emissions saving in South Africa from green electricity generation

Electricity in South Africa is produced primarily by the state-owned utility, Eskom, using fossil fuels, mainly low-grade coal. The resource savings and emissions eliminated per 1 MWh (per TREC) by the displacement of 'dirty' electricity green electricity are as follows:

- Water consumption saved: 1320 liters
- Coal consumption saved: 560 kg
- Ash production avoided: 161 kg
- Ash emitted avoided: 0.23 kg
- SO₂ emissions avoided: 8.69 kg
- NO_x emissions avoided: 4.39 kg
- CO₂ emissions avoided: 1,200 kg (based on UNFCCC/CDM methodology) (Source: Eskom Annual Report 2008)

What is the difference between TRECs and carbon offsets via CDM?

Certified Emission Reductions (CERs) form part of the Clean Development Mechanism (CDM) process established at Kyoto. TRECs and CERs are different but complementary in as much as TRECs provide a mechanism to supply green electricity within a voluntary market (at present in Southern Africa) and CERs provide a framework for funding and transacting global emission reductions in terms of the Kyoto Protocol.

In essence, CERs can be generated from any project that reduces emissions (the project needs to be duly registered as part of the CDM process) whereas TRECs access the broader benefits associated with green electricity generation and utilization, namely increased price certainty, generation diversification, better job creation opportunities and the establishment of a viable renewable energy generation industry in addition to the emissions reductions associated with RE.

How long has GreenX Energy been in business?

GreenX Energy was established in 2003 based largely on the experience derived from a pilot Green Power trading project in 2002 for the World Summit on Sustainable Development. The Green Power for the WSSD project supplied 854 TRECs (corresponding to 854 MWh of electricity) to two of the main venues for the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002. Glynn Morris, one of the founders of GreenX Energy, secured a budget from USAID and was the project leader of the Green Power for the WSSD Project. The project was implemented by AGAMA Energy and other partner organisations including the National Energy Regulator (now the National Energy Regulator of SA, NERSA).



GreenX Energy is a privately owned company (operating as a 100% subsidiary of AGAMA Energy (Pty) Ltd) with offices at the Green Building in Westlake, Cape Town, South Africa.

What is the nature of the GreenX Energy business?

Essentially GreenX Energy markets and sells green electricity certificates, Tradable Renewable Energy Certificates (TRECs). The primary aim of the company is to value the 'greenness' or non-energy benefits of renewable energy production and engage in a commercial mechanism for trading this value in a Green Power market. Initially, GreenX Energy's customers are predominantly multi-national corporations (in retail, manufacturing and commerce). We are currently looking at ways to provide Green Power solutions to the individual household customers.

What products does GreenX Energy market?

As already mentioned, GreenX Energy sells Tradable Renewable Energy Certificates (TRECs) which attest to the fact that the customer is paying for the benefits of green (or cleaner) electricity.

Where can I get more info?

For additional info about green energy, TRECs or GreenX Energy, contact Glynn Morris at GreenX Energy (Pty) Ltd, The Green Building, 9b Bell Crescent Close, Westlake Business Park, 7945, South Africa (email: glynn.morris@greenxenergy.com) or visit the website on www.greenxenergy.com.