

Review of national and municipal legislation
and policy in South Africa to support
Renewable Energy and Energy Efficiency uptake
in municipalities

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1. Introduction

This report forms the starting point of the REEEP funded project 'Sustainable Energy Provision at the Municipal Level'. The project is being managed by Sustainable Energy Africa (SEA) and will run from February 2013 – January 2014.

The primary focus and aim of the project is to find solutions to the increasing electricity provision challenges that South African municipalities face. These challenges include:

1. Steeply increasing electricity prices over the past 3 years. These are making alternative energy sources such as embedded photovoltaic generation and solar water heating more affordable to electricity customers. Energy efficiency is also becoming increasingly viable with reduced payback periods.
2. The negative impact that large scale embedded renewable energy generation and energy efficiency implementation will have on municipal electricity coffers. This loss of income will typically come from customers who pay the highest electricity rates, and who cross subsidise other areas of the municipality which allows them to function effectively.
3. The increased political pressure to electrify informal settlements within the municipality. Electrification of these areas has many benefits such as reduced risk of shack fires; improved quality of life provided by electrical appliances and improved air quality through reduced use of coal and paraffin stoves in the house. However this is a cost to the municipality which is typically cross subsidised by the commercial and high income residential users.

Based on the above, there may well be a 'knee jerk' reaction by municipal electricity departments to try to block energy efficiency and renewable energy implementation in order to secure their financial situation.

However, within this context there are also other forces at play. National and municipal policies are looking towards greater integration of energy efficiency and renewable energy into the energy mix. These policies and frameworks have come into play through increased strain on the electricity supply in South Africa, and through the increasingly more centralised acceptance of the negative impact that electricity generation is having on South Africa's natural resources and on global warming.

The project aims to find a 'middle path' through these conflicting challenges. The first step in understanding these better is to analyse the current policy context in South Africa around energy efficiency and renewable energy, in order that the project can be housed within this space.

This is the purpose of this report.

2. Policy Framework

2.1. National policies

National policy is developed by national government departments. Most policies considered in this section have been developed by the Department of Energy and the Department of Environmental Affairs. These are the two key role players nationally around the sustainable energy space. Policies do not necessarily always speak to each other, and in some cases can be conflicting. However, they do reflect broadly the intentions of national government, and as such can be used as guides for future development in the country. With regards to the key project areas of energy efficiency and renewable energy implementation, greenhouse gas emission reduction and informal settlement electrification, the following policies are relevant:

White Paper on Energy Policy (1998)

This document outlines five key objectives:

- to increase access to affordable energy services particularly to meet the basic needs of the poor,
- to improve energy governance,
- to stimulate economic development,
- managing energy related environmental impacts particularly focusing on poor households and securing supply through diversity.

In 1998 at the time this paper came out 40% of all homes and many schools and clinics in South Africa were without access to electricity supply. This figure has reduced significantly to 10% in 2013. This was an important document and in many respects set the scene for some of the policies and strategies that followed.

Key points to take from policy:

1. Focus on energy poverty alleviation, which has resulted in widespread electrification and subsidised electricity prices for the poor
2. Diversification of supply to ensure energy security can be interpreted as a support for alternative generation technologies such as photo-voltaics

The White paper on Renewable Energy (November 2003)

This paper set out government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa. It clearly states that South Africa has relied on cheap coal to meet its energy demands and that given the green house gas emissions from the use of fossil fuels and South Africa's ratification of the UNFCCC and Kyoto Protocol, it is imperative for government to establish a renewable industry through a phased and flexible strategy which builds on partnerships. The target set by the white paper was that South Africa should produce 10 000 GWh of renewable energy by 2013. It states that South Africa has abundant renewable energy resources and to enable the take up of these resources government must introduce fiscal and financial support

mechanisms, legal instruments, develop institutional infrastructure such as regional electricity distributors (REDs), develop technology and build awareness and capacity.

Key points to take from policy:

1. Focus on government support to achieve renewable energy targets.
2. The policy does not specifically look to support embedded generation.

