



Western Cape
Government



Game Changer Roadmap 2018
Energy Security
Version Dated August 2018



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Section 1



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Background: The Game Changers

“ It has become increasingly evident that we need a new way of delivery, one that is uncompromisingly results-focused and performance-driven. ”

Premier Zille, November 2014

On starting its second term of office in 2014, the Western Cape Cabinet reaffirmed its commitment to achieving its vision of creating a highly skilled, innovation driven, resource-efficient, high opportunity society for all.

While we have made progress in realising this vision since first coming into government in 2009, we recognise that there is still a lot to be done.

There are still many people living in poverty in the province and we face a number of challenges that serve as a hindrance to economic growth and job creation.

With this in mind, we focused on identifying top priorities over the five-year term, which could serve as catalysts for major improvements in people's lives, in particular, the lives of our young people.

As a result, we have committed to seven priority interventions which we have called Game Changers.

Our Game Changers are bold interventions that focus on either leveraging the best opportunities or tackling some of our greatest challenges in the province.

We have set ambitious targets under each Game Changer which, if achieved, will contribute towards accelerating economic growth, job creation and social inclusion. Our seven Game Changers are:

- Expanding Apprenticeship and Vocational Skills;
- Achieving Energy Security;
- Delivering High Speed Broadband;
- Implementing quality eLearning at schools;
- Expanding quality After School activities;
- Pioneering a major “live, work and play” development called the Better Living Model that integrates communities; and
- Reducing Alcohol Related Harms

We have also recognised that, for these Game Changers to make a discernible difference in our province, we need a new method of delivery – one that is innovative, uncompromisingly solutions-orientated, results-focused and performance-driven.

We have committed to this new methodology within provincial government in order to drive change in the Western Cape. In order to support this new approach, a Delivery Support Unit has been established in the Department of the Premier to provide strategic oversight and guidance to provincial departments and monitor the implementation of the game changer plans.

However, we also recognise that government cannot achieve progress alone.

We will only be able to achieve the targets set under our Game Changers through a whole of society approach, where national, provincial and local government work in partnership with business, civil society, communities and individuals.

This is what we mean when we say, “Better Together” and we look forward to working with all our partners to drive our Game Changers over the next few years.

Our 7 Game Changers in more detail:

GAME CHANGERS in the Western Cape

We have committed to 7 priority interventions called Game Changers that could serve as catalysts for major improvements in people's lives.



Game Changer

Apprenticeship

+534m for skills development over the next 3 years

32 500 employable TVET graduates by March 2019



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SAVE ENERGY,

buy independent power, and diversify the energy mix

135MW from solar panels by 2020, with residents feeding power back into the grid

Sufficient energy to power **ECONOMIC GROWTH**



Connect

Broadband

BROADBAND

at 1 900 public sites, with schools as the first priority

380 WI-FI HOTSPOTS

for free public internet access



eLearning

Connect & Learn

OVER 6000 TECHNOLOGY ENABLED CLASSROOMS

by end of 2016



Game Changer

After School

112 000 learners in no-fee schools accessing quality after-school programmes by 2019

300 after-school sites including MOD centres, libraries, partial care centres and Youth Cafés



Conradie

Better Living Model

INCLUSIVE CAPE TOWN multimillion rand development to transform old Conradie site

3 000+ residential units, business space, schools and green public spaces

AFFORDABLE HOUSING 50% of units reserved for people earning between R3 500 – R15 000 per month



Alcohol

Harms Reduction

STRONG PARTNERSHIPS with communities and law enforcement to reduce access to alcohol

ALTERNATIVES both economic and recreational so that communities drink less



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BETTER TOGETHER.



Section 2



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1. Introduction: The Energy Security Game Changer

The security of energy supply is recognised as playing a significant role in the development and resilience of modern economies. This is particularly true for developing countries like South Africa, where investment in rapid industrialisation and attraction of foreign investment remain critical for overall growth and ultimately the alleviation of socio-economic issues such as unemployment, poverty and crime.

Energy security not only relies on the reliability of installed generation, transmission and distribution infrastructure, but increasingly also on the diversity of the energy mix of the region. Different studies have shown diversity of fuels and technologies to be fundamental to a properly functioning and cost-effective electricity system as it assists in balancing the benefits, risks and costs associated with producing electricity.

The Western Cape Government (WCG) and the City of Cape Town (CCT) have identified the availability of quality, reliable and clean energy as a key strategic imperative in supporting continued economic and social development in the province. To this end, the Energy Security Game Changer was initiated in 2015 to ensure the long-term energy security through the availability of reliable, diverse and low carbon energy to support economic and social growth in the Western Cape by 2020.

This will be done by ensuring that available energy resources and infrastructure are utilised in an efficient and environmentally sound manner, as well as attracting sufficient investment into diverse and cleaner technologies in the province.

