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Energy

Navigating the Regulatory Complexities

Municipal renewable energy generation in South African municipalities

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WWF South Africa's Policy and Futures Unit undertakes enquiry into the possibility of a new economy that advances a sustainable future. The unit convenes, investigates, demonstrates and articulates for policymakers, industry and other players the importance of lateral and long-term systemic thinking. The work of the unit is oriented towards solutions for the future of food, water, power and transport, against the backdrop of climate change, urbanisation and regional dynamics. The overarching aim is to promote and support a managed transition to a resilient future for South Africa's people and environment. The organisation also focuses on natural resources in the areas of marine, freshwater, land, species and agriculture.

This is one in a series of publications produced by WWF South Africa's Transport Low-Carbon Frameworks programme, which is a dimension of a broader mission around economic transitions towards economically, socially and environmentally sustainable futures. The transport project aims to provide a platform, expertise and perspectives to support labour, business and government in engaging with the challenges implicit in the shift to a low-carbon economy. We seek solutions that will lower greenhouse gas emissions and enable a flourishing South Africa, to deliver developmental outcomes and social equity in the context of South Africa's economic geography. Consideration is given to the three tiers of interventions that will be required to effect the transition of this sector, being to **reduce** movement of goods and people, **shift** to low-carbon modes of transport, from private to public and from road to rail, and **improve** mobility services, and energy and fuel efficiency.

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ABBREVIATIONS

CAPEX	Capital Expenditure
CCT	City of Cape Town
CP	City Power
DoE	Department of Energy
ERA	Electricity Regulation Act
FiT	Feed in Tariff
GHG	Greenhouse gas
IEP	Integrated Energy Plan
IRP	Integrated Resource Plan
MFMA	Municipal Finance Management Act
MSA	Municipal Systems Act
NERSA	National Energy Regulator of South Africa
OPEX	Operational expenditure
O&M	Operation and maintenance
PFMA	Public Finance Management Act
PPA	Power purchase agreement
PPP	Public Private Partnership
PPPFA	Preferential Procurement Policy Framework Act
PV	Photovoltaic
REGC	Renewable energy grid code
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SANAS	South African National Articulation Standard
SCM	Supply chain management
SSEG	Small-scale embedded generation/generators

INTRODUCTION

In the light of numerous electricity provision challenges, South African municipalities, and metros in particular, are increasingly reviewing the way they procure, manage, distribute and sell electricity and are looking to find solutions to electricity provision challenges. These include, among others, continuity of supply and unpredictable price increases. At the same time, such challenges are also driving consumers to look for alternative energy sources that are more affordable, and to re-examine their dependence on the municipality for supply of energy services.

Electricity revenue and municipal finances are closely coupled

The close linkages between electricity revenue and municipal finances are a real issue at local government level. South African municipalities operate as electricity distributors, and surplus electricity revenue is fed into municipal coffers, cross-subsidising a range of other essential municipal services. Large-scale embedded renewable energy generation would typically lead to the loss of income from 'high-end' customers who pay the highest electricity rates, and whose revenue is routinely used to cross-subsidise power to poor households which are not fully covered by the national Equitable Share grant.

Driven by climate considerations and dramatic decreases in the cost of solar modules, solar photovoltaic (PV) adoption has grown exponentially worldwide within the last decade. In South Africa, this exceptional growth has been primarily driven by the initial phases of the country's globally acclaimed utility scale Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).[1]

Further steep electricity price increases, further drops in renewable energy technology costs and doubts around the financial health and governance of the national utility continue to make a compelling case for the adoption of alternative modes of electricity supply. In the absence of progress with the utility-scale REIPPP programme, some of the impetus has shifted towards smaller scale, non-utility scale adoption and some of the possible benefits associated with a more distributed, less centralised approach to power generation. Some of these benefits relate to shorter construction times, smaller space requirements, fewer and cheaper bulk infrastructure requirements, increasing reliability and efficiency, and reduced transmission and distribution losses, along with an enhanced potential for broader participation in the power sector from a more diverse set of actors.

Yet, policy lags and high-level commitment to a new and evolving energy paradigm that is taking over the world is questionable. South African municipalities therefore find it challenging to seize such opportunities because they need to reconcile myriad conditions necessary for the successful use of these technologies at a municipal scale.

Furthermore, apart from the sheer complexity and daunting nature of some of the technical and regulatory considerations, the coupling between electricity revenue and municipal financial survival through cross-subsidisation poses a very significant challenge.

1 South Africa was among the fastest growing utility scale renewable energy markets in the world at the start of the programme, but 27 outstanding Power Purchase Agreements (PPAs) with utility scale wind and solar developers comprising the latter phases of the programme have been delayed since 2015 with sign-off only happening in 2018.

The objective of this overview is to provide an understanding of the options, from a technical, legal, institutional and financial perspective, for South African municipalities, and how, within the current regulatory regime, they might be able to legally generate or procure renewable energy-based electricity at a scale that would be meaningful.

This overview investigates the potential opportunities for local authorities to generate electricity through the installation of renewable energy technology on municipal buildings as well as the potential for the rollout of such technologies on private buildings or land within their municipal boundaries. In addition, it investigates the potential for procuring renewable energy-based electricity from other municipalities or independent power producers, and the potential for electricity trading.

THE MANDATE AND POLICY ALIGNMENT FOR RENEWABLE ENERGY GENERATION AT MUNICIPAL LEVEL

Before assessing a number of options for South African municipalities to invest in renewable energy generation technologies, the broad mandate of municipalities to invest in renewable energy as well as the alignment with the Constitution and national policy must be interrogated.

Electricity generation as a constitutional mandate

To begin with, any discussion of the role of municipalities in electricity provision and their potential role in accessing and generating renewable energy is informed by their constitutionally derived mandate of providing sustainable services that enable social and economic development whilst ensuring environmental compliance.

The South African Constitution empowers local government with the mandate of providing services to communities in a sustainable manner, and the promotion of social and economic development and a safe and healthy environment (section 152(1)). The Constitution also sets out the powers and functions of municipalities (Section 56(1) and Schedule 4 Part B and 5 Part B), which include aspects relating to air pollution, building regulation, electricity and gas reticulation, municipal planning and street lighting.

This implies that the Constitution gives municipalities the authority to intervene in matters related to electricity reticulation. However, it does not explicitly specify the role of municipalities when it comes to engagement in renewable energy generation projects and programmes. The absence of such an explicit mandate to municipalities to pro-actively pursue renewable energy generation has, at times, been interpreted and raised as an argument against municipal involvement in renewable energy projects. A discussion with National Treasury confirms that the absence of an explicit mandate has been interpreted to mean that municipalities are not authorised to engage in renewable energy.

Arguably, the only way to resolve such an impasse would be for municipalities to apply to NERSA for a generation licence. Should their application be turned down, they can then use the opportunity afforded to take the issue to the Constitutional Court to be decided one way or another. A likely argument might be that the Constitution gives municipalities the right to exercise any power concerning a matter reasonably necessary for, or incidental to, the effective performance of its functions.

Given that municipalities have historically been subjected to load-shedding episodes where the current electricity provision model has been unable to meet demand, and given that municipalities are subjected to the vagaries of the utility's pricing model, one could reach the conclusion that it is both fair and necessary for municipalities to engage in alternative service delivery models which mitigate risk in regard to energy security and cost of supply. These include evaluating opportunities for renewable energy for electricity generation or providing generation licences to third parties.

One could further argue that the power and mandate of the municipality is not limited to the activities delineated in the Constitution, and in this respect, the 2012 Gyanda judgment of the Durban High Court made it clear that Schedule 4 and 5 of the Constitution are not exhaustive and only list areas of exclusive and/or concurrent competence. This might suggest that room exists for municipalities to engage in other initiatives.

Renewable energy at municipal level: An objective aligned to national goals

Over and above the discussions on the constitutional mandate of municipalities, it is important to note that exploring municipal opportunities around renewable energy generation technologies is not contradictory to the objectives of national energy policies or legislation. While decisions, by-laws and policies established by municipalities cannot conflict or contradict national and applicable provincial legislation, all national policies related to energy have a goal to improve energy security through the diversification of energy sources and increase capacity using clean forms of energy, making renewable energy an ideal candidate.

The White Paper on Energy (1998) speaks of the need to diversify South Africa's energy supply by balancing fossil fuels with natural energy resources, with a focus on energy security. The White Paper on Renewable Energy (2003) provides for the government to create an enabling environment for the development of renewable energy technologies through an appropriate legal and regulatory framework. These policy objectives, emphasising the importance of diversifying supply to ensure energy security, harnessing natural energy resources and addressing the environmental impacts from the energy sector, might be broadly interpreted as support for alternative generation technologies.