National Energy Efficiency Strategy (NEES) (2005)

The vision of this strategy is to strive for affordable energy for all and to minimise the negative effects of energy usage on human health and the environment through sustainable energy development and efficient practices. The latest NEES prioritises energy efficiency and programmes and has an overall target of 12% of energy efficiency for the country, 10% for residential and 15% for other sectors by 2015. The NEES also includes photo-voltatics as a fuel switching option (only if the substitution allows for de facto improvement in energy efficiency)

Key points to take from policy:

1. Strong call for energy efficiency in all economic sectors with ambitious targets
2. Renewable energy is compartmentalised as 'fuel switching', mostly focussed on poor communities with poor energy access.

The National Energy Act (2008)

This act gives the mandate to the National Department of Energy to ensure that diverse energy resources are available in sustainable quantities and at affordable prices in the South African economy to support economic growth and poverty alleviation, while also taking into account environmental considerations. In addition, the Act also provides for energy planning, for the increased generation and consumption of renewable energy.

Key points to take from Act:

1. Strong focus on diversifying supply
2. Strong focus on increasing renewable energy generation

The Electricity Regulation Act (2006, amended 2008)

This Act makes provision for energy efficiency measures with respect to lighting, water heating and space heating/cooling and smart metering to be promulgated. It also ensures that incentives and penalties are legislated. These energy efficiency applications included in the Act are largely the responsibility of municipalities to enforce and/or implement.

Key points to take from Act:

1. Allows for budget to be allocated for energy efficiency specifically
2. Strong municipal focus for implementation

Long Term Electricity Regulation Act 4 of 2006 as amended in 2007

At national level, there is no clear policy to promote embedded generation other than that which recognises the value of embedded generation as a demand side measure. The Act regulates that small scale generators generating for own use and/or connected to the grid with an installed capacity less than 1 MW will be exempt from further compliance. However all Embedded Power Generators (even those generating for own use and not connected to the grid) are requested by NERSA to at least submit the standard generation application form in order to notify/register with NERSA and need to comply with standards for electricity connection.

Key points from the Act:

1. The policy for embedded generation is not clear, but does allow for it if standards are met.

Mitigation Scenarios (2008)

The Long Term Mitigation Scenarios (LTMS) is a Cabinet approved document developed by the Department of Environmental Affairs & Tourism. It outlined three key scenarios – *growth without constraint*, i.e. business as usual which they clearly state is unacceptable, *current development paths*, which will not be sufficient to create change, and *required by science* which would provide the shift needed to arrest the catastrophic effects of climate change. They noted that by 2050 there would be a huge gap of 1300Mt CO₂ between *growth without constraint* and *required by science* scenarios. The document argues that GHG emissions should plateau by 2020 and decline by 2030. They identified possible solutions which included extensive energy efficiency measures, and a split between nuclear and renewable energy production by 2050 as well as the introduction of carbon tax.

Key points from document approval:

1. Cabinet buy in for accepting that measures must be taken to arrest climate change into the future. This would include photovoltaic generation.
2. Mention of a carbon tax which could cross subsidise cleaner generation and more efficient technologies

Climate Change White Paper (2010) While the Climate Change White paper's goal is to support renewable energy as a means to mitigate climate change, the policy is based on technology transfers, flagship programmes and learning curves to kick start the local renewable energy manufacturing industry.

The current strategy of the DoE is to supply large scale renewable energy utilising a sustainable energy resource management which includes market stimuli (tariff structures) and legal instruments; further implement flagship programmes (e.g. Clean energy education and empowerment (C-C3e) Women Initiative); ensure capacity building and demand side management.

Key points from policy:

1. Renewable energy is further recognised as a means to mitigate climate change

2. The paper allows for the support of institutional structures and mechanisms to help remove barriers to large scale renewable energy implementation.

The Electricity Pricing Policy of the SA Electricity Industry

This Policy states that electricity prices should reflect efficient market signals, accurate cost of supply and concomitant price levels that will ensure financial viability of the electricity sector in its entirety. According to the NER Regulatory Policy on Energy Efficiency and Demand Side Management (EEDSM) for South African Electricity Industry (May 2004), all metros are obliged to incorporate EEDSM (and thus proper tariff structures) in their planning and to ensure EEDSM implementation.

Key points from policy:

1. The Act mandates local municipalities to implement demand side management measures through a portion of their electricity tariff income.
2. Local municipalities are also mandated to implement energy efficiency.

