



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

NON GRID ELECTRIFICATION POLICY GUIDELINES

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1. Introduction

Government has a responsibility to ensure the electrification of all its citizens, particularly, the poor in rural areas, to uplift the people and make life a little easier. It is widely recognized that access to and supply to modern energy plays an important role in poverty alleviation and sustainable development. Access to electricity can bring many positive impacts including poverty alleviation and improved child education.

Government supports the concept of “energisation”, for the purposes of widening access, to a safe and effective energy package, within grasp of the low-income consumer and will promote its implementation where appropriate.

Universal household access to electricity is one of the cornerstones of the White Paper on Energy Policy. The connections made during the electrification programme (1994 – to date), were mainly in the urban areas. This disparity in the provision of electricity to households can be attributed to the increasingly high cost of extending the grid to rural areas that are remote from the existing network; low density of houses; low electricity consumption; and bad terrains.

The Department of Energy (DoE) is committed to providing access to energy to 92% of formal South African households by 2014. Grid electricity is the preferred method of energisation. 82% of formal South African households are already connected. Of the 18% not yet electrified, a majority of these households are in deep rural areas.

The most suitable method of electricity provision depends on a combination of the geographical context, the consumer needs, and the possibilities that are available and affordable to provide the energy requirements.

The rising cost of material and the ever increasing costs of electricity makes grid electrification more and more uneconomical. The low load demand, the dispersed nature of rural settlements, and the high fixed costs of grid extensions makes it unlikely that grid will reach most areas in the medium term.

Furthermore, the call to reduce carbon emissions makes off grid electrification more attractive. There are also environmental issues such as a positive impact on pollution. There are also health and safety benefits in relation to risks associated with the use of paraffin, candles and wood which is very common in unelectrified rural households.

It is widely acknowledged that the grid electrification programme currently fails to recover the operational costs of supplying electricity to rural communities. Provision of grid electricity of households in rural areas is likely to be uneconomical and unsustainable in the long term.

The non grid Solar Home Systems (SHS) have been identified as a suitable temporary alternative to grid electricity. The SHS offers both a technologically and viable alternative, providing basic electricity for essential services such as quality lighting and access to the electronic media to the rural consumer, where grid cannot be provided within reasonable cost norms.

The integration of the available electrification technologies and electricity supply options on the basis of the most economical application will allow the provision of basic energy services to a larger portion of the population in the shortest possible time within the constraints of available funding. It is regarded as the only viable way of bringing the goal of sustainable "*universal access to electricity*" within reach over the longer term.

2. Objective of the policy

The objective of this document is to provide policy guidelines for the provision of non-grid electrification to households as part of the Integrated National Electrification Programme.

3. Scope of application

These policy guidelines are applicable to all licensed entities, concessionaires, and service providers (energy-service-company: ESCO) providing non-grid electrification to households on behalf of the Department of the Energy.

4. The non- grid electrification programme

Households in rural areas are typically sparsely settled, which makes the extension of grid networks to connect those areas economically unviable. The electrification programme would not be able to ensure grid electrification of all remote rural areas in the short or medium-term, therefore non-grid electrification was identified as an alternative.

The non-grid electrification programme is designed to temporarily give deep rural communities access to limited electricity until such time that grid connections are possible. Solar Home Systems (SHS) are given to households as part of the non-grid electrification programme.

A solar home system is an environmentally friendly technology and it involves low operation and maintenance costs. The solar home system is designed to serve one individual household.

The basic solar home system to be used would comprise the following:

- A photovoltaic (PV) panel (50Wp),
- A charge controller,
- Wiring & outlets for small appliances
- A battery (105Amp-hour)
- 4 energy efficient compact fluorescent lights (CFLs)

One 50W panel equates to approximately 250Wh/day.

The solar home systems must satisfy the specification NRS 052 photovoltaic systems for use in individual homes. Deviations from this specification may be accepted, provided such deviations are clearly explained, reasons for the deviations given and support warranties issued.

Experience from previous electrification projects in rural areas has shown that initially, customer use very little electricity. The main cause of low consumption is limited financial resources due to the poverty levels in the rural areas.

The solar system allows for the use of a black and white television for four hours; four hours of quality lighting using high efficiency lights; the use of a portable radio for ten hours; and charging of cellphones.

However, the thermal energy needs of solar off-grid customers, such as cooking, heating, ironing and refrigeration are not met. Other energy sources such as firewood and biomass, coal, paraffin, oil and liquid petroleum gas have to be used.