Similarly, the yet-to-be promulgated Integrated Energy Plan (IEP) aims to ensure security of supply, minimise negative environmental impacts from the energy sector, and diversify supply sources and primary sources of energy. It provides a direct mandate for diversifying to renewable and other clean sources of energy.

The IEP also lends support to distributed generation and acknowledges that, combined with smart technology and metering, distributed generation can form an essential part of smart grids that have several advantages over centrally dispatched generation. As mentioned above, these advantages relate to issues such as shorter construction times, smaller space requirements, fewer and cheaper bulk infrastructure requirements, increasing reliability and efficiency, and reduced transmission and distribution losses.

Informed by the IEP, the Integrated Resource Plan (IRP) determines the country's electrical power generation mix. The first IRP was published in 2010 with an update in 2013 and, at the time of writing has not been updated in five years. A draft of the IRP was published in late November 2016 with plans for an updated version of these to be submitted to Cabinet within the 2017/18 financial year and promulgation soon thereafter. However, it is not known what the current version of the IRP contains in terms of technology allocations. Furthermore, criticism has been levelled at the drafting process relating to the level of public participation, with a key concern being the inclusion of nuclear power despite various independent studies indicating that it will not be required.

The Electricity Regulation Act and its various updates and amendments also speak to the potential contribution that renewable energy generation can make within the municipal context. The Electricity Regulation Act 4 of 2006 (ERA), the Electricity Regulation Amendment Act 28 of 2007 and the Second Electricity Regulation Amendment Bill of 2011, do not seem, in principle, to prevent municipalities from engaging in renewable energy generation activities, and the most recent amendment speaks directly to distributed generation in its Licensing Exemption Registration Notice, gazetted on 10 November 2017, comprising an Amended Schedule 2 outlining exemptions from the obligation to apply for and hold a generation license.

This amendment exempts generators of less than 1 MW from requiring a generation licence, whilst subjecting them to an allocation in the IRP. Furthermore, all generators greater than 1 MW require a licence and will also be subject to an IRP allocation and/or ministerial determination. The fact that the country still awaits a finalised IRP leaves somewhat of a policy vacuum in this regard.

Presently, the absence of any explicit conditions in support of electricity generation at municipal level does seem to point to an intention to exclude municipalities as generators. This needs to be weighed against objectives such as safeguarding the interests and needs of present and future electricity customers and end users, facilitating investment in the electricity supply industry, and promoting the use of diverse energy sources and energy efficiency. Broadly speaking, this seems to bolster the case in favour of the deployment of renewable energy at municipal level.

Available options are split between own-generation opportunities, the procurement of electricity from third parties and energy trading. These options are investigated below.

INVESTING IN SELF-GENERATION OPTIONS

Historically, municipalities have generated their own electricity and there are still facilities in use, such as the Kelvin Power Station in Gauteng, that predate existing legislation on electricity generation.

In this regard, two options are technically available:

- the installation of small-scale embedded generation (SSEG) on buildings owned by the municipality or one of its agencies; or
- the installation of solar PV-based (or other renewable technologies such as wind and waste-to-energy) power stations on land owned by the municipality or one of its agencies for electricity generation for its consumers.

Both of these options have been explored and tried by South African municipalities.

Installing on municipal rooftops

The first self-generation options involves the municipality installing solar PV (or other) technologies on municipal buildings.

This option enables the municipality to reduce its direct carbon footprint, offset its electricity usage and reduce its monthly electricity bill. It also serves as a hedging mechanism for the municipality to ensure adequate, reliable and affordable supply in the long term to low-income households in the event of large-scale grid defection by the middle and upper class.

Policy and regulatory considerations

From an energy regulatory perspective, this is an attractive option, in particular if the system has an installed generation capacity of less than 1 MW, and the electricity generated is for own use. In this context, it would not be required for the municipality, in terms of the ERA, to apply for a generation licence or an exemption letter from NERSA. It would also not be necessary to have a wheeling agreement in place.

The capital expenditure can be financed through the municipal capital expenditure (CAPEX) budget (consisting of retained income, debt of grant funding) and the PV

Box 1: Examples of self-generation, solar photovoltaic-based projects in South Africa

The Wallacedene taxi rank in Cape Town and five recent solar PV installations in eThekwini are examples of the use of SSEG by local government. The Wallacedene taxi rank is powered by seventy-eight 250 W rooftop solar photovoltaic panels spanning an area of 136 m^2, with a maximum annual output of 47 MWh, enough to meet the electrical power needs of the entire facility. The rank is also equipped with battery storage capacity amounting to 72 kWh to see it through the night and when the sun isn't shining. It is estimated that the capital cost of this solar installation will be recovered within 6 to 10 years in monthly electricity cost savings.

eThekwini's Solar PV Project has seen the installation of solar PV panels on five municipal buildings as a pilot project that aims to promote the use of embedded rooftop solar PV generation in eThekwini and reduce the dependence on the national energy grid. The project also serves as an example for the private sector and other municipalities to learn from. The five pilot installations will generate an estimated 426.75 MWh per annum, and sites include uShaka Marine World Theme Park, Moses Mabhida Stadium Sky Car, People's Park restaurant, Metro Police Headquarters and eThekwini Water and Sanitation Customer Service Department.

system can be installed on buildings owned by the municipality. However, the project would have to comply with sections 46–5 of the Municipal Finance Management Act (MFMA) relating to municipalities borrowing money. In addition, the equipment would have to fall within the local content requirement thresholds as prescribed by the Department of Trade and Industry. These are:

- Laminated PV modules – 15%
- PV module frame – 65%
- DC combiner boxes – 65%
- Mounting structure – 90%
- Inverter – 40%

In order to determine the financial viability of such a project, it would be advisable to do a prefeasibility study. Such a study should consider the available roof space (strength, suitability, size and orientation), the solar resource, the system cost, financing options, the electricity usage profile of the building and applicable electricity tariffs. This includes the available solar resource, analysis of the potential of possible sites (buildings), optimal size of potential systems both in relation to size and orientation of the roof of the building, financing options – grant or debt funded – and the payback period and savings over the period of the project. An additional benefit of such a study is that it can also inform future energy efficiency interventions based on the granular evidence on usage patterns.

Installing on municipal land (ground-mounted)

A second self-generation option requires that the municipality establish ground-mounted solar PV systems on land owned by the municipality or one of its agencies and financed through the municipality's CAPEX budget. Similar to the previous option, this option would lead to a reduced electricity cost and carbon footprint.

In this case, the municipality would be the project developer, and operations and maintenance (O&M) of the project could sit within the municipality or municipal utility, or be outsourced. The advantage of this approach relates to procurement.

The project run by the Ekurhuleni Metropolitan Municipality shows the possibility of such an option. However, as the plant was developed as a demonstration project in the run up to COP17, it benefited from a number of legal exemptions, which simplified and shortened the project cycle. These included an exemption from the electricity generating licence, as well as the possibility to follow an expedited emergency procurement process, which is considerably simpler and quicker than standard public procurement procedures.

Box 2: Existing examples of municipal solar parks in South Africa

The Ekurhuleni Metropolitan Municipality set up a 200 kWp solar PV plant in Leeupan at a capital cost of R47.5 million in 2012 value. The price of solar PV technologies has drastically decreased since 2012 and a similar plant would now cost considerably less. Examples of other local institutions that have their own solar PV systems include Riversdale (25 kWp).

The Dube TradePort has an existing 701 kWp solar PV installation, and has released a tender for the installation of two more systems with an estimated combined capacity of 225 kWp for use by the facility.

SOURCE: GBCSA, 2015

Policy and regulatory considerations

From a regulatory perspective, this option would be more onerous than the small-scale self-generation option. It would require an electricity generation licence from NERSA (see Box 3 for further details on the licensing process) in terms of section 34 of the ERA or an exemption of licensing through a ministerial determination as mandated under section 35 of the ERA. It is furthermore far from clear whether such an application would be successful, as already discussed.

However, the ERA does not specify if the exemption has to be made on a case-by-case basis or whether it would set a precedent for a whole group of generation activities (in this case, self-generation). If the latter is the case, it might open the possibility of a municipality obtaining a licensing exception for renewable energy projects within its boundaries regardless of their modality (size, ownership, etc.), which would considerably shorten the time and lessen the effort needed to increase the supply of renewable power.

It is also assumed that the investment would be financed by debt, in which case Sections 45–5 of the MFMA are applicable. Should the proposed partnership or contractual engagement commit the municipality for a period greater than three years, section 33 of the Act allowing a municipality to enter into a contract with another party which will impose financial obligations on the municipality beyond a financial year also applies.

In the event that the municipality decides to choose a public private partnership (PPP) as the most appropriate model, the Municipal Systems Act (MSA) and in

particular, section 78, is applicable. This section requires an investigation which includes a cost benefit analysis, a municipal capacity assessment, an impact analysis on the administration including labour, community impact assessment, and an analysis of trends to provide similar services, consultation with organised labour and the community, as well as complying with additional prescribed legislation.