The four strategies that will give effect to this goal statement are shown in figure 1 below:

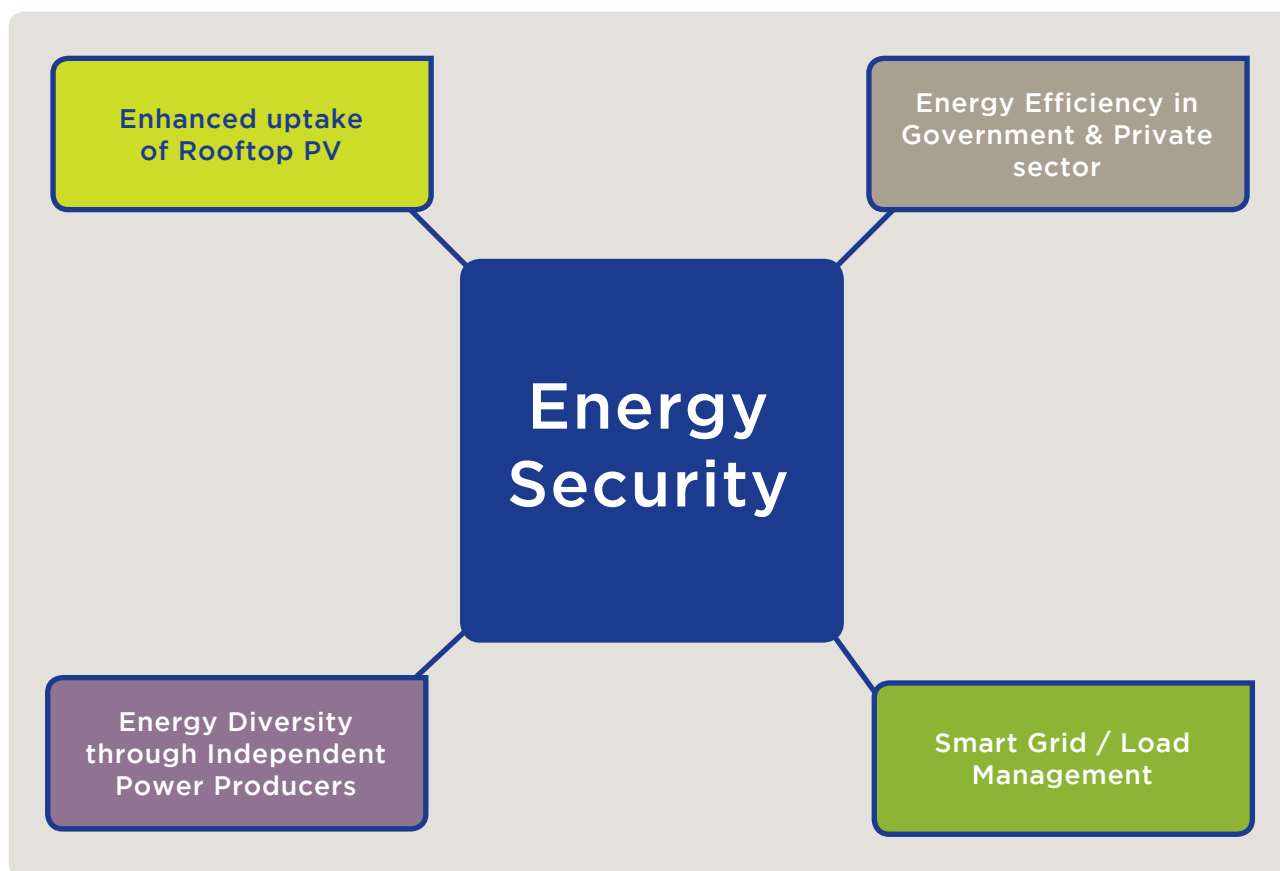


Figure 1: Energy Security Game Changer Levers

Clear targets have been set for each of the four strategies:



Enhanced uptake of rooftop Photovoltaic (PV): increase the contribution of rooftop PV to Western Cape electricity supply to 135 MW (just under the capacity of 4 Western Cape based wind farms) by 2020.



Reduced energy consumption in both public and private buildings: 30% reduction in energy consumption in provincial government buildings by 2020.



Smart Grid / Load management: the development of a grid management system that facilitates wheeling and manages peak demand.



Roll-out of Independent Power Producers (IPPs) and Liquefied Natural Gas (LNG): increased diversity of electricity supply in the Western through IPPs by 2020.



“If we want to continue on the upward trajectory of economic growth and job creation in Cape Town, we need to act now to make our city and province energy secure...”

We cannot leave the future of energy security in the hands of Eskom. We no longer want to merely be distributors of electricity but want to become energy creators as well.”



Patricia de Lille, Cape Town Mayor.

The Energy Security Game Changer is a joint effort by the Western Cape Government, the City of Cape Town and the five largest non-metro municipalities (Stellenbosch, George, Drakenstein, Saldanha Bay and Mossel Bay), but there is also increasing participation of other Western Cape municipalities. Successful implementation depends critically on the continuous engagement and co-operