



# Energy towards well-governed cities





## Introduction

In 1996 the Constitution gave local government a new developmental mandate. Local government in South Africa must now structure and manage its administration and budgeting and planning processes to give priority to the basic needs of the community. The White Paper on Local Government (March 1998) defined these responsibilities as being specifically the provision of housing infrastructure and services, the creation of liveable, integrated cities, towns and rural areas, local economic development and community empowerment and redistribution. This is an enormously challenging task given the dual nature of city economies in South Africa and levels of unemployment and poverty facing cities.

The notion of “well governed” cities refers to both efficiency of local government in utilising its resources, i.e. cost per service delivery unit, and effectiveness in addressing the identified development priorities of residents i.e. are city resources being applied to identified development priorities and whether the outcomes of this application justify expenditure of resources. The concept is broader than just government, and includes the “sum of ways” in which individuals and institutions, public and private, plan and manage their common affairs<sup>1</sup>. Monitoring this aspect of local government looks to the internal performance of government: institutional capacity, service delivery, financial stability and efficiency, the network of cooperative arrangements and the levels of citizen satisfaction and participation – the latter not always easy to measure.

Energy runs through all areas of local government responsibilities: housing form will impact on the energy requirements of a household; local government must ensure energy is provided to all households (in a manner that relieves, rather than

exacerbates poverty), an irregular energy supply will hugely affect the economic competitiveness of a city and its ability to attract business and residents; payment for energy services is an important part of a city’s fiscus; delivery of other services (water, waste, street lighting and traffic control, public transport) requires energy inputs that are costly and environmentally harmful; sound urban planning reduces mobility needs



of city residents and good transport systems enable residents to participate in city living and underpins business efficacy.

Restructuring of municipalities by the Demarcation Board, with the introduction of “wall to wall” municipalities, has brought new challenges and responsibilities. Some municipalities, such as Ekurhuleni and Nelson Mandela Metropolitan Municipality, have involved the amalgamation of a number of previously separate institutions. Cities, such as Tshwane and Buffalo City, now include extensive rural areas within their metro boundaries. Cities also face a context of underlying financial crisis: the revenue growth of most South African cities is simply not keeping up with rising input costs and The State of the Cities Report, 2004 notes that “in most cities less than half the population can realistically afford the service bills that a small household would normally attract”.<sup>2</sup>

Local authorities consume, on average 1% of the total energy consumption within a city. This is often larger within smaller towns, such as King Sabata and Potchefstroom where local authority consumption is around 4% of total city consumption. This places local authorities in an important position to influence local consumption and, as large procurers, local energy services development, or generation.

Energy management (as opposed to simply electricity delivery management) – frequently linked to climate change management issues – is taking root within the big metros in South Africa, and in some of the smaller cities – notably those who participated within the ICLEI Cities for Climate Protection Campaign.

Energy consumption in service delivery – notably building and operations efficiency and vehicle fleet management – offer important opportunities for financial and energy savings. While some inroads have been made, systematic implementation of routine energy management through all departments has not been achieved. In addition, monitoring of energy must, and does not appear from data to do so, be linked to the level of service outputs achieved. It is vital that efficiencies do not take place at the expense of service delivery levels and standards.

Those cities furthest ahead with institutionalising of city energy management have established important networks with NGOs and research institutions, as well as national government and related institutions. This is an important foundation for co-operative governance and the involvement of civil society in policy development, that needs to be built on.

Table 5.1 Local authority energy consumption as a share of total city energy consumption, 2004

Metros		Industrial towns		Non-industrial towns	
City of Cape Town	1.3	uMshini	0.1	Buffalo City	0.1
City of Johannesburg	1.1	Saldanha Bay	0.2	King Sabata	4.8
eThekweni	1.9			Mangaung	1.5
Ekurhuleni	1.1			Potchefstroom	3.7
City of Tshwane	0.8			Sol Plaatje	1.4
Metro totals	1.2	Industrial totals	0.2	Non-industrial totals	1.5
Study cities total	1.1				

Source: Derived from data gathered in City Energy Review, 2006

## ISSUE: Local authority energy consumption

Local authorities are large – often the single largest – energy consumers within a city area and are, on average, responsible for over 1% of the carbon emissions footprint of a city. Table 5.1 below indicates that local authorities are significant energy consumers within a city and thus well placed to influence energy consumption patterns and as substantial customers may influence energy utilities.

<sup>2</sup> SACN, 2004, p143

Understanding how and where energy inputs are used within a city in relation to the level of services provided is important information for good city management. The concern within this report is that cities have currently developed some level of data on energy consumption (in many cases notably gathered through the ICLEI Cities for Climate Protection CCP programme), but that this often stands alone as an input measure, with no relationship to the service outputs related to that input.

Measuring inputs without measuring outputs with the objective of improving efficiency of government services could have the unintended effect of “saving by not delivering”. This needs to be borne in mind throughout the energy measures relating to local government consumption. Further data development at the city level needs to draw out service levels associated with the energy inputs.

City data is fairly varied, often depending on how municipal departments are structured, whether services are outsourced, etc. Data was outstanding for Nelson Mandela Metropolitan Municipality, Sedibeng and uMhlatuzi. Data for Buffalo City, King Sabata, uMsunduzi and Potchefstroom only include figures for electricity consumption and no liquid fuel (vehicle fleet) data.