Therefore one of the requirements of the Department of Energy is that the suppliers of non-grid technologies should augment their services by selling thermal fuels such as paraffin and Liquefied Petroleum Gas (LPG) to meet the cooking needs.

4.1. The criteria for non-grid electrification

Prior to providing non-grid electrification to certain areas, communities or households, the following conditions must be met:

- The lowest capacity grid supply cannot be supplied within the capital expenditure limit
- Non grid systems should not be installed within 2km from a grid line.

- Consider future grid electrification plans. The area falls outside of the 3 year grid plan.
- The identified areas must be included in the Municipal IDP.
- Eskom or licensed distributor in that area must confirm areas or households that would not receive grid electricity in the foreseeable future and grant permission that non-grid electrification be provided in those areas.
- A cost benefit analysis will also be considered to determine whether an area will be electrified via non-grid or not.

The cost of reticulation is extremely high in rural areas because there are no bulk infrastructure lines in most cases and the population density in deep rural areas makes grid electrification extremely uneconomical. The cost of supply must be compared against the lowest grid supply option available to more dense settlements.

5. Non-grid electrification through Concessionaires

Government alone cannot address energy poverty issues. It has been recognized that there is a need to involve the private sector and create public-private partnerships in service delivery. This has been done through the involvement of concessionaires in the provision of non-grid electrification to rural households.

Non-grid electrification through concessionaires was launched in 2001 by the then Department of Minerals and Energy, to provide energy services to remote rural areas.

Off – grid electrification in the INEP is currently carried out by the private sector service providers (also known as the concessionaires) who have successfully tendered for rendering services in designated concession areas. Six concessionaires were identified through a bidding process for the provision of non-grid electrification in the concession areas.

The selected service providers were allocated exclusive rights to provide off-grid electrification in particular geographic areas. These areas are situated in broader areas earmarked for non-grid electrification, called concession areas. The rights last for 5 years, however, the service contract remains binding for a period of 20 years.

The concessionaires involved in the non-grid electrification programme include the following:

Concessionaire	Province
KwaZulu Energy Services (KES)	KZN & Eastern Cape
Nuon RAPS Utility (Pty) Ltd	KZN
Solar vision (Pty) Ltd	Limpopo
Ilitha Cooperative	Eastern Cape
Summer Sun Trading (Pty) Ltd	Eastern Cape
Shine the Way cc	Eastern Cape

There is also a German donor funded (KfW) non-grid project implemented by KES in the Eastern Cape.

Customers/ end-users are expected to pay the concessionaire a once off connection fee. A monthly service fee is charged to the customer/ end-user to cover lifetime running costs including the operation, maintenance, replacement of batteries, fee collection, customer service, support and management of the system.

To be connected, customers have to submit an application form to the concessionaire and pay an application fee determined by the concessionaire.

6. Non-grid electrification programme roll-out

To fast track service delivery and meet the universal access target, the Department is now looking to roll out the non-grid electrification programme to other areas that fall outside of the concession areas.

The benefit of the non-grid electrification programme rollout is two-fold. There is an energy poverty alleviation benefit and an energy efficiency benefit in cases where non-grid electrification is provided to supplement grid electricity in certain areas.

This roll-out can be initiated and facilitated by Municipalities making applications for non-grid electrification in their respective areas to the Department. The Department will appoint service providers to provide non-grid to the Provinces that do not have concessionaires.

6.1 The application process for Municipalities

The application process is as follows:

- The respective Municipality must submit a formal letter signed by the Municipal manager to the Department of Energy, requesting approval and support for providing non-grid in their area.
- Requests should be submitted to DoE by 30 September of each year.
- The letter must include the following detail:
 - Name of the area, ward and/or village
 - The number of possible beneficiaries
 - Their electrification plan/ Master plan
 - Eskom's electrification plan, if the area is within Eskom's area of supply. Furthermore, the Municipality needs to confirm having engagements and discussions with all relevant stakeholders,

including the community, on electrifying the area prior to submitting the request to the Department.

- Upon receiving the request, the Department will engage Eskom and the Municipality to confirm that the intended area meets the non-grid criteria.
- If the Municipality falls within a concessioned area, the concessionaire operating in that area will also form part of the discussions.
- Should the area meet the criteria, it will be included in the non-grid plan for the following financial year.
- The Department of Energy will give a formal response to the Municipality, informing them of the outcome of their request by 30 October of the same year.