Grid Interconnection of Embedded Generation, Part 2: Small-scale Embedded generation, Section 1: Utility Interface

NERSA has published rules related to the third party transportation of energy. These rules allow for wheeling and bi-lateral trade and set out the connection charges and how use-of-system charges will be raised for generators and loads, including customers that purchase/consume wheeled energy. As given in the South African Distribution Network Code, Eskom is obliged to connect embedded generators under as long as the generator meets connection standards. These standards were accepted in 2010 (NRS 097-2). The standards cover:

- Utility interface requirements (NRS 097-2-1 – approved & published). Also approved by NERSA (22 September 2011)
- Equipment type testing (NRS 097-2-2 – draft circulated for comments)
- Utility Framework (NRS 097-2-3 – conceptual phase).

However, it does not address the gaps for units >100kW and <1MW. A Specification will in the future be developed to provide informative guidelines on the implementation procedures, the application form, the license requirements, the certificate of compliance procedures, the commissioning procedures, where applicable, and documentation requirements for the embedded generator. Further, the standard doesn't take into account wheeling and net generation tariffs adequately for small scale renewable energy generation.

National Solar Water Heating Framework

The DoE has developed a solar water heating framework, which consolidates all solar water heating programmes currently run by various municipalities, public entities and the private sector. This framework also proposes a viable funding mechanism that will allow for the accelerated installation of

one million solar water heaters by 2014/15. The Solar Water Heater (SWH) programme, in terms of which a commitment has been made to progressively deploy the solar water heaters in all residential dwellings which do not have a geyser (this is approximately six million households). The outcome of this programme includes electricity demand reduction (3 600MW). A subsidy and insurance linked programme is planned for increasing uptake in middle to high income households. As of 2012, 160 000 solar water heaters have been installed (of which 40 000 are high pressure systems in middle to high income homes).

The National Building Regulations Part XA: Energy Efficiency (2011)

The National Buildings Regulation was amended to include energy efficiency standards in all residential and commercial buildings. Importantly, it includes water heating, where at least 50% of heating needs must be supplied by non-electrical resistance means. The amendment has provision for building envelope, fenestration, passive solar heating and insulation.

2.2. Local policies:

eThekwini

In 2006, eThekwini produced its first State of Energy report which identified strategies for sustainable energy implementation in their municipality among all sectors, viz. residential, government, commercial and industrial buildings, agriculture and transport. The focus of energy sustainability was carbon emission reduction; energy security and affordability by utilising clean and efficient energy supply and demand side management. The municipality set a target for emissions reduction of 24% by 2020 and renewable energy uptake of 8.3% by 2020. In addition, the 2008 Energy Strategy for the residential sector encourages clean and sustainable domestic energy use for the social health and welfare of communities throughout the EMA.

With regards to renewable energy and energy efficiency, the municipality has three goals:

- Goal 1: increase uptake of energy efficient practices and renewable alternatives, especially the middle income and higher income households.
- Goal 2: Encourage development of the energy efficiency and renewable energy technology sectors
- Goal 3: Increase general awareness of energy efficiency and renewable energy technologies

‘Green Domestic Power Tariffs’ which are essentially TREC’s are being promoted and the medium to long term markets are being investigated. eThekwini accepts grid connection applications from renewable energy Embedded Power Generators and customers need to register a Power Purchase Agreement.

Key points from Ethekwini’s policies and objectives:

1. The municipality is making good progress into renewable energy and energy efficiency policies and bylaws.
2. It is one of the first municipalities to generate and purchase renewable energy.

City of Johannesburg (CoJ)

In 2008, the first State of Energy report was produced. The report aligns with the national Energy Strategy for South Africa and the White Paper on Renewable Energy. The report includes a series of sustainability objectives which were developed for each sector and which relate to issues such as access to energy supplies, energy affordability, climate change, atmospheric pollution as a result of fossil fuel combustion, social welfare and employment. These objectives included:

- Increasing residential energy efficiency uptake
- Reducing the use of liquid fuels and coal in the home
- Increasing uptake of solar water heaters and renewable energy
- Increasing the affordability to clean and safe energy sources

The objectives from the State of Energy report are included and built on in the IDP and the municipality's Environmental Management Policy which supports sustainable energy sources and demand side management.