### Measure: Local authority energy consumption (GJ) and carbon emissions (tonnes) per capita

Table 5.2 illustrates that on average city administrations and their service delivery arms consumed 511 KJ of energy per capita in 2004–2005 and emitted 103kg of CO<sub>2</sub> in the delivery of services (water, street-lighting, vehicle fleet, buildings, etc). Data is most complete for the metro cities and provides indication of a fairly consistent energy/capita rate. Outstanding data amongst the industrial and non-industrial cities (notably the very low figures for uMsunduzi and Buffalo City) render these figures unreliable.

Table 5.2 Local authority energy consumption and carbon emissions per capita, 2004

Metros	Energy (KJ)/capita	CO <sub>2</sub> /capita (kgs)	Industrial towns	Energy (KJ)/capita	CO <sub>2</sub> /capita (kgs)	Non-industrial towns	Energy (KJ)/capita	CO <sub>2</sub> /capita (kgs)
Cape Town	581	98	uMsunduzi	60	18	Buffalo City	38	11
Johannesburg	414	103	Saldanha Bay	706	153	King Sabata	627	192
eThekweni	539	76				Mangaung	410	99
Ekurhuleni	671	154				Potchefstroom	1252	383
City of Tshwane	574	101				Sol Plaatje	445	105
Metro totals	546	105	Industrial totals	140	35	Non-industrial totals	384	106
Study cities	511	103						

Source: Derived from data gathered in City Energy Review, 2006

Note: \* no data for Nelson Mandela, Sedibeng and uMhlatuzi. Electricity figures only for uMsunduzi, Buffalo City, Sabata and Potchefstroom.

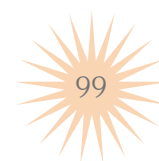
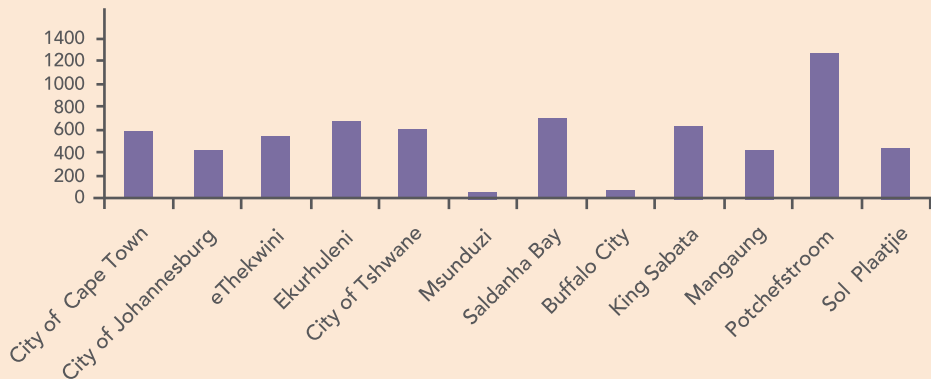


Figure 5.1 Local authority energy consumption per capita (KJ), 2004



Source: Derived from data gathered in City Energy Review, 2006

Mangaung and Sol Plaatje, with fairly reliable data, indicate that energy per capita for service delivery may be lower in smaller local authorities. It is unclear however, whether this is indicative of energy “efficiency” achieved within the framework of smaller towns, or whether this may point to a lower level of service within a smaller town. As carbon emissions per capita in the metros and non-industrial towns are the same despite the difference in energy consumption, the indication is that the smaller towns are relatively more dependent on electricity than metros where energy consumption involves a larger relative proportion of liquid fuels. City of Johannesburg also stands out as having a high relative proportion of electricity consumption.

Monitoring per capita energy for service delivery needs to be explored and approached *with caution*. Further work needs to clarify the minimum level of energy consumption required per capita for adequate service delivery and exploring how the form of a city impacts on service delivery efficiency. Whether services supplied are reaching all people is critical – the output of energy consumption (apparent “efficiency” may simply represent an absence of services, and in this regard measuring outputs becomes crucial).

Cities often outsource areas of service delivery, such as waste removal, and it is not clear if data includes all areas of service delivery – making comparison between cities difficult.

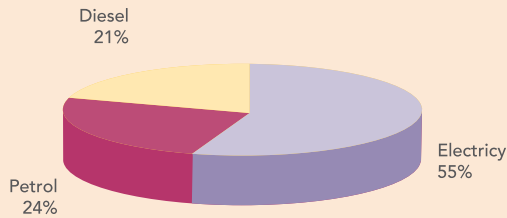
### Measure: Local authority energy use (and carbon emissions) in service delivery by fuel type

Apart from a handful of small pilot retrofits, such as LPGas vehicles, local authorities in South Africa remain 100% dependent on fossil fuels as the power source for service delivery (Figure 5.2). Input costs for service delivery in our cities are likely to increase over the next couple of decades, possibly at a rate faster than the growth of the revenue base of cities.

Security of supply is also a substantial issue. The impacts of supply disruption on service delivery were brought home in the power outages experienced within the Western Cape in December 2005 and early 2006. Power outages brought water treatment pumps to a halt and the City of Cape Town experienced sewage spillages and other service disruptions.