If, however, the partnership is for a service that is not defined as a municipal service, it could be argued that section 78 of the MSA does not apply. Indeed, if the agreement concerns the performance of any activity within the legal competence of a municipality (which is not a 'municipal service'), the PPP regulations must be complied with, but the requirements of the MSA do not apply. For instance, a partnership whereby an external (private) party retrieves costs for the installation of solar water heaters via the municipality's billing system is an example of a partnership that needs to be concluded in terms of the PPP regulations only.

Although the MFMA and the MSA are often seen as hurdles to invest in renewable energy projects, they should not be seen as definitive obstacles. According to the National Treasury, no statutory prohibitions stand in the way of municipalities embarking on renewable energy (and other low-carbon) projects in South Africa. Many of the perceived barriers relate to the misinterpretation of existing laws and regulations, rather than effective legal restrictions on activities that municipalities can undertake to increase the role of renewable energy in municipal electricity supply.

Should the municipality decide to build its own renewable energy plant, two options are possible. In one possible instance, the municipality can drive the process, carrying out all technical and financial planning, and managing and implementing the project internally. An alternative is that the municipality can procure service providers to do so. In the latter instance, the procurement process must follow

Box 3: Licencing process

The ERA grants NERSA a period of 120 days to process an application. This period commences once NERSA is satisfied that it has received all the information which it considers necessary. In practice, and despite the 120 days being a lengthy period to consider a simple application, this period is usually used by NERSA. The final decision to grant a licence is made by the NERSA Electricity Licensing Sub-Committee, which is chaired by the Electricity Regulator. The applicant is then informed of the decision in writing, and if the licence has been granted, what conditions have been placed upon the applicant. A license is granted for 15 years, but the conditions of the licence typically limit this term to the expiry of the PPA. Conditions of the licence include the requirements to meet the Grid Code, the requirement to have a Connection and Use of System Agreement in place with the network owner into which the power is to be supplied, and routine submissions of power generated. There is also the requirement to make a licence amendment application on significant changes to the generation facility or PPA. The Act requires the Regulator to consider the current IRP when considering a licence application. If the generation capacity does not fall into the IRP, NERSA will ask the applicant to provide a suitable motivation for deviation from the IRP. NERSA is applying this requirement to even the smallest generators.

SOURCE: LEGAL OPINION, 3 JUNE 2014 (UNPUBLISHED)

appropriate decision making in terms of the municipal legislation, in particular the MSA and the MFMA. If the projects are innovative in nature and involve modification to the manner in which services are provided, they must be authorised via the process laid down in the MSA.

Even though the process is cumbersome, PPPs are useful vehicles for implementing sustainable development projects, particularly when municipalities lack the financial resources for implementation and/or prefer to shift risk to, or share risk with a private sector party. Shifting the risk makes it easier for municipalities to pursue innovative projects. It also unlocks technical skills and expertise that the municipality does not necessarily have.

PROCURING FROM THIRD PARTIES

Over and above the opportunities associated with the municipality investing in solar PV systems, a second set of options looks at procurement of power for the municipality. These options entail the purchase of electricity from third parties, either SSEGs, private producers or Independent Power Producers.

Procuring from small-scale embedded generators

The most common model involves the purchase of excess electricity from third party SSEGs, such as rooftop solar PV systems located on residential, commercial or industrial properties.

Technical considerations

An SSEG produces electricity that is 'embedded' in the local electricity distribution network in that it is connected to the utility network on the consumer's side of the utility's electricity meter. Most of the electricity generated by an SSEG is consumed directly at the site. However, there are times when generation exceeds consumption. The municipality could allow consumers to feed this excess electricity onto the grid. Existing examples include Black River Park in Cape Town (see Box 4 for more details).

Box 4: When generation exceeds consumption: Black River Park in Cape Town

The 1.2 MW Black River Park Solar Project in Observatory, Cape Town became the first customer of the City of Cape Town's Electricity Department to legally sell surplus energy back into the grid. However, the City had to be creative in creating its own rules, while waiting on the national regulator to establish the general rules. The scheme had to avoid using the term 'feed-in tariff' because only Eskom is allowed to buy electricity directly from producers in South Africa. Cape Town's solar producers may receive a rebate or partial refund on electricity supplied to the City, but it is not the same as a purchase. Based on this scheme, only producers that remain net consumers of electricity may apply for the scheme.

SOURCE: GBCSA, 2014

This model faces many challenges relating to feed-in tariffs, connection fees, and safety concerns as a result of not all SSEGs registering with municipalities in accordance with the Standard Conditions for Small Scale Embedded Generation. In response to these, many municipalities and metros have developed by-laws to facilitate uptake and compliance (see Annexure 2).

Box 5: City of Cape Town's SSEG guidelines

Cape Town's SSEG guidelines apply to systems with a generation capacity smaller than 1 MVA. For systems with generation capacity of greater than 1 MVA (Mega Volt Amp), an initial consultation with the City is mandatory to determine the full set of requirements before proceeding. In addition, a generating licence or exemption letter from NERSA is required before connection is considered. Under these guidelines, the City of Cape Town permits only those SSEGs that are 'net consumers'. Net generators are not permitted. 'Net consumers' have been defined as those SSEGs that on average (over a one-year period) purchase more electricity from the utility than they feed back onto the utility grid. 'Net generators' have been defined as those SSEGs that on average (over a one-year period) purchase less electricity from the utility than they feed back onto the utility grid. The guidelines also prohibit the transfer of electricity to a different location and all electricity produced by the SSEG must be utilised on the property on which the generator is located, or fed onto the utility network for purchase by the City. In other words, no wheeling of electricity is allowed.

SOURCE: CITY OF CAPE TOWN ELECTRICITY BY-LAWS

Policy and regulatory considerations

As far as the powers of municipalities are concerned, the IEP proposes to give the power to municipalities to formulate regulations and incentives to deal with solar PV rooftop installations. Similarly, the 2013 IRP update recommends that embedded generation be incentivised for appropriate implementation. Moreover, the IRP Update 2013 makes recommendations towards the creation of a centralised agency that would procure electricity from embedded generators. It is unknown at this stage if such a centralised purchaser of electricity from embedded generation would be included in the next iteration of the IRP or what kind of mechanism would be put in place to supply such electricity to municipalities. The interaction between such an agency's role and powers and NERSA's regulations on SSEG is another grey area. As mentioned above, at the time of writing, both the IEP and the IRP are awaiting finalisation.

In terms of a NERSA update in December 2015, the Small Scale Embedded Generation: Regulatory Rules could not be finalised until the finalisation of the Licensing Regulations by the Department of Energy (DoE). The finalisation of this was done by the gazetting of the Licencing Exemption and Registration Notice of the ERA in November 2017. It is not clear whether this notice now fully informs NERSA's regulatory rules for SSEG or at what stage these regulatory rules will be finalised by NERSA.

The main updates included in this notice are that projects smaller that 1 MW will be capped by an IRP determination by the minister of Energy (excluding off-grid installations) and that the category of projects ranging from 1 to 10 MW is scrapped, meaning that all projects larger than 1 MW now require a generation licence and are subject to IRP allocation and/or ministerial determination as per the ERA.

This notice further sets out the licensing exemptions for generators as:

- Generators Less than 1 MW that don't wheel, or wheel, or off-grid
  - Needs use-of-system agreement with grid operator
  - Will have an IRP allocation and minister can cap (not applicable to off-grid)
  - Demonstration facilities
  - Cannot operate for longer than 36 months
- Generators that produce from waste products (e.g. sugar bagasse)
  - Must be on-site
- Facilities for standby/backup during a grid interruption (e.g. diesel gensets)
  - Existing facilities
- Distribution facility exclusively for wheeling
- Electricity resellers
  - Where tariff is same or less than what would normally be
  - There is an agreement with the local distribution company
  - Approved by NERSA

There is no clarity at this stage as to how NERSA will regulate what the DoE determines from time to time. When NERSA circulated its own regulatory rules for SSEG, it appeared that it was worried that the sheer number of installations could pose a potential problem in terms of the applications that it would receive for licences or registration. The implications are unknown at this stage. Nevertheless, this could be challenged on the basis of the advantages of embedded generation in increasing energy security and electricity supply, specifically by evoking the Constitution and the ERA for the right of universal access to electricity.