7. Funding

7.1 The funding model: Fee-for-service model

The funding model currently used in the programme is the fee-for-service model. This model eliminates a capital cost to the customer, who is often poor. The initial investment is not borne by the end user but by the concessionaire or service provider.

Furthermore, the maintenance of the system is not borne by the end user, but by the concessionaire or service provider. The service provider will charge households an affordable fee for services, including maintenance of the systems. In essence, the utility co-owns the equipment with the Department and the customer pays for the service.

The service provider charges a monthly fee to households and is responsible for the service. The ESCOs buy solar PV systems in bulk, install the solar home system, and bill for services rendered.

7.2 The subsidy

Subsidies are essential for increasing rural electrification access to the poor. However, subsidies should be temporary in nature and be evaluated on a regular basis.

The Department will subsidize the provision of non-grid solar home systems. Only 80% of the total capital cost of the system will be subsidized. The service provider will pay the remaining 20% of the capital cost.

7.3 Free Basic electricity

Every poor household is entitled to free basic electricity which is subsidized on a monthly basis. In 2003 a free basic electricity (FBE) policy was introduced to support the low-income households as a key strategy for improving availability and access to energy services for the poor.

The FBE is offered to grid and off grid customers. According to the FBE policy, consumers to non-grid systems, installed through the INEP will receive a subsidy of up to 80% (or R48.00 per month) of the monthly service fee to provide access to non-grid systems, subject to the contractual obligations between the service provider and the consumer being met.

The implementation of FBE is the responsibility of the Municipality, making sure that poor households benefit from the subsidy. The provision of FBE is informed by the indigent policy of the respective Municipality.

Municipalities therefore need to pay the FBE, as set out on the FBE policy, for the qualifying beneficiaries thus making sure that electricity is affordable and really benefits the poor.

8. Contractual agreements

8.1 Contracts

The Department has a signed contractual agreement with each of the concessionaires to provide non-grid electrification in KwaZulu Natal, Limpopo and the Eastern Cape.

In the case of the programme rollout, the Department will also have contractual agreements with the appointed service providers for the remaining Provinces.

8.2 Level of service agreements

To ensure clear understanding of what is expected from all parties, there should be an agreed upon level of service agreement between the following parties:

- Between DoE and the concessionaire/ service provider
- Between the concessionaire/ service provider and the local municipality

8.3 Re-use of deinstalled solar home systems

There have been instances where systems have been removed/ deinstalled from households due to continuous non-payment of the monthly service fee by the end-users and due to grid encroachment.

Grid encroachment refers to cases where grid infrastructure/ the network has reached areas where non-grid infrastructure (SHS) has been provided to households as a temporary measure for electricity. As such, households would then be connected to the grid. In cases of grid encroachment, the local licensed utility is liable for the cost of deinstalling the solar home systems.

The number of deinstallations should be included in the reports submitted to DoE and the Municipality. Should deinstalled systems be used in other non-grid areas, this should also be reported to the Department as this has direct cost implications on the programme's budget.

9. Maintenance

Maintenance is a prerequisite for an effective, successful and sustainable non-grid electrification programme. The service provider for the SHS is responsible for the maintenance of the systems. The solar home systems need to be regularly maintained. Therefore, the maintenance requirements for the solar home systems should be clearly stipulated in the contract.

10. Monitoring and reporting

- There should be periodic monitoring of concessionaire's and service providers' performance and regular reporting. Reports of work done should be submitted to both the Municipality and DoE.
- The Department of Energy will monitor and verify off-grid installation claims and will disburse the capital subsidies at agreed intervals.

- Municipalities are to also monitor and confirm installations.
- Technical audits are also to be done prior to payment of the service provider.

11. Community awareness and education

- There often are negative perceptions amongst potential end-users on the characteristics, durability and utility of these technologies, which need to be combated through the availability of maintenance services and focused and sustained public education and marketing campaigns.
- Energy is only useful when it is affordable and sustainable, and when safe, easy-to-use, efficient appliances, consumer information and technical advice are available from service providers.
- There should be information sharing and sensitization of local communities.
- Customers must be educated on how the system works and how to use it; what maintenance is needed; and what the installation and service costs are.
- End-users/ customers must be trained on system operations and minor troubleshooting. This will increase the customers' confidence about the system as they know what they are using.
- End-users should be made aware that when grid encroaches, the solar home systems will be removed and installed in other needy areas.