An outcome of the State of Energy report is to reduce its energy consumption using energy efficiency and solar water heaters by 4,2 million MWh by 2015. The city has undertaken several initiatives including retrofitting council-owned buildings; installing solar water heating systems in thousands of low income households; installing energy efficient street lights; implementing greening initiatives; setting up waste minimisation programmes and is investigating landfill gas extraction. Also included in the Energy Strategy and being investigated are household rebates for energy efficiency, and for the commercial sector tax rebates.

Key points from City of Johannesburg's policies and objectives:

- City of Johannesburg has a policy on energy efficient buildings for new and existing residential buildings.
- The city is part of the C40 Large Cities Climate Leadership Group and is the only South African city to be participating.

City of Cape Town

City of Cape Town has made the biggest strides in energy efficiency and renewable energy policies and implementation. It has a target of 10% renewable energy and cleaner energy supply by 2020. The city has developed a Energy and Climate Change Action Plan and its policies have progressed into IDPs since 2010. Included in the IDP are energy efficiency and renewable energy technologies including mass

rollout of solar water heaters and retrofitting buildings. In addition, the City has released a Green Building Guidelines which focus on reducing energy consumption at the household.

Excluding solar water heaters, diversification of the energy mix includes large scale renewable energy supply from Eskom, local projects e.g. Darling Wind Farm, micro-hydro from municipal water services, landfill gas and small scale generation using embedded PVs on rooftops. The city is researching green tariff development and developing electricity tariffs to promote energy efficiency and renewable energy installation.

Key points from City of Cape Town's policies and objectives:

- City of Cape Town has been one of the most progressive of South African cities in the sustainable energy/climate change space.
- There is a strong focus on renewable energies and solar water heaters especially targeting middle to high income households.
- Strong focus on energy efficiency in the residential and government sectors.

Ekurhuleni

Ekurhuleni has a target to reduce its electricity consumption and has implemented an aggressive tariff structure for high-end consumers to assist with meeting these targets. The more electricity used, the more is charged per kWh. In addition, Network Access Charges and surcharges were also introduced for commercial and industrial consumers. The tariffs also take into consideration high demand/low demand seasons whereby one pays more for winter consumption.

The municipality has been progressive in its metering initiative and has live measurements for 1500 commercial and light industrial consumers, and council owned buildings. This is a switch from kVA demand meters to internet-based. A resolution was passed by council to have conventional meters converted to prepayment meters at 20% of the actual cost, which works out to R340/meter and at no cost to the consumer.

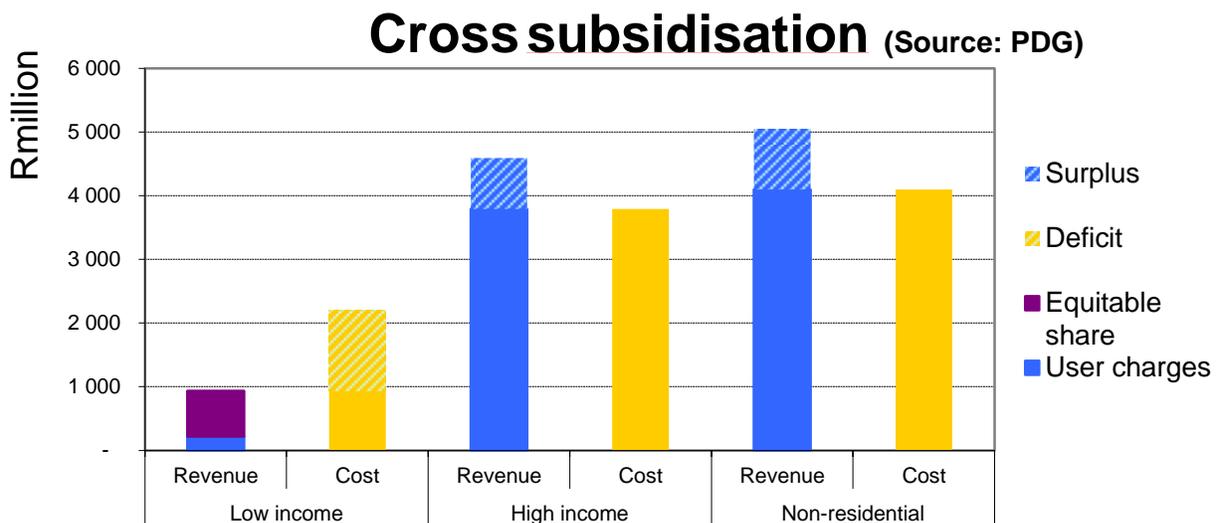
Key points from Ekurhuleni's policies and objectives:

- Strong energy efficiency foci on residential, commercial and industrial customers.
- Strong emphasis on solar water heaters for middle to high income residential customers.