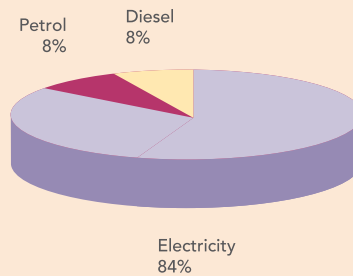
The high dependency on electricity (somewhat exaggerated as there is no liquid fuel data for

Figure 5.2 Aggregate local authority energy consumption by fuel type, 2004



Source: Derived from data gathered in City Energy Review, 2006

Figure 5.3 Aggregate local authority carbon emissions by fuel type, 2004



Source: Derived from data gathered in City Energy Review, 2006

three towns) has a disproportionate impact on carbon emissions by cities (Figure 5.3). Cities wishing to tackle climate change-related emissions reduction need to look to their electricity-based activities.

### Measure: Local authority energy expenditure as a share of total budget

The report was unable to track down comprehensive information on budget spending for cities. This is an important area to follow up, as a sense of relative energy costs will support city efforts towards energy efficiency and related cost savings.

The limited data within Table 5.3 indicates that electricity may be a proportionally more expensive fuel for cities (though this is obviously subject to fuel price fluctuations over time). This highlights the potential for financial (and environmental) savings to be made through electrical energy efficiency initiatives.

### Measure: Energy consumption and emissions by city service delivery operation

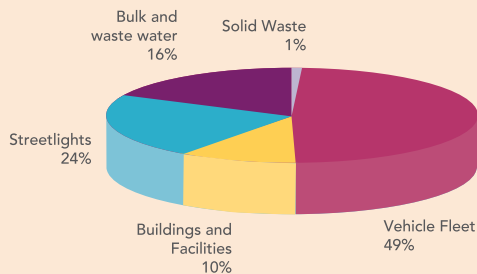
Streetlights, water treatment, buildings and facilities and solid waste make up only 50% of total energy consumption (Figure 5.3), but the use of electricity in the delivery of these services mean that they may have a disproportionate impact in terms of global greenhouse gas emissions and cost (Figure 5.5).

Table 5.3 Local Authority Fuel Expenditure, 2004

City	Fuel expenditure	Fuel expenditure as % city expenditure	Electricity consumption as % Total consumption	Electricity consumption as % Total energy expenditure
Cape Town	Approx R100 million	No data	40%	63%
Sol Plaatje (2001 data)	Approx R10.5 million	No data	71%	74%

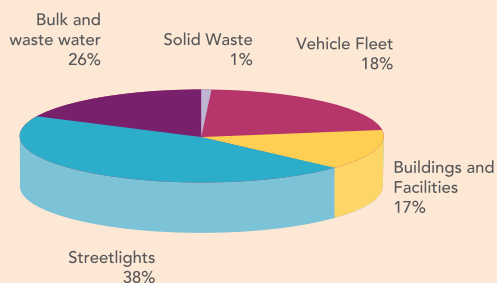
Source: Data derived from City of Cape Town State of Energy Report, (SEA, 2003) and Sol Plaatje State of Energy Report, (SEA, 2005)

Figure 5.4 Aggregate local authority energy consumption by service sector, 2004



Source: Derived from data gathered in City Energy Review, 2006

Figure 5.5 Aggregate local authority carbon emissions by service sector, 2004



Source: Derived from data gathered in City Energy Review, 2006



Streetlights make up only 24% of total energy consumption, but 38% of carbon emissions. This is a significant proportion of local energy and emissions. Many cities have already upgraded streetlights, but detailed data on this is outstanding. In addition, the use of light emitting diode (LED) signals at traffic intersections has significant potential for savings on energy use, financial savings and reduced emissions.

Scope exists to improve the efficiency of wastewater treatment and bulk water which comprise 16% of energy and 26% of global emissions within local authority consumption. There is also a substantial energy efficiency savings opportunity within the Buildings and Facilities sector. Cape Town and Ekurhuleni have done pilot retrofits of some of their civic centre buildings – revealing potential for substantial savings (typically ranging from 15–35% of current building electricity costs). No sustained, comprehensive building energy efficiency programmes have been systematically undertaken within cities.

Local authority vehicle fleets account for nearly 50% of all service delivery energy consumption across the cities. Table 5.4 indicates that the two smaller local authorities, Sol Plaatje and Mangaung, both have relatively low vehicle fuel consumption as a proportion of their total energy consumption. Amongst the metros, Ekurhuleni and Johannesburg have a similarly low proportion of liquid fuel consumption, but within Cape Town, eThekweni and Tshwane vehicle fleet liquid fuel consumption accounts for well over half (in eThekweni almost three quarters) of total energy consumption.

The consumption of diesel and petrol contribute significantly to local air pollution and global Greenhouse Gas emissions (18%). Significant opportunities exist within vehicle fleet for fuel savings through better fleet

Table 5.4 Local authority vehicle fleet as % total local authority energy consumption, 2004

Cape Town	59
Johannesburg	25
Tshwane	55
Ekurhuleni	33
eThekweni	69
Mangaung	27
Sol Plaatje	30

Source: Derived from data gathered in City Energy Review, 2006

management systems to reduce theft and wastage. Alternative fuels such as biodiesel and LPGas may also provide important “cleaner” fuel opportunities.

Little data seems to be available on the solid waste component of city energy consumption. This may be due to this service being commonly outsourced to a service provider.

