

Smart Meters & Smart-enabled Prepaid Meters Project

Summary report

2013-2014



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Green Economy Programme
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EXECUTIVE SUMMARY

1.1 Background to the project

There is considerable pressure on municipalities to ensure revenue collection from electricity provided. The widespread installation of pre-paid meters is seen by municipalities as a key strategy to improve revenue collection.

Given national and provincial investigations into smart grids, any decision to roll out more pre-paid meters without taking into account the requirements of smart grids, risks leaving having stranded and ineffective assets. It is thus suggested that any meter roll-out program should focus on smart meters or smart enabled prepaid meters.

Within this context the provincial Department of Economic Development and Tourism's Green Economy programme approved funding for a GreenCape project, to investigate smart meters and smart enabled prepaid meters. The project has the following key deliverables:

- Engagement with the national process being conducted through the South African Smart Grids Initiative (SASGI) hosted within the South African National Energy Development Institute (SANEDI) to get agreement on the standards for smart meters at all levels.
- Engagement with industry to assess the capacity and ability of local manufacturers to manufacture smart meters or smart enabled pre-paid meters, to identify any barriers in this regard and make recommendations on any incentives or policies needed encourage manufacturing.
- Municipal Capacity building through presentations and guideline document to municipal managers, staff of electricity service departments and other relevant municipal personnel on the role, attributes, and economics of smart meters.

1.2 Engagement with the national process through SASGI

SASGI was originally tasked to convene three working groups to guide smart grid and metering policy & standards development in South Africa. These groups focused on Policy, Standards & Technology, and Implementation & Applied Research.

GreenCape requested and received nominations early in the project from the City of Cape Town to join the Standards and Implementation working groups – these groups however only convened once each during the project period, due to the Department of Energy suspending these activities in a process of realigning SASGI's activities with its own strategy.

The project team has therefore moved the focus of their efforts in accelerating South African smart meters standards towards assisting in the drafting of NRS 049-2, “Functional Specification for Smart Prepayment Metering Systems”. This was done in alignment with the City of Cape Town, specifically Cornie Malan (Electricity Services, City of Cape Town) who was put in charge of running the NRS 049-2 national working group.

As several different ideas on the functional specifications for smart prepayment metering exist within the smart metering space, GreenCape is attempting to facilitate general agreement amongst these stakeholders, a requirement before a national standard can be developed. To do this a meeting is being convened for March 2014 (date tbc) between major South African metros and Eskom to get some form of consensus on the way forward.

1.3 Engagement with industry on barriers to local manufacturing and roll-out of Smart Meters

It was decided that a survey would be a good way to engage with industry on barriers to local manufacturing and roll-out of smart meters. This survey focussed on companies operating in South Africa that manufacture / can manufacture smart or smart-enabled prepaid meters, or provide smart meter related services. Thirteen such companies were identified. Where detailed information could not be obtained directly from these companies, more general information was obtained from Internet searches, supplemented by discussions with colleagues and input from other smart metering and smart grid vendors.

The survey results, which in essence reported on the status of and challenges with regard to local manufacturing of smart and smart enabled pre-paid meters, was documented in Chapter 2 of the “GE1 – Smart Meters Survey” report, with the rest of the report providing analysis of the information obtained.

In summary, the barriers / challenges to smart metering implementation have been identified through the survey as:

- Lack of smart meter-focused funding
- Lack of customer knowledge of and experience with smart meters
- Lack of South African standards for smart metering
- General shortage of people with the required skills for smart meter planning, procurement, implementation and running of smart meter systems
- Piece-meal planning of the electrical infrastructure
- The lack of planning for municipal shared services which then makes each service more expensive on its own
- The perceived threat of job losses if automatic meter reading (AMR) is adopted

- The need for and expense of up-skilling of staff to cope with more complex meters
- The complexity and constraints of the current municipal procurement and SCMP processes
- Unfair tender awards, with insufficient weighting on relevant expertise.

The barriers / challenges to local manufacturing of smart meters have been identified through the survey as:

- smart meter sales volumes not high enough to get sufficient economies of scale to be cost-competitive against imported smart meter products
- The lack of clear and South Africa-specific smart meter standards
- The presence of large global companies in the South African smart meter market, leading to monopolistic conditions.
- The lack of clear incentives and policies to promote local manufacture and local purchase of smart meter systems and products
- The tendency of municipalities to favour one-stop-shop solutions for smart meter projects rather than having to deal with many projects spread across many suppliers
- Corruption and unfair business practices

The following strategies are recommended to overcome these barriers to smart meter roll-out:

- Build smart meter and smart grid people capacity within national, provincial and local governments.
- Promote integrated electricity infrastructure planning.
- Build expertise in applying the municipal planning, budgeting and procurement processes.
- Streamline and improve the National, Provincial and local government procurement processes.
- Accelerate the process of developing and adopting smart meter standards.

The following strategies are recommended to overcome the identified barriers to the local manufacturing of smart meters:

- Increase smart meter local sales demand by removing the barriers to smart metering roll-out.
- Provide incentives and policies to encourage local smart meter manufacture, based on research and comprehensive consultation with the affected parties.
- Level the playing field for the smaller, local companies.
- Combat corruption and unfair business practices.

1.4 Municipal capacity building

As part of another DEDAT and British High Commission funded GreenCape Smart Grids project, three municipal business cases for smart grid technologies were developed in Saldanha Bay, Witzenberg and Drakenstein municipalities. One of these business cases, for Drakenstein, focused specifically on smart metering roll-out. These business cases provided the project team with excellent opportunities towards understanding the challenges that municipal electricity businesses are facing, and content for changing perceptions within these municipalities about smart grid and metering technologies and their benefits & challenges.

A large amount of engagement with a variety of stakeholders took place during the course of the project, covering all spheres of government and the smart grids industry. The engagement started within the three case-study municipalities and the project steering group, but also extended wider through presentations aimed at training & changing perceptions towards smart grids and metering within bodies like the Municipal Managers Forum, Association of Municipal Electricity Utilities (AMEU), South African Local Government Association (SALGA), South African Revenue Protection Association (SARPA) etc.

As part of municipal capacity building, a municipal guidelines document was developed covering the benefits, technology status and challenges of smart metering, entitled “GE1 – Smart Metering benefits, technology review & challenges”.

1.5 Way forward

The smart grid and metering projects completed during 2013/2014 provides a solid foundation for further work, in terms of content, guidelines and relationships developed and understandings gained.

It is proposed to take the current activities further in 2014/2015 through developing case studies within three municipalities (not necessarily the same ones as in 2013/2014) that will accurately inform a set of smart grid, smart metering and embedded generation barrier-removing / enabling interventions. Depending on the municipal context, these interventions might include embedded generation tariff-design guidelines, guidelines for customer engagement with regards to smart metering roll-outs, roadmaps for municipalities on putting processes in place to create an enabling environment for embedded generation, identifying funding sources for smart grid projects, etc.

The participation in and acceleration of the national processes for the setting of standards is also crucial and should continue in 2014/2015.

Activities like those described above will strongly contribute towards smart grids and the smart metering and embedded generation integrated into such smart grids improving the efficiency and sustainability of electricity service provision within municipalities, and stimulating job creation through the manufacturing, installation and maintenance of these technologies.