In any case, the municipality could set a renewable energy tariff for embedded generators. In this regard, it is key to note that tariffs are only valid for a year, which provides very little long-term security for investors. Importantly, the SSEG tariff cannot be more than what the municipality is currently paying Eskom. Municipalities are typically charged on the Megaflex tariff, which is a time-of-use tariff. The SSEG tariff will then typically be calculated as a blended Megaflex tariff applicable for the times that the sun shines. NERSA's approval is required for all electricity tariffs, but there is a slight loophole in that NERSA does not approve the SSEG conditions. Some municipalities went ahead and called their projects pilot projects in spite of the fact that they were paying more than Eskom rates using a net metering approach. Another important issue here is that a contract period longer than three years for SSEG may be difficult to implement as it would be in contravention of the MFMA. If the tariff is such that the payback period is drastically reduced for solar PV installations, then the contract period may not be of so much significance anymore. With an improved tariff, the debt tenor can be reduced significantly, making it possible to get finance for small installations.

Procuring from Independent Power Producers

A more interesting, but also more challenging option, involving more regulatory and technical complexity, entails contracting renewable energy-based electricity from Independent Power Producers (IPPs) or private producers having excess capacity in their own renewable energy installations (i.e. their own demand is less than the power being supplied by their renewable energy system).

In a similar manner to own-production options, it would impact favourably on both the carbon footprint and the energy access and security of the municipality. Although difficult to replicate, an example of how this could work is the Darling Wind Farm in the Western Cape.

Box 6: Darling National Demonstration Wind Farm

In June 2000, the then-Minister of Minerals and Energy declared the Darling Wind Farm as a National Demonstration project. The facility consists of four 1.3 MW turbines, and came online in March 2008. It was the first grid-connected, independent wind energy power-generating facility developed in South Africa. The Darling Wind Farm Company (DWP) signed a 20-year Power Purchase Agreement with the City of Cape Town as well as a power wheeling agreement with Eskom. In terms of the agreement, the City of Cape Town purchased electricity at a higher tariff than Eskom's Megaflex tariff. This was facilitated through the selling of green certificates to identified end users. This agreement is no longer in place, however. The Darling Wind Farm was a pioneering project and an important milestone in South Africa's utility scale renewable energy history, but as a replicable case study it is problematic due to its National Demonstration Project status and the fact that it was supported by donor funding.

Since the Darling Wind Farm came online, South Africa's globally acclaimed REIPPP programme, which began in 2011, has seen over 60 (of a total of 92) large scale wind, solar, landfill gas, bioenergy and small hydro IPPs start feeding into the grid. However, due to the single buyer restriction, municipalities are not allowed to purchase power directly from these IPPs.

In 2017, with the pace of the REIPPP programme having drastically slowed down due to Eskom's refusal to sign PPAs with the wind and solar developers in the latter round of the programme, the City of Cape Town (CCT) approached NERSA for permission to procure directly from IPPs. NERSA claimed that it is bound by ministerial determinations and that it cannot issue a licence to IPPs to sell directly to municipalities, forcing the city to turn to the Minister of Energy for such a determination. The City of Cape Town has since approached the High Court in an application against NERSA and the Minister of Energy.

Technical considerations

Under this option, the municipality or its utility would procure the electricity under a power purchase agreement (PPA). One of the biggest advantages of this option is that it would not entail any capital outlay on the part of the municipality.

As far as contractual arrangements are concerned, the municipality or municipal utility would be the contracting party and the cost of servicing the agreement would be part of municipality's operational budget (OPEX). It might also be necessary to enter into a wheeling agreement (with Eskom and/or other municipalities) depending on where the generating assets are situated.

Policy and regulatory considerations

In order to pursue this option, the municipality can choose between contracting with a third party, and entering into a PPP. It is important to note here that regulations explicitly exclude the government or any organ of state from holding a controlling ownership interest (direct or indirect) in an IPP. This can however be interpreted to suggest that a municipal utility could still hold a minority stake in an IPP. Moreover, municipalities have the option of seeking ministerial exemption from this imposition. However, the conditions under which such exemption can be sought are not specified and need to be explored further should a municipal entity wish to pursue this option. In any event, even if the municipality is a minority stakeholder in the IPP, it would not mean that it is allowed to buy from it due to the single buyer model stipulating that Eskom is the only buyer.

If the PPP option is chosen as the most appropriate model to deliver a municipal service, Chapter 8 of the MSA must be complied with, which includes a section 78 investigation. As already highlighted on page 12, this includes a cost benefit analysis, a municipal capacity assessment, an impact analysis on the administration including labour, community impact assessment, and an analysis of trends to provide similar services, consultation with organised labour and the community, as well as complying with additional prescribed legislation. If the PPP extends beyond three years, then section 33 of the MFMA also applies.

If procurement from an external service provider (in this case an electricity generator) is identified as the preferred option, then the Preferential Procurement Policy Framework Act (PPPFA) applies. It compels a municipality, in the selection criteria, to weight the proposed pricing at 80% or 90% (depending on project value). However, the PPPFA does not make any provisions to value and cost externalities related to the project or programme. This skews the selection criteria in favour of established, cheaper technologies and disadvantages the more advanced and often more efficient ones because of their higher cost, without considering their wider and longer-term benefits. If a municipality tries to circumvent this and chooses the supplier that did not have the highest weighting because of the positive externalities of his project, this can result in appeals and lengthy litigation processes.

Long-term procurement of energy from IPPs is also governed by the ERA and the New Generation Capacity regulations of the Department of Energy. Shorter-term procurement can happen subject to NERSA and Public Finance Management Act (PFMA) or MFMA approval. These regulations mandate that buyers can only purchase electricity from a renewable energy project that is approved to be part of the REIPPPP. Therefore, projects outside of the REIPPPP would not be allowed to supply the grid. The ability of a municipality to purchase power is subject to MFMA processes and NERSA's approval of the tariff. In any case, procurement would not be free of challenges. Indeed, although municipalities such as eThekwini have already entered into PPAs, it remains unclear whether or not municipalities can enter into long-term power purchase agreements.

The Electricity By-laws could potentially be used as the legislative platform to create (or empower) a separate municipal entity, classified as an organ of state, to purchase power from IPPs. According to eThekwini Municipality (2013), the MSA and the MFMA create the space for this. The restriction on what the municipal entity could purchase and how purchasing would take place would however need to be further investigated.

First, the current policy context for municipalities to purchase power from IPPs over a long-term period is not clear. If the Cabinet decision of 5 December 2007 that designated Eskom as the 'central buyer of power' from IPPs is not revoked or amended, the opportunity to buy from IPPs is not a possibility for municipalities at this stage. Eskom has been designated as the central buyer of power from IPPs within the REIPPPP.

Box 7: The basis of CCT's argument to procure directly from IPPs

The City of Cape Town (CCT) intends to offer its citizens 'the best possible energy solution and service'. It believes it can do so by purchasing renewable energy (RE) from IPPs, which will – according to CCT – realise the following advantages and benefits for its citizens:

- **pricing benefits**: '*currently solar and wind energy are the cheapest source of new, grid-connected power*';
- **clear market signals and planning**: sourcing IPP's on a tariff structure that CCT is able to control sends long-term pricing signals to the market – creating market stability and certainty, which will allow for the growth of local markets;
- **environmental benefits**: CCT '*will provide a service that harnesses environmentally friendly technology with a reduced carbon footprint*' and allow South Africa to meet its international commitments;
- **diversification of sources of supply**: variety is essential to achieve significantly lower-carbon electricity supply and will improve market and price stability; and
- **job creation**: '*the RE industry represents the best opportunity in the energy sector for both localization of component manufacture/assembly as well as direct and indirect job creation*'. Delays in the conclusion of the REIPPPP power purchase agreements (PPAs) has resulted in an estimated loss of 500 jobs and R600 billion in foreign investment – the effects of which have been felt by CCT's GDP. Direct RE purchase will create an enabling environment for technology transfer and local economic development.

In light of the above, CCT says it has a duty to provide the cheapest electricity to its citizens and renewable energy is the cheapest. It states, however, that there is no intention of moving away from Eskom entirely. CCT says that it hasn't 'set face' against Eskom and is willing to buy surplus electricity if from green sources.

While CCT refers to the job and environmental benefits (from a GHG emission perspective) of RE. Its primary focus, in terms of the benefits of RE, appears to be pricing, the other being CCT's GHG emission reduction goals, with it intending to reach 20% RE by 2020.

CCT currently purchases 99.3% of its electricity from Eskom – with 0.7% (7 GWh) coming from the Darling Wind Project (DWP). DWP first started producing renewable energy for the City in 2008 – this was negotiated before 2006 when the Electricity Regulation Act 4 of 2006 (ERA) came into force.

SOURCE: CENTRE FOR ENVIRONMENTAL RIGHTS MEMORANDUM, JANUARY, 2018

Second, municipalities are excluded from the IPP definition as highlighted in the regulations on New Generation Capacity (2011), as well as the IRP2010.