#### Data comment

*Energy represents a substantial portion of local authority costs and good management may reap important financial savings for cities. Institutionalizing comprehensive data on energy inputs and related service outputs requires attention within local government. All city governments should ensure that energy consumption, both internally and amongst city contractors (through service delivery contracts), is routinely kept and reported.*

## ISSUE: Local authority energy services delivery management

### Measure: Allocation of energy services

Levels of access to safe, efficient, reliable and affordable energy services are examined within Energy towards Inclusive Cities. However, scrutiny of budgets for development of energy service provision and whether service delivery is in line with stated development priorities needs to be examined in future studies of this kind.

Cities are constitutionally mandated to provide residents with electricity (and gas), though the Municipal Systems Act of 2000 provides that this may be provided through an internal or external mechanism, such as Eskom, or a Regional Energy Distributor (RED). Cities are increasingly exploring a broad energy supply mandate, including other clean, safe, reliable and affordable energy sources, notably LPGas and ethanol gel.

### Measure: Value of non-payment for electricity services

Creating a culture of service payment has been a campaign of the government and is clearly important for the sustainability of the electricity distribution sector. The review aimed to monitor the value of non-payment, disaggregated by sector, but this data was not readily available from cities. Clearly understanding the size and shape of non-payment – who, how much – is important if this issue is to be addressed. There appears to be a ready perception that non-payment is something emanating from the townships and a hangover from

### Regional Energy Distributors (REDS)

*“Cities face a revenue base that is struggling to keep up with rising service delivery input costs. In this context effective revenue collection is extremely important to financial stability as the majority of the income in our cities comes from revenue collected. The REDS present a very real challenge in this context not just because surplus generated through electricity distribution cross-subsidises other service delivery, but because the collection of electricity revenue is the pillar of most municipal revenue systems. Electricity represents some 40% of turnover in cities, but municipalities use their control over electricity billing in a variety of ways to enforce payment discipline in respect of other services.”*

*From: SACN, 2004*

boycott days of the past, but little data to back this up. Interestingly, an electricity debtors’ list recently published by the City of Cape Town in the local newspaper, indicated that it is rather the sizeable institutions, such as provincial government and larger commercial establishments, that in fact carry responsibility for the bulk of the *value* of non-payment within Cape Town.

Technical losses refer to that electricity lost as a natural function of grid reticulation. Non-technical losses refer to the illegal tapping of electricity from the system and represents electricity taken without being paid for – i.e. represents a loss of revenue to the distributor. Limited data in Table 5.5 indicates technical losses for cities average around 9%. Data on non-technical losses was even more limited and points to anything from 2–10% of revenue being lost to “illegal” electricity tapping. Lack of sound, reliable data on electricity losses within city departments hampers effective strategic planning.

Table 5.5 Technical and non technical electricity distribution losses as a share of total revenue generated, 2004

	Technical losses as % total revenue, 2004	Non technical losses as % total revenue, 2004
City of Cape Town	6.5%	-
City of Johannesburg	6%	6.3%
eThekweni	11.3%	9.6%
Ekurhuleni	-	2%
City of Tshwane	9%	-
Mangaung	9.4% (all losses)	
Potchefstroom	5%	2%

Source: Derived from data gathered in City Energy Review, 2006

### Measure: Capital investment in electricity distribution infrastructure as a share of revenue generated

Investment in electricity distribution network infrastructure is a key measure in terms of the ongoing sustainability of service delivery infrastructure. Such data should be readily available from city electricity departments. However, although some cities do have excellent and detailed electricity business reporting, when requested, few city officials were able to provide information on investment in infrastructure. Limited data received was not sufficiently clear for reporting purposes.



## CHAMPIONING SUSTAINABLE ENERGY IN CITIES

*Mzi Velapi, freelance journalist*

It is half-past-two on Wednesday and I have an appointment with the City of Cape Town's Director of Environment Planning, Osman Asmal, or Ossie, as his secretary refers to him. All I really know about Ossie is that Cape Town's groundbreaking Energy and Climate Change Strategy and the city's status as an international leader within environmental, energy and climate change city networks are seldom mentioned without his name coming up.

"Mr Asmal is running late, he is still in a meeting," says Ossie's secretary, Naomi Higam. After ten minutes of waiting the door opens and five men come out. Among them is a short, well-built guy, wearing khaki trousers, a cream golf shirt and a dark brown waistcoat, sporting a distinctly South African accent. He has a genuine smile. "A friendly guy," I think. I introduce myself and we sit down.

"I was born in Bergville, a small town near the Drakensberg mountains in KwaZulu-Natal, so I khuluma Zulu (I can speak Zulu)," says Osman. I am tempted to put him to the test; to conduct the whole interview in Zulu, but decide against it since we will have problems when it comes to the environmental jargon. "As a kid, I liked the outdoors. We used to go out camping in the Drakensberg during the December holidays," says the 34-year-old who started collecting rocks at primary school. His love for nature and understanding of environmental issues stems from growing up in a small rural town, where "it doesn't matter if you are rich or poor, everybody is faced with a challenge of not having basic access to services like water or electricity".

Ossie studied Geology and Geography at the former University of Durban-Westville, but after an excursion to the mines in Gauteng decided that he did not want to spend his life working underground. With the guidance of mentor Professor Helen Watson, Osman enrolled for Honours and then Masters with the University of Cape Town's Department of Environmental Science.