3. Low income electrification and funding

The White Paper on Energy Policy's objective is to provide access to electricity for all citizens by 2012 through the Integrated National Electrification Programme. This mainly targets informal and low income households in rural and urban communities who were previously denied access to electricity. The responsibility for electrification lies with Eskom and municipalities depending on location. If the municipality undertakes to provide the service, funding can be obtained through the following sources:

1. Municipal infrastructure grant – which is a conditional grant to support municipal capital budgets to fund new and upgrade existing infrastructure. The allocation is usually insufficient as it does not cover contracting out to service providers, administration or capital costs associated with delivery.
2. Local government equitable share (LGES) grant - based on equitable share funding which is allocated based on the numbers of indigent households identified, size of the municipality and other variables. The grant is used to assist these households with basic services such as water, sanitation, refuse and electricity. As an unconditional grant each municipality can decide how that money is spent in accordance with their mandates, and sometimes electricity (energy) is not the most prioritized.
3. The remainder forms the bulk of funding, and is cross subsidised from the profits raised from local electricity departments. Typically 10% of annual electricity revenue generated is fed into city coffers, subsidising a range of other important municipal services. In addition, surpluses from revenue from high income and non-residential users is routinely used to cross subsidise deficits from providing electricity/energy to indigent households which are not fully covered by the national Equitable Share grant. The graph below is an example of cross subsidisation in the City of Cape Town.



Municipalities are also constitutionally mandated to provide free basic electricity of 50kwh per month per household. Funding for the distribution of the subsidy is contained in a basket through the equitable Share Fund to municipalities.

Key findings on low income housing electrification:

- Government funding for electrification and free basic electricity is insufficient and municipalities rely on revenue from electricity sales to high income customers to subsidise these initiatives.

4. Conclusion

All national policies have a goal to improve energy security through diversification of energy and increase capacity using clean forms of energy i.e. renewable energy. The various policies speak to targets of renewable energy (large-scale) as well as those for energy efficiency.

A great deal of support and structure has been given to all levels of energy efficiency implementation for all sectors, and municipalities have been mandated with ensuring energy efficiency is undertaken through price signals. On the other hand, while the policies provide targets for energy efficiency in different sectors, these are not mandatory.

The situation is somewhat different for renewable energy. Although national energy policies do exist, the majority of them do not specifically hold local municipalities to these mandates, and the lack of implementation of sustainable energy initiatives is largely due to this. A good example is the solar water heater rollout which is now been backed by national government with additional financial support, and has directly resulted in increased uptake.

Of the local municipalities reviewed in this document, their local policies and strategies align well with those of national government and most are proactively looking to pass bylaws for building standards which are in addition to the national building regulations for energy efficiency, and for solar water heaters ahead of national government.

Local municipality targets for energy efficiency within the various sectors are in line with national targets. These targets are conservative and some municipalities have identified this and have created additional bylaws to support them.

National policy does not have any clear regulations relating to embedded renewable energy, other than that which recognises the value of embedded generation as a demand side measure. Thus unless otherwise regulated by local government, customers who generate electricity on-site are not able to feed into the national electricity grid and be financially compensated for it. Municipalities are however, investigating including embedded generation into their local policies and are running pilot projects at the moment to determine the technical constraints. This is while NERSA clarifies specifications and rules for small scale embedded renewable energy.

With government making progress on allowing for energy efficiency and renewable energy, electrification continues to be important and is obligatory for municipalities. The funding mechanisms for electrification and free basic have not changed which in itself is a great drain on resources for municipalities. The challenge is then exacerbated by decreasing revenue as a result of the high consumers installing renewable energy and energy efficiency technologies. The greatest challenge is then for municipalities to meet national government sustainable energy targets as well as maintain profits from electricity sales.