Third, given that municipalities do not make capital investments into IPP projects and only purchase electricity from these projects, contracts with IPPs to purchase electricity becomes an operational expenditure under the MFMA. A grey area on whether electricity purchase is a capital expenditure or operational expenditure means that municipalities can currently only contract with IPPs for a maximum of three years. It may be noted that, although the MFMA does not prohibit the sort of long-term contracts required with IPPs, typically 20 years, it requires due processes of securing public participation, council approval and endorsement by the National Treasury to be followed for contracts that have financial implications beyond three years. No financial implication beyond three years presumably means that tariffs would be tied to Eskom rates (or lower). Such an arrangement is unlikely to attract renewable energy IPP investments even with 20-year contracts. Moreover, this process would be far too onerous to follow for every IPP contract on an ongoing annual basis.

Fourth, a renewable energy-based IPP project larger than 100 kW would need a generation licence. The provisions related to licensing as laid down in the Electricity Regulation Act (2006) and the Electricity Regulation Amendment Act (2007), coupled with the electricity policy framework laid down in the IRP 2010 and 2013 IRP update, suggest that renewable energy-based IPP projects would need a licence, which would be possible only if the projects fell within the IRP process, unless a ministerial exemption is sought for the project. There is no clarity as to whether the exception can be made on a case-by-case basis or if a precedent could be set, exempting a whole group of generation activities. This means that it may be worth looking at the possibility of a municipality obtaining a licensing exception for renewable energy projects within its boundaries regardless of their modality (size, ownership, etc.), which would considerably shorten the time and effort needed to increase the supply of renewable energy. However, this avenue appears unlikely to succeed.

Procurement modalities

Four procurement strategies are typically available for contracting power from IPPs or private producers:

- bilateral contracting;
- feed-in tariffs (FITs);
- competitive solicitations; and
- auctions.

Bilateral contracting involves contracts for renewable electricity generation capacity between two entities without resorting to an official competitive solicitation. Bilateral contracts can be initiated by either the purchaser or the seller and would be no different from any other service agreement entered into by the municipality. It is governed by the MSA and the MFMA.

However, the most suitable path would be to follow a preferential procurement process in terms of the PPPFA. This would enable the municipality to contract more easily with suitable producers rather than undergoing a protracted procurement process. However, as raised earlier, the PPPFA compels a municipality, in the

selection criteria, to weight the proposed pricing at 80% or 90%. The PPPFA also does not allow a municipality to value and cost externalities related to the project or programme and makes no provision to consider the long-term life cycle costs of the project, as the recurrent costs are absorbed by the municipality's operational budget in terms of compliance with the MFMA in particular.

Feed-in tarrifs encourage the development of renewable electricity generation by offering open access to long-term purchase contracts for the sale of renewable electricity at a price determined in advance. This price can be based on estimated generation costs of representative projects or on a utility's avoided cost. The obligation to purchase electricity is established in law and enforced by the regulatory body.

However, this option will not be possible for municipalities. NERSA has in the past determined FITs for renewable energy but this was met with legal and political challenges and subsequently abandoned in favour of an auction system (Montmasson-Clair et al., 2014). Moreover, the MSA provides for competitive bidding processes by municipalities. Although it allows for exceptions when a municipality opts to have a municipal service provided by a municipality, a municipal entity or an organ of state, procurement of electricity from an IPP is unlikely to qualify.

Competitive solicitations are designed to encourage competition among developers and suppliers of renewable energy, so as to secure electricity supply at the lowest cost. A competitive solicitation is a formal process under which a procuring agent issues a request for proposal, collects and evaluates qualifying bids, and executes contracts with winning bidders. This procurement strategy has been used in South Africa under the REIPPPP.

By contrast, under an auction framework, producers of renewable energy-based electricity bid into the auction expressing a willingness to sell electricity at a given price, soliciting from others their willingness to buy at that price.

Arguably, the last three procurement modalities do not appear viable for municipalities at this stage and only bilateral contracting constitutes a possible avenue.

ENERGY TRADING

A third set of options revolves around trading electricity, rather than installing generation capacity or procuring power.

This model entails the use of an energy trader that is licensed (by NERSA) to trade power within the framework of the voluntary 'willing buyer, willing seller' market. This market relies on the willingness of different parties, such as generators, utilities and customers, to 'offset' their energy accounts to allow for the simultaneous transmission of electricity. Such a model is present in the country in the form of PowerX, the only energy trading entity licensed by NERSA to date.

Technical considerations

Under this model and in a process known as wheeling, an energy trader, with or without willing buyers, contracts generators of renewable electricity at pre-negotiated rates. The generator could be located anywhere in the country. At the same time, the energy trader obtains access to the Eskom and/or municipal grids under wheeling agreements that typically involve the payment of a wheeling charge or fee to access and use the grid to transmit electricity. The generator can apply for a generation licence to NERSA on the basis of having received a PPA with the energy trader in terms of the 'willing buyer, willing seller' model.

The electricity is then offered to electricity consumers as an alternative energy source, complementary to the electricity supplied by Eskom. There is no change in the mode of supply of electricity under this model. Only the metering model changes, with the demand from the buyer of renewable energy-based electricity being metered by the energy trader and not the electricity supplier, namely Eskom or the municipality. In the event that there is no supply of electricity from the renewable energy source, the consumer continues to receive uninterrupted electricity in the conventional manner through Eskom and the municipality. However, as with traditional supply, a failure on the grid (operated by Eskom or the municipality) would result in interrupted supply to the consumer. This model necessitates accurate metering and accounting to differentiate between the amounts of traded energy transmitted and the amounts of regular electricity transmitted. A further challenge in municipal wheeling is to accurately determine the appropriate system charges. This requires a detailed cost of supply study, which is likely to require external expertise for less capacitated municipalities.

Wheeling presents challenges when prices are not unbundled, i.e. no distinction is made between network (transmission charges) and energy charges (electricity delivered). Yet these are distinct issues and are important when the generator is not also the transmitter as in the case of wheeling. Eskom approved a detailed wheeling framework in 2009 and NERSA developed rules in 2012 around the question of network charges, dealing with how system charges are raised for generators. While there are outstanding points of clarification, Eskom uses the principles set out by NERSA to determine what these charges should be.

Policy and regulatory considerations

Beyond the constitutional issues of responsibility of the supply of electricity within the distribution area, current NERSA rules assume that the amounts of energy subject to wheeling will be low. As a result, Nersa does not permit Distribution Use of System Charges and limit System of Use Charges. Yet it provides for penalties for lack of grid availability. This is arguably a shortcoming, particularly since private direct agreements between producers and consumers within the municipal grid mean that the municipality would have lost that customer (and the revenues that would otherwise have been generated from that customer). Until these issues are addressed, wheeling within the distribution grids is unlikely to be developed.[2]

Box 8: The experience of PowerX

PowerX (formerly Amatola Green Power) was licensed by NERSA in 2009. PowerX and its client base of renewable energy-based electricity consumers enter into PPAs with generators. The PPAs are usually of long-term durations (10, 15 or 20 years) and involve negotiated tariffs as well as annual escalations. PowerX gives the option to consumers to purchase green certificates along with the green power. The carbon credits then belong to the generator. PowerX currently has a wheeling agreement with the Nelson Mandela Bay Municipality. Small amounts of electricity are traded through this arrangement but its value lies in demonstrating the economic and technical feasibility of the scheme. A key aspect is the applicable wheeling charges. These have been increased from 7% to 20% of the total energy charge. At the higher charge, the viability of increasing renewable energy into the mix is very limited. The increased wheeling charge makes the premium of 'green' electricity too high. As such, a call was made to look at alternatives and support mechanisms for encouraging the benefits of renewable energy to the local green economy.

From a replicability perspective, the PowerX experience was largely a pilot initiative and should be seen as unique. The case of the licensing and contracting is very important as the licence that PowerX got was unique and might not be repeated by NERSA.

SOURCE: ERLN, 2015 AND MONTMASSON-CLAIR ET AL., 2014

There are three broad options available to municipalities under an energy trading model. Any option under this category would necessitate licensing for electricity trading from NERSA.

First, the municipality could work with PowerX in a manner similar to the Nelson Mandela Bay Municipality. Alternatively, the municipality could help establish another energy trader, i.e. an equivalent of PowerX, to provide renewable energy-based electricity to consumers in its areas. Using a private energy trader would be preferable if suppliers of renewable energy-based electricity are based outside of the municipality's area of operation and the electricity is required to be wheeled through Eskom and municipal networks.

Second, the municipality could take up an energy trading license. This option would be beneficial only if electricity suppliers are restricted to the municipality's area of operations and no electricity is required to be wheeled through Eskom's network.

Finally, the municipality could contract or trade with other municipalities to buy and sell excess renewable energy-based electricity as may be available to itself and other municipalities. However, this option looks unlikely given the existing regulatory environment.

2 Salvodi. S. 2015. Wheeling and cost of supply. Presentation at ELN Workshop on local and sub-national renewable energy and energy efficiency: Challenges and opportunities for economic development, held on 15 and 16 October, Johannesburg

CONCLUSION

The review of relevant legislative, policy and regulatory frameworks demonstrates that developing renewable energy within municipalities is well aligned with the country's energy policies. Moreover, no statutory prohibitions stand in the way of municipalities embarking on renewable energy initiatives. However, neither policies nor statutes clearly define or regulate the role of municipalities as energy generators or procurers of renewable energy. The absence of such an explicit mandate for municipalities to engage in renewable energy and a coherent framework for this purpose has sometimes been interpreted and raised as an argument against municipal involvement in renewable energy projects.

The conditions are somewhat overwhelming, as are the unknowns. Municipalities could pursue clarity on these unknowns and seek exemptions, or undertake the processes laid down under the different statutes. However, the process for either of these would be time consuming, cumbersome and expensive.

Moreover, case studies suggest that although most of the options have precedence in the country, these have essentially taken the form of standalone projects executed before 2011 in the run-up to COP 17 in Durban. The conditions for implementation of these projects are largely not replicable.

Among the set of options analysed, the only one that appears readily achievable is self-generation through the installation of solar PV systems on municipal buildings. Although it is tempting to try to construct an enabling environment for a municipality to generate its own electricity, existing legislation, in particular the ERA, does not support it. There are two ways that municipalities could engage with the present regulatory environment. In the first instance, it could start engaging with government about changes required to create a more enabling environment. In the second instance, and as proposed before, municipalities could approach NERSA for a generation licence and test the waters. Should these attempts be unsuccessful, municipalities could approach the Constitutional Court for a final resolution.

In the interim, the promotion of SSEG could offer much potential. Metros are large users of electricity and increasing their own access to renewable energy-generated electricity would impact both positively on their revenues and their carbon footprints. If managed well with appropriate connection fees and incentives, SSEG can contribute significantly to energy security, local economic development and competitive tariffs. However, the delay in NERSA finalising the framework for SSEG means that there is uncertainty around the conditions for municipalities to purchase excess electricity from SSEG. The viability of this option will eventually depend on the balance that NERSA is able to strike between SSEG's feed-in-tariff, Eskom's blended Megaflex rate and connection fees such that municipalities can equitably earn a return from all of the users of the grid.

Then, there is the option of contracting renewable energy-based IPPs and private producers having excess capacity in their own renewable energy installations. This option is attractive as it does not entail any capital outlay from the municipalities nor their agencies. However, the option is negated by a ministerial determination that

designates Eskom as the central buyer of power from IPPs. This explicit mandate for Eskom effectively excludes municipalities from buying power from IPPs as do the New Generation Capacity regulations that bar projects that are not part of the REIPPPP from supplying to the grid.

Even if municipalities could procure power from an IPP, the administrative and technical complexities would make the option a difficult one to pursue. Municipalities will then be faced with onerous administrative processes under the MFMA given that long-term power procurement will necessitate contracts of longer than three years. The option of short-term power procurement exists both through NERSA approval and under the MFMA. However, there remains a multitude of challenges which negate the case for such procurement. The main challenge is that municipalities are only able to purchase electricity at blended Megaflex rates (or cheaper). Such a tariff offering by a municipality to an IPP does not provide an investment case for the IPP.

Finally, the municipality could use an energy trading model to procure renewable energy. This option is doable and necessitates a licence for the entity engaged in energy trading from NERSA. However, NERSA has granted only one such licence so far to a pilot project. The conditions of this licence are said to be unique and are unlikely to be repeated by NERSA. In addition, the implementation of this option also necessitates resolution of multiple issues for wheeling within the distribution grids.

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ANNEXURE 1: NATIONAL MUNICIPAL LEGISLATION AND REGULATIONS

There are five key pieces of municipal legislation that pertain to municipalities, namely:

1. The Municipal Structures Act 117 of 1998
2. The Public Finance Management Act 1 of 1999
3. The Municipal Systems Act 32 of 2000
4. The Preferential Procurement Policy Framework Act 5 of 2000
5. The Municipal Finance Management Act 56 of 2003.

Municipal Structures Act 117 of 1998

The Municipal Structures Act recalls in section 83, the functions and powers assigned to municipalities in terms of sections 156 and 229 of the Constitution. Section 84 further provides that District Municipalities (by opposition to a Local Municipality) are vested with the following function and power: '(c) Bulk supply of electricity, which includes for the purposes of such supply, the transmission, distribution and, where applicable, the generation of electricity'. Bulk supply in this sense appears more extensive than the reticulation of electricity explanation set out in Schedules 4B and 5B of the Constitution. According to eThekwini Municipality, a broader reading of the Electricity Regulation Act (ERA) together with the Municipal Structures Act could support the inclusion of electricity generation within the functions and powers of a municipality.

Municipal Systems Act 32 of 2000

The Municipal Systems Act provides the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities, and to ensure universal access to essential services that are affordable to all. The Act also defines the legal nature of a municipality as including the local community within the municipal area, working in partnership with the municipality's political and administrative structures.

Section 4 allows the council of a municipality the right to govern, on its own initiative, the local government affairs of the local community, finance the affairs of the municipality by charging fees for services, and impose surcharges on fees, rates on property and, to the extent authorised by national legislation, other taxes,

levies and duties. This section could be used to support the inclusion of embedded generators in municipalities' electricity by-laws.

The Municipal Systems Act makes provision for municipalities to 'levy and recover fees, charges or tariffs in respect of any function or service of the municipality'. This may help a municipality to generate additional revenue for the increased tariff for embedded generators. According to eThekwini Municipality (2013), it could be argued that by providing embedded renewable energy through bulk purchase and consequently reduced prices, the municipality would be providing a renewable energy service to the public. The mechanism for implementing a tariff is outlined in section 75A of Municipal Systems Act. The resolution would need to be signed by the City Treasury, the City Manager, The Head of Legal and Head of Procurement and Infrastructure. The resolution would be tabled with the municipal council with support from the majority of its members. It would then need to be made available publicly for a period of 30 days, but would not require public consent or participation.

Section 8 states that a municipality has the right to do anything reasonably necessary for, or incidental to the effective performance of, its functions and the exercise of its powers. In light of the limited electrical capacity argument and the rights discussed in the Constitution, the municipality could argue that it is both fair and necessary that it is able to engage in electricity generation or in the provision of licenses.

Municipalities can also be assigned a function or a power by executive authorities such as a Cabinet member, a Deputy Minister or an MEC. This duty can fall outside of the functional areas listed in Part B of Schedule 4 or Part B of Schedule 5 to the Constitution. Section 9 of the Municipal Systems Act details the procedure associated with such assignment. Most importantly, financial consultation must be organised with relevant authorities and appropriate steps must be taken to ensure sufficient funding and capacity building.

Chapter 8 (sections 73–94) regulates the provision of services such as electricity supply by municipalities. According to section 76, a municipality may provide a municipal service in its area or a part of its area through:

- an internal mechanism, such as a department or other administrative unit within its administration, any business unit devised by the municipality provided it operates within the municipality's administration and under the control of the council in accordance with operational and performance criteria determined by the council; or any other component of its administration; or

- an external mechanism by entering into a service delivery agreement with a municipal entity; another municipality; an organ of state (including a licensed service provider registered or recognised in terms of national legislation and a traditional authority); a community-based organisation or other non-governmental organisation legally competent to enter into such an agreement: or any other institution, entity or person legally competent to operate a business activity.

In particular, section 78 prescribes the need for a detailed investigative process to determine the most appropriate service delivery mechanism (i.e. an internal or external mechanism). This includes a cost-benefit analysis, a municipal capacity

assessment, an assessment of the impacts on the administration, labour and the community, an analysis of trends to provide similar services, consultation with organised labour and the community, as well as the compliance with additional prescribed legislation.

Section 78 also prescribes that, if a municipality decides to explore the possibility of providing a municipal service through an external mechanism, it must give notice to the local community of its intention to explore this external option and assess its different service delivery options. Only after having undergone the full process required, can the municipality then decide on an appropriate internal or external mechanism to deliver the municipal service. This process is onerous, costly and time consuming and is therefore only available to large municipalities.

Section 11 provides the right to 'impose and recover rates, taxes, levies, duties, service fees and surcharges on fees, including setting and implementing tariff, rates and tax and debt collection policies'. This could open the door for the municipality to generate additional revenue for the increased tariff for embedded generators.

According to section 75, such a tariff policy must be adopted through municipal by-laws. According to eThekwini Municipality, it could be argued that by providing embedded renewable energy through bulk purchase and consequently reduced prices, the municipality would be providing a renewable energy service to the public.

Preferential Procurement Policy Framework Act 5 of 2000

The Preferential Procurement Policy Framework Act (PPPFA) and its accompanying regulations have been promulgated to prescribe a framework for a preferential procurement system. The Act and its regulations need to be read in conjunction with the Municipal Finance Management Act (MFMA) and the Public Finance Management Act (PPPFA) when analysing supply chain management (SCM). The SCM legislation under the PPPFA aims to ensure that the best service is provided by service providers at the best value for money. This is usually for non-state actors. However, if a municipality would like to purchase power through a separate entity, it would also have to assess its different service delivery options and conduct a feasibility study, prior to deciding on the appropriate means to deliver the municipal service. However, the present weighting in favour of price makes it difficult to use preferential procurement to purchase renewable energy which will be more expensive than electricity purchased from Eskom at the Multiflex tariff.

Public Finance Management Act 1 of 1999

The Public Finance Management Act (PFMA) regulates financial management in the national government and provincial governments, ensuring that all revenue, expenditure, assets and liabilities of those governments are managed efficiently and effectively and to provide for the responsibilities of persons entrusted with financial management in those governments.

The approach forces managers in government to plan effectively based on strategic outcomes, forecast income and expenditure accurately over a period of three years, and to clearly indicate how products and services have been procured. It further prescribes a culture in which public resources must be effectively managed and accounted for in a transparent manner using generally recognised accounting practices.

Municipal Finance Management Act 56 of 2003

The key purpose of the Municipal Finance Management Act (MFMA) is the sound and secure fiscal management of municipalities and municipal entities. The implementation of the MFMA was progressively adopted, based on the capacity of municipalities. The MFMA is the key Act when embarking on any query of municipal relations as it relates to municipalities, municipal entities and all other organs of state in their dealings with municipalities. The Act has seven key purpose areas, including budgetary and financial planning processes and co-ordination and supply chain management. No contract can be entered into or extended without full compliance with the MFMA.

MFMA needs to be read in accordance with the PFMA as it extends the same overarching principles to municipalities. There is agreement that neither the PFMA nor the MFMA prohibits municipalities from investing in projects within their mandate. However, they do regulate and prescribe a set of procedures that must be followed for both internal and external service delivery mechanisms that are perceived as being onerous and time consuming. In addition, the substantial divergence in the interpretation of the various sections of the legislation make the application of the rules more complex.

Budgets

According to section 16 of the MFMA, 'The council of a municipality must for each financial year approve an annual budget'. However, section 16 does not preclude the appropriation of money for capital expenditure for a period not exceeding three financial years, provided a separate appropriation is made for each of those financial years. While capital expenditure is not clearly defined in the Act, the purchase of electricity would typically be classified as an operational expenditure and not a capital expenditure. In such a case, it would seem that this clause does not apply to a long-term power purchase agreement.

In the case that electricity purchase is considered to be a capital expenditure, section 16 suggests that a maximum contract period of three years applies. This three-year period could be extended. However, it appears to be a cumbersome process. Section 17 requires that any changes to the budget be detailed and the supporting documentation supplied. This process would be far too onerous to be applied for every contract on an ongoing annual basis and would defeat the purposes for which the legislation was designed, which is ultimately to improve the fiscal and financial affairs of the municipality.

The issue of annual renewal could potentially be avoided under section 33 of the MFMA. Section 33 allows a municipality to enter into a contract that will impose

financial obligations on the municipality beyond a financial year. The burden of these requirements outlined in this section would make the process far too onerous.

Section 33 suggests that the onerous requirements would only apply where financial obligations are imposed and that, where these obligations are lacking, a contract for longer than three years may be entered into. Indeed, section 33 may potentially be avoided if the contracts do not have 'future budgetary implications for the municipality'. Assuming no financial implication for the municipal beyond three years could mean that tariffs would be tied to, or lower than, ongoing (Eskom) rates. It could be assumed that this does not 'impose an obligation' in the sense that an 'obligation' denotes an increasing duty or commitment. The phrase 'impose financial obligations' nevertheless requires closer legal scrutiny. According to eThekwini Municipality, it is unlikely that IPP contracts would be seen as falling outside the scope of classification as a 'financial obligation'.

In this case, section 33(2) provides a set of exemptions from these requirements. The process set out above does not apply to:

> '(c) contracts—
>
> (i) for categories of goods as may be prescribed; or
>
> (ii) in terms of which the financial obligation on the municipality is below—
>
> (aa) a prescribed value; or
>
> (bb) a prescribed percentage of the municipality's approved budget for the year in which the contract is concluded.'

Where a contract is interpreted as imposing a financial obligation, an exemption from the section 33 requirements could be obtained if the contracts are for 'category of goods as may be prescribed'. An exemption could also be possible if the financial obligation is 'below a prescribed value' or 'a prescribed percentage of the municipality's approved budget'.

According to eThekwini Municipality, this could be used in a broader reading of 'impose financial obligations' to suggest that the clause may not be applicable, as long as the cost of the contract remains below a prescribed ceiling. This could possibly allow for more manoeuvrability in extending PPA contracts. It is suggested that where there is no new obligation, such as a change in rate, that a contract may continue but the legalities of this would need to be further explored.

Debt

Where municipalities want to incur debt they must comply with sections 46–50 of the MFMA. If the proposed partnership or contractual engagement commits the municipality for a period greater than three years, section 33 of the MFMA also requires a detailed analysis of the costs, commitments, ability to meet contractual obligations, and a public participation process. In addition, the municipality must consult with Provincial and National Treasury before seeking full council approval.

Tariffs

In addition to setting up the rules for supply chain management, section 42 of the MFMA builds in a mechanism whereby the National Treasury must monitor the pricing structure of organs of state that provide electricity, water or other bulk resources to municipalities, within the provision of municipal services. Before an organ of state submits a price increase, it must give reasons and request the National Treasury and the South African Local Government Association (SALGA) to give comments on the proposed amendment. The National Treasury is also required to monitor payments made by municipalities or municipal entities for these bulk resources.

Supply chain management

As part of the procurement process, Chapter 11 Part 1 of the MFMA requires municipalities to have a supply chain management policy. This policy must describe the supply chain management system that is to be implemented in the municipality. However, this aspect of the MFMA cannot be read in isolation, but must be read in conjunction with the Municipal Systems Act (MSA). The MSA sets out a definition for municipal services, which can be understood as any service that a municipality, in terms of its powers and functions, provides for the benefit of the local community.

Section 110 provides that supply chain management requirements (detailed in section 112 notably) apply only to:

(a) the procurement by a municipality or municipal entity of goods and services;

(b) the disposal by a municipality or municipal entity of goods no longer needed;

(c) the selection of contractors to provide assistance in the provision of municipal services otherwise than in circumstances where Chapter 8 of the MSA applies; and

(d) the selection of external mechanisms referred to in section 80(1)(b) of the MSA for the provision of municipal services in circumstances contemplated in section 83 of that Act.

However, requirements do not apply:

> 'if a municipality or municipal entity contracts with another organ of state for—
>
> (a) the provision of goods or services to the municipality or municipal entity;
>
> (b) the provision of a municipal service or assistance in the provision of a municipal service; or
>
> (c) the procurement of goods and services under a contract secured by that other organ of state, provided that the relevant supplier has agreed to such procurement.'

As raised earlier, according to eThekwini Municipality, section 110(2) of the MFMA and section 78 of the MSA potentially allow for the possibility of the municipality to create a municipal entity through which it could purchase electricity from IPPs.

Public-private partnerships

Public-private partnerships (PPPs) for municipal government are also governed by the MFMA, along with the MSA. The central legislation governing municipal PPPs is in Chapter 11 Part 2 (section 120) of the MFMA on Goods and Services (Part 1 deals with supply chain management). By contrast, the central legislation governing public-private partnerships (PPPs) for national and provincial government is Treasury Regulation 16 issued to the PFMA. Municipalities are not subject to the PFMA or to Treasury Regulation 16 for PPPs.

The MFMA prescribes a set of investigations and consultation processes that must be completed before approval by the full council. For a PPP, section 120 of the MFMA outlines the conditions and the processes required to establish a PPP. Section 120(4), outlines the specific requirements that must be established in a feasibility study. In addition, the PPP must be approved by council after a community participation process, and comments from National Treasury, the Department of Cooperative Governance and Traditional Affairs, and other affected departments. This process is particularly time consuming and costly.

Where a PPP is envisaged for a municipal service, Chapter 8 of the MSA must also be complied with, which includes section 78. If the PPP extends beyond three years, section 33 of the MFMA requires compliance.

Trading and transfer of municipal assets

When a municipality has to dispose of a municipal asset, it must follow section 14 of the MFMA, which prescribes the procedures before the asset is sold. Section 14 is relevant in instances where a municipality wishes to sell or grant user rights. The process outlined includes determining that disposal of the asset does not impact on the municipality's ability to deliver a minimum level of basic services and this should be disposed of at fair market value in an open and transparent manner.