In 1995, Osman joined the Environmental Planning Management Team of the City of Cape Town, the department he now directs. Ossie was tasked with coordinating the Local Agenda 21 initiative – a cities programme arising out of the Rio Summit looking at local level sustainable development. Beginning in 1999, Ossie led the city in the country's first Cleaner Development Mechanism project, the Kuyasa Housing project.



"What kind of a leader are you?" I ask Ossie, who has successfully pioneered new projects in the City, pulling different teams and stakeholders together, working closely with communities and securing political support for the initiatives. "As a leader I've learned that one must listen when people speak and make joint decisions. One of the biggest challenges I have ever faced was going into a meeting of about 700 community members, listening to their environmental problems and then having to translate that into action." He ascribes his successes to having a great team of people working with him – both inside and outside of the City. "Hard work and significant teamwork by all spheres of government, NGOs, community organizations, academic institutions and the business sector have brought Cape Town to where it is today," says Asmal.

Ossie has mentored a number of upcoming city officials. Monwabisi Booi worked with Ossie as an Energy Advisor. Today Monwabisi manages Cape Town's Urban Renewal Programme. "I learnt so much from the guy," comments Monwabisi. Booi attributes Ossie's success to his leadership style and sees Asmal as his role model. "He interacts genuinely with everyone in the office from the tea lady to the directors," says Booi enthusiastically.

In June 2004, Ossie transferred to the Ekurhuleni Metropolitan Municipality in Gauteng where he worked as Director for Environmental Management. "Osman is a hard worker, selfless team member and an ideal supervisor," says Ekurhuleni Executive Manager of Environmental Planning, Deborah Ramalope. Ossie's enthusiasm was contagious, and during his time there, the Ekurhuleni energy strategy was developed, along with the first South African pilot project using landfill methane as an alternative fuel for refuse collection vehicles.

The decision to return to Cape Town, in June 2005, to direct the Environmental Management Department was tough, particularly as Ekurhuleni was closer to Ossie's family home in Bergville. Ossie lights up when he talks about his family, who he refers to as "my people". This, his family and their rural roots, is the support and base that enables Ossie to move forward with confidence. "Most of the great leaders were born in the rural areas, Nelson Mandela is the living example of that," said Ozzie with passion in his voice.

## Measure: Number of days per year experiencing power outage within the city of a duration longer than 30 minutes

A secure and reliable supply of power is critical for any city economy and for service delivery. This requires good electricity sector management – obviously at the level of electricity generation and transmission (often beyond local government control) as well as at the distribution level. Of importance at the level of local distribution is not the quantity of power outages alone, but also the response time, or length of outage. This area of electricity management also reinforces the need for cities to develop some level of local power generation. It also raises the position and role of local government in relation to big utilities and “out sourced” electricity or energy service providers, such as City Power or a RED. Given their constitutional mandate to deliver electricity, what powers, if any, do local authorities have with regard to monitoring of business and investment decisions within the electricity generation, transmission and distribution sector?

Table 5.6 Power outage days by city, 2004 - 2005

City	Number outage days (definition varied)
Cape Town	3 (2004–2005))
Johannesburg	144 (2004–2005)
King Sebata	80 hourly occurrences (2004)
Mangaung	286 blackout incidents (2004–2005)
Potchefstroom	2 days (2005)
Saldanha	5 days (2005)
SPM	3 days (2005)

Source: Derived from data gathered in City Energy Review, 2006

Data with regard to outages and response times is held differently across cities, making reporting on this indicator difficult. As data begins to be collected on a more routine and uniform basis examination of this indicator in conjunction with investment in distribution infrastructure will be revealing of state of distribution infrastructure.

## ISSUE: Institutionalising energy service management in cities

An important aspect of energy service delivery is the level of institutional and human resource capacity available to the city to carry out the necessary work. Until fairly recently, energy services in cities was considered to refer exclusively to electricity distribution. However, increasingly the notion of energy planning and energy services management – including the efficient use of energy in all areas of local authority service delivery and jurisdiction, the effective and efficient supply of energy services to citizens and the recognition of energy as a key tool in tackling the social and economic development mandate of local government – has come to the fore.

## Measure: Key city energy services management matrix

City officials and stakeholders identified a range of key energy management areas (Table 5.7). These ‘measures’ are explored qualitatively, rather than quantitatively.

Table 5.7 City energy services management matrix, 2006

	Local authority energy audit	State of Energy Report	Energy and Climate change Strategy	Dedicated energy management staff	Energy management committee or forum	Routinely collected energy data	Sustainable energy pilot projects	Sustainable energy implementation mechanisms	Support local renewable energy generation
Cape Town	√	√	√	√			√	√	√
Johannesburg	√			√			√		
eThekweni	√	In process	In process				√		
Ekurhuleni	√	√	√		√		√		
City of Tshwane	√	√	√	√	√		√	√	
Nelson Mandela		In process		√	√		√		√
uMsunduzi									
Saldanha Bay	√								
Sedibeng									
uMhlathuze									
Buffalo City		In process							
King Sabata									
Mangaung	√	In process		√					
Potchefstroom	√						√		
Sol Plaatje	√	√					√		

Source: Derived from data gathered in City Energy Review, 2006

### Internal local authority energy audit

For many cities energy awareness was kick-started through the Cities for Climate Protection Programme of ICLEI and this served to develop understanding, awareness and capacity around energy use and energy data and monitoring internally. However, it does not appear that the energy monitoring done within CCP has been institutionalized within any of the participating cities in the form of an annual report on energy consumption in service delivery. While some initial pilot projects, such as the retrofit of buildings, were done, the systematizing of internal energy management in city service delivery has yet to be achieved. This requires reporting on energy consumption per service delivery output in all financial reports, procurement processes, service delivery agreements and reports.





### State of Energy Report and City Energy and Climate Change Strategy or Plan

Energy strategies are, arguably, central to strategies for sustainability – in all its aspects: environmental protection, economic regeneration and social equity. At least four cities have conducted a state of energy report collecting detailed energy data and another four are in the process of conducting such a study. The logic behind such a process is that until a city understands what energy service needs exist, and where and how energy is used, they are unable to make informed energy-related decisions. Three to five cities have full energy strategies or integrated energy plans developed (or in process), but to date full council approval of such plans has only been achieved in Cape Town. Energy is not yet embedded within the “score cards” of city officials beyond those with a specific, dedicated energy position.

### Dedicated energy management staff

Having dedicated capacity was identified by cities as a critical factor in energy monitoring and taking energy issues forward. All cities have electricity departments, though, particularly in light of the REDs development, many of these are undergoing restructuring.

The City of Cape Town has a dedicated energy management position. Tshwane has an Energy advisor position. Nelson Mandela Metropolitan Municipality have an Electricity and Energy Business Unit and Mangaung’s Centelec has two dedicated energy efficiency staff though these have a strong electricity focus and are not mandated to address cross-cutting energy issues. Other cities have environmental management staff whom have an energy or climate change component within their job descriptions, but are expected to tackle a wide variety of city environmental issues. Dedicated air quality monitoring staff are reportedly on the increase in cities though no data was collected on this.

### Inter-departmental Energy Committee or forum

Energy is cross-cutting and requires a great deal of inter-departmental cooperation. City officials noted that they consider it to be extremely important that energy does not get stuck in environmental department, but is able to get beyond the “silos” and coordinate between line functions. True success is considered to be when energy-related projects happen independently of Environmental Management Departments. At same time a concern is when energy projects are happening without coordination and on an ad hoc basis. Experience within Tshwane (see case study for further details), whom have the most established inter-departmental forum, indicates that it is extremely difficult to get cooperation without

Table 5.8 Staff per 1,000 electricity connections, 2004

Johannesburg	eThekweni	Tshwane	Buffalo City	uMtsunduzi
6.75	3.22	9.05	2.17	2.5

Source: SACN, 2004

high level political direction and the “embedding” of energy within the job description, or score card, of a city official. Awareness creation and capacity building to increase levels of perceived value from such inter-departmental cooperation requires attention.

### Routinely collected energy data

Data is routinely collected for some of the energy-related indicators; however this is held in various different locations within cities and cities have not yet established a routine, energy-specific, data collection process. Probably the furthest down the road in this regard is the City of Cape Town whose sustainability and environmental reporting processes support this.

An issue of concern is where data is collected by consultants in the business of developing reports and this is not “returned” to cities, or no lasting system left in place for ongoing routine data collection. Within District Municipalities the task of energy data collection is even harder as different functions are spread between the different tiers of municipal governance. Again, the existence of service delivery entities means that records are often held by companies outside of the city. Routine energy data collection and reporting needs to be written in to service delivery agreements.

### Energy pilot projects

Exciting city energy pilot projects have taken place, largely through funder-driven processes. These have included eco-housing projects in a range of cities (Sol Plaatje, Cape Town, eThekweni, Nelson Mandela, Johannesburg and others), municipal building retrofits, streetlighting projects, vehicle fleet management projects and the occasional LPGas retrofit of council vehicles. Useful knowledge has been developed through these processes. Frustration and concern exists over the inability of cities to get beyond pilot projects and begin to mainstream some of these energy interventions.

### City Energy Agency

*The City of Cape Town has begun exploring the possibility of establishing a city energy agency whose core business would be to promote the city's energy strategy vision and goals. The body would ensure substantially more capacity was directed towards tackling energy issues and would be a more flexible vehicle than local government in terms of being able to respond to opportunities, channel finance, etc. This approach has worked well in cities elsewhere, such as the UK City Energy Partnership that tackles energy issues and opportunities for a county grouping of UK cities.*





### Instituted energy services implementation mechanisms

As noted above, numerous pilot projects exist, but cities themselves identify the inability to move beyond pilots, scaling-up into mainstream energy initiatives, as the current challenge. The City of Cape Town has developed a draft solar water heater by-law that will potentially ensure that all buildings constructed in the city (or major renovations of buildings) of a value over R40,000 would have solar water heating and not conventional electric geysers. Cities such as Ekurhuleni, Johannesburg and Cape Town have also moved towards the development of local “green” building guidelines (but face legal constraints to making these features mandatory).

### City government support of local renewable energy generation supply (either own generation, or Power Purchasing Agreement with developer)

The City of Cape Town has recently signed a Power Purchasing Agreement (PPA) with the Darling Wind Farm developers. This ensures that the developers have a market for their “green” (and

more costly) electricity and enables them to move forward with the development. Cape Town has yet to determine to whom it will sell on this more costly electricity. Legally it is unable to purchase it as a proportion of its electricity mix and pass the cost on to all consumers. It must sell the “green” electricity as a separate product to a willing buyer.

Nelson Mandela Metropolitan Municipality are busy establishing themselves as bold leaders with regard to the development of local renewable electricity and have recently appointed three energy companies to undertake preliminary work around the establishment of grid-linked wind turbines in the metro.

A number of cities have begun processes around utilizing methane captured in landfill sites to generate energy. This is not considered to be a “renewable” source (in terms of internationally recognized terminology) as “renewable” refers to a non-finite energy input resource, whereas sustainable development looks ultimately to the reduction of landfill sites in the future.

### Civil society and stakeholder involvement in policy development and local energy generation or services development

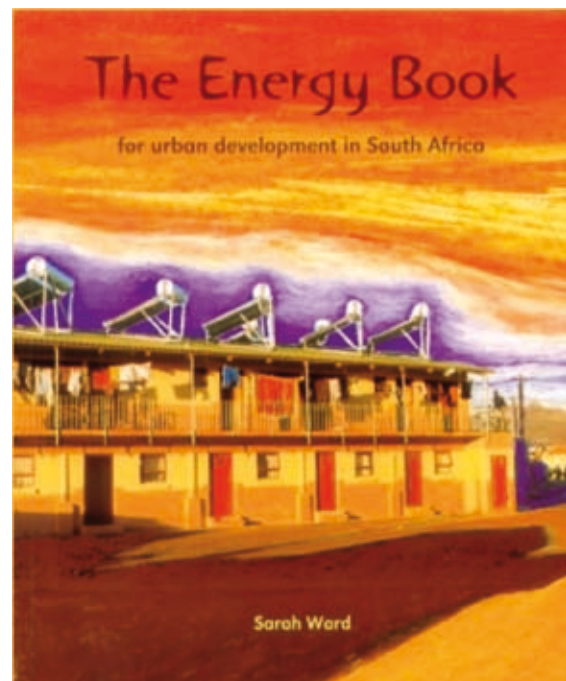
The level of civil society involvement varies hugely from city to city. Within the larger cities there appear to be mechanisms that ensure some degree of consultation around environmental and some energy issues.

There appears to be a high level of engagement between research institutions and city management on energy and environmental issues within the larger cities. Again, smaller cities lose out on this expertise as few of them host universities and/or lack capacity to make these important connections.

Currently there is no involvement of civil society networks and local residents in local generation as the local, independent power generation sector is in its infancy.

### Key city energy networks

*The establishment of partnerships with research institutions and NGOs was identified as critical in getting energy related work off the ground within cities. While some cities have civil society links – eThekweni has established an External Environmental Stakeholder group and Johannesburg mentions work with communities around energy related issues – others noted that there was no easy link to the civil society and NGO community (uMshunduzi). Most cities work actively with national and provincial government departments. Cities noted that they have experienced a lack of coordination between key government departments, such as the Department of Minerals and Energy (DME), Department of Environmental Affairs and Tourism (DEAT), Department of Science and Technology (DST) and Department of Housing (DoH), on energy and environment related issues.*



## ON THE ROAD TO SUSTAINABLE ENERGY IN TSHWANE

*Sam Mutswari, Energy Adviser, Tshwane Municipality*

In October 2005, 500 households in the Winterveld region of the Tshwane Municipality received gas cookers and 30kg gas cylinders. Although South Africans are entitled to a free basic electricity allowance of 50KWh per month, in reality this allowance is only available to households connected to the electricity grid. This innovative gas alternative ensures that poor people who are not connected to grid electricity are also able to access their free basic energy quota.

The Winterveld project is the brainchild of the Sustainable Energy for Tshwane (SET) committee – an integrated, interdepartmental committee coordinating energy and climate change initiatives within the Tshwane municipality. SET is the result of continued championship, commitment, hard work, capacity development and perseverance on the part of small group of enthusiastic officials and politicians.

Tshwane was one of the first cities to adopt the Cities Energy Declaration in 2003 and participated in the ICLEI Cities for Climate Protection campaign. The political championship of Councillor MMC Nawa helped ensure that the growing enthusiasm of Tshwane officials received top-level attention.

Through connections with Sustainable Energy Africa (SEA), a local NGO, the municipality became part of the Sustainable Energy for Environment and Development (SEED) programme which focuses on building capacity in municipalities around energy issues. The growing support in the municipality, along with SEED funding from Danida, enabled Juan Mostert, head of the Environmental Health Unit, to appoint Sam Mutswari as a SEED Advisor.

Over the next couple of years, Sam's knowledge of sustainable energy issues was expanded through networking meetings, seminars and training. He travelled abroad for conference and training opportunities and enrolled for an Honours degree in Energy Studies. Internal networking and connections with local experts in the field also played a key role in building capacity.

A two-week training course in New Delhi, India, had an enormous impact on Sam's approach. "India boasts a dedicated Ministry of Non-Conventional Energy Sources that is responsible for promoting the development of renewable energy technologies and an in-house financing mechanism. I was able to witness a country that has gone beyond piloting sustainable energy projects," says Sam.

Shortly after Sam's return, the SET committee was established. SET is an interdepartmental

committee, led by the Environmental Health unit of the Social Development Department. Other participating units included Energy and Electricity, Transport, Environmental Resource Management, Housing, Local Economic Development, IDP, City Planning, Waste Management, Water and Sanitation. Both Sam and Juan agree that this would not have happened without top-level direction, from both councillors and senior managers.

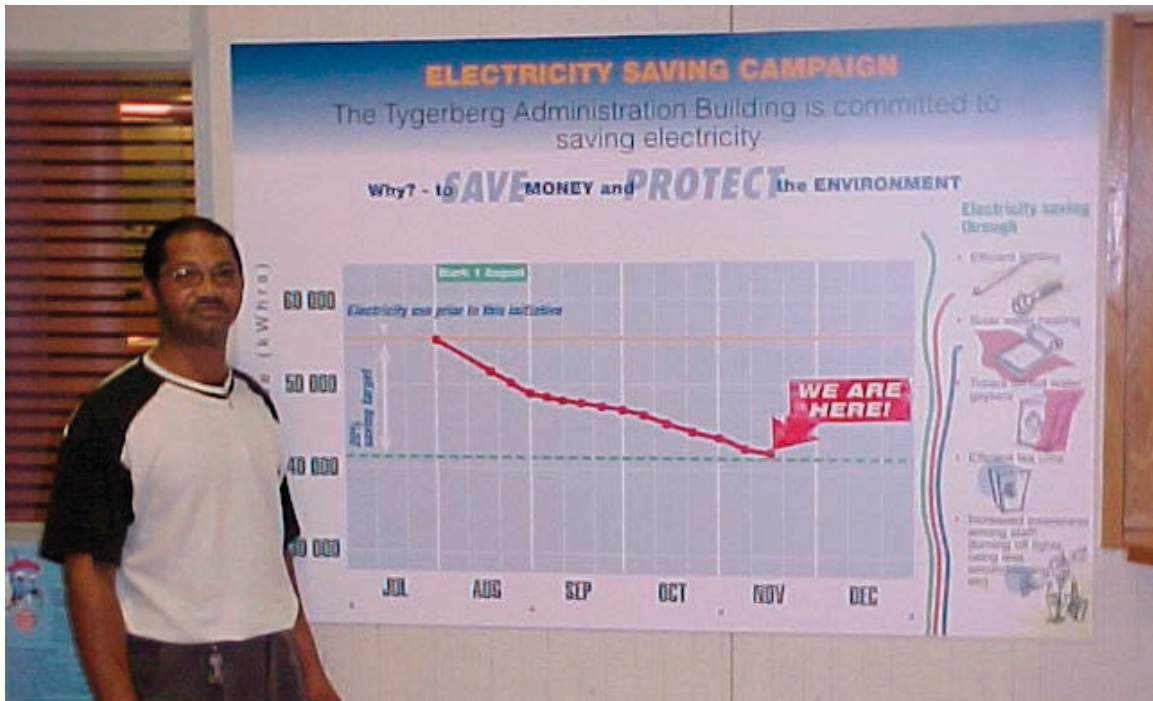


Although it has subsequently achieved great things, the committee initially experienced teething problems. At the end of 2004, participants from Social Development felt frustrated by the lack of commitment within the committee. Departments had their own lines of decision-making and overworked officials may have found SET an irksome burden. The relevance of energy issues was also not always immediately apparent to components like the Housing Department. Yet today, Tshwane Housing Department is busy with a solar housing project through the SET committee.

How was the blockage overcome? Fairly simply – through good communication and championship. Once the concern over the lack of cooperation was raised, leaders from the different components clarified relationships between the departments, committees and forums. A workshop early in 2005 reintroduced the concept of integrated sustainable energy planning and practice. These moves have forged a close and cooperative relationship between the various role players.

Staff on the ground, as well as top-level management and political leaders have supported Tshwane Municipality on its road to sustainable energy implementation. “Having sustainable energy written into our scorecards and operational plans definitely helped to drive the process,” reports Juan. “The challenge is to see sustainable energy integrated in all departments.” The almost complete Energy Strategy will be critical in achieving this.

Of course success brings its own demands. With sustainable energy issues gaining such prominence, and the targets of an Energy Strategy placing new demands on staff, Juan feels there is now the need for a full Energy Unit to implement projects on the ground. Never caught on the back foot, however, Tshwane has already asked those developing their energy strategy to explore and propose institutional models for such a unit.



## Key policy issues

Considering broad energy management in terms of service delivery is a relatively new concept within local authorities. Many still lack the capacity to take this forward, while others have made impressive strides.

An accepted set of data measures for routine data collection across cities to enable comparison over time and across cities is needed. Collecting data and bringing it to a central point requires dedicated capacity. This process is greatly enhanced when departments across the city can perceive a value in the process – thus systems should be designed to support departmental goals. The presence of an high level energy champion to lead inter-departmental cooperation also greatly enhances the process of collecting data from a diverse range of departments and sources within the city.

Effective energy data capture systems established possibly through Integrated Development Plan key performance indicators. These **must** reflect level of service for energy input and should include levels of investment in energy infrastructure amongst other measures.

Cities face substantial challenges regarding local, sustainable energy service development. Political support to city energy strategy implementation is critical. Ongoing capacity development of city staff and stakeholders is vital for energy development. Local CBOs, NGOs and research institutions have an important contribution to make to local level energy development and a sound network for ongoing consultation in local level policy development is important.