Two specific instances have been raised where this process had to be followed. The first is granting a private company the right to use landfill sites for the extraction of methane or for managing solid waste. In these instances, the legislation is clear and the processes must be followed. In the second instance, the trading of 'carbon emission reduction credits' has been identified as disposing of a municipal asset. It is unclear whether intangible assets such as 'carbon' should be treated as a municipal asset, and the accounting treatment of the sale of carbon credits is also not clearly defined.

ANNEXURE 2: OVERVIEW OF MUNICIPAL SSEG GUIDELINES

Province	Municipality	Keeps list of installations	Approved SSEG application process	Allows feed-back into the grid?	Status of SSEG tariffs	Website / Contacts
Eastern Cape	Nelson Mandela Bay	Yes	Yes	Yes	Approved and operational	*See note 1 below*
Eastern Cape	Buffalo City	Yes	Yes		No SSEG tariffs	
Free State	Mangaung	Yes	Yes	No	Under development	
Gauteng	City of Johannesburg	Yes	Yes	Yes	Approved and being rolled out	*See note 2 below*
Gauteng	City of Tshwane	Yes	Under development	No	No SSEG tariffs	
Gauteng	Ekurhuleni Metro	Yes	Yes	No	No SSEG tariffs	
Gauteng	Midvaal	Yes	No	No	No SSEG tariffs	
KwaZulu-Natal	eThekwini	Yes	Yes	Yes	Approved and being rolled out	*See note 3 below*
Limpopo	Ephraim Mogale	Yes	No	Yes (pilots)	Under development	
Limpopo	Polokwane	Yes	No	No	No SSEG tariffs	
Northern Cape	//Khara Hais	Yes	No	No	No SSEG tariffs	
North West	Tlokwe	Yes	No	No	No SSEG tariffs	
Western Cape	Beaufort West	Yes	Yes	Yes	Approved and operational	
Western Cape	Bergrivier	Yes	Under development	Yes	No SSEG tariffs	
Western Cape	Breede Valley	Yes	Yes	Yes	No SSEG tariffs	
Western Cape	Drakenstein	Yes	Yes	Yes	Approved and operational	
Western Cape	George	Yes	Yes	Yes	Approved and operational	
Western Cape	Langeberg	Yes	Yes	Yes without compensation	No SSEG tariffs	
Western Cape	Mossel Bay	Yes	Yes	Yes	Approved and being rolled out	
Western Cape	Oudtshoorn	Yes	Under development	Yes	Under development	
Western Cape	Overstrand		Yes	Yes	Approved and being rolled out	

Annexure 2: Overview of municipal SSEG guidelines

Province	Municipality	Keeps list of installations	Approved SSEG application process	Allows feed-back into the grid?	Status of SSEG tariffs	Website / Contacts
Western Cape	Stellenbosch	Yes	Yes	Yes	Approved and being rolled out	
Western Cape	City of Cape Town	Yes	Yes	Yes	Approved and operational	*See note 4 below*
Western Cape	Saldanha Bay	Yes	Yes	No	Under development	
Western Cape	Theewaterskloof	Yes	Yes	Yes	Approved and being rolled out	
Western Cape	Swartland	Yes	Yes	Yes	Approved and operational	

1. nelsonmandelabay.gov.za/DataRepository/Documents/2_nmbm_requirements_for_small_scale_embedded_generation_sseg_1_july_2016.pdf http://www.nelsonmandelabay.gov.za/datarepository/documents/1_application_form_small_scale_embedded_generation_sseg.pdf
2. distributedgeneration@citypower.co.za
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ANNEXURE 3: CASE STUDIES

Grid-tied distributed generation: Leeupan solar PV project in Ekurhuleni

The Leeupan solar PV project was developed as a demonstration project by the Ekurhuleni Metropolitan Municipality (EMM) in the run-up to COP 17 in Durban in 2011. It also supports EMM's target of 10% green energy supply by 2020. The municipal council approved the project concept and budget in June 2011 and the plant was commissioned in October 2012.

The plant is located on municipally owned land, has a capacity of 220 kWp and is connected to the Eskom low voltage distribution grid. It is meant to meet part of the demand of the municipal centre for environmental learning and demonstration. The life span of the plan is expected to be 20–25 years. The capital cost of the plant amounted to R9.5 million and was fully funded by EMM. Its average electrical output is about 350 MWh/year, or the equivalent of powering some 60 mid-income households.

As the project was developed as a demonstration project in the run-up to COP 17, it benefited from a number of legal exemptions, which simplified and shortened the project cycle. These included an exemption from an electricity generating licence, as well as the possibility to follow the emergency procurement process, which is considerably simpler and quicker than standard public procurement procedures. In addition, as it is mainly for 'own consumption' of the environmental learning centre, no PPA with Eskom was needed. Nevertheless, as a first of its kind, it imposed a steep learning curve on EMM's Energy Division.

The O&M of the plant lies with the municipality, which presents a challenge because of a lack of a line function for this within the city and no standard procurement for technical parts that might need replacement. This leads to long response time at fault or theft events and has caused the power output to be much smaller than initially predicted. Theft of panels has been recognised as a real problem.

Wheeling of renewable electricity: wind electricity traded by PowerX in Nelson Mandela Bay

In 2012 the Nelson Mandela Bay Metropolitan Municipality (NMBMM) council passed a resolution to source 10% of the total electricity consumption in the municipality from renewable sources. This includes the possibility to 'wheel' renewable power from private producers to willing buyers. Based on the resolution, the NMBMM then developed their framework wheeling agreement, which lays out the maximum amount of power that will be accepted for wheeling by the

municipality (10%, of which at least 80% must come from local developers) and the conditions under which the municipality will wheel the power.

The wheeling agreement is signed between the municipality and a NERSA registered renewable electricity trader. The first such agreement in NMBMM has been signed with PowerX (previously Amatola Green Power) who has a PPA with Electrawinds for 5 GWh annually from its Coega wind turbine which it on-sells to BHP Billiton. NMBMM charges PowerX a standard grid charge of 20% of the value of the power traded for the wheeling service, which covers the associated network costs, but not the full cost of service. Billing and some other service charges are forfeited by the municipality as a way to stimulate further development of local projects that will deliver more renewable power.

This arrangement has opened the door to additional renewable energy projects within NMBMM that are now finding it easier to secure finance through PPAs that are facilitated through the wheeling framework agreement.

A main challenge in municipal wheeling is to accurately determine the appropriate system charges. This requires a detailed cost of supply study, which is likely to require external expertise.

Grid-connected biogas: The Bronkhorstpruit biogas project in Tshwane

The Bronkhorstpruit Biogas Project (BBP) is the first large scale animal waste-to-energy project in South Africa. It is located on a feeding lot for 20 000 head of cattle that produce over 40 000 tonnes of manure per annum. This is supplemented with several additional streams of organic waste to arrive to the approximately 60 000 tonnes needed to produce sufficient biogas to power the plant's 4.4 MW gas engines. The plant has an expected initial life cycle of 20 years. It is privately owned and the initial capital cost of R135 million was financed by the project owner (Bio2Watt), the IDC and a number of donors and funding agencies.

The plant produces approximately 35 GWh per year which is wheeled to BMW's Rosslyn plant with which BBP has a 10-year PPA agreement, through both the City of Tshwane's and Eskom's power grids. BBP therefore needed two separate wheeling agreements with both grid owners.

Additional revenue streams for the biogas plant are the sale of fertiliser that is a by-product of the digestion process, the sale of carbon emission reduction credits as well as tipping fees. The project also materially improves waste management on the farm, eliminating the hazardous escape of cow manure into the nearby river during the rainy season and methane emissions from the accumulation of animal waste. Finally, it is likely to expand based on additional organic waste diverted from Tshwane's landfills, which will help the city comply with South Africa's new Waste Management Act.

Being the first one of its kind, the project had an extremely prolonged lead time. Every step of regulatory compliance (i.e. the acquisition of the necessary permits and licences) took much longer than initially expected, bringing the total project

development time to eight years (the feasibility study started in 2007 and the plant was finally commissioned in 2015).

With regard to the wheeling agreements, the one with Eskom was concluded fairly easily, while the one with the City of Tshwane took much longer because the city had no appropriate framework in place. There was also a lack of clear directives and protocols nationally. However, due to its pioneering work, it has paved the way for other renewable energy projects that can find willing buyers within the City of Tshwane to consider electricity wheeling as an option.

SELF-GENERATION

The option of self-generation through the installation of solar PV systems on municipal buildings is readily achievable.

ENERGY TRADING MODEL

This model could be used by municipalities to procure renewable energy.

DEVELOPING RENEWABLE ENERGY

within municipalities is well aligned with the country's energy policies and Constitution.

SMALL-SCALE EMBEDDED GENERATION

can contribute significantly to energy security, local economic development and competitive tariffs.

Why we are here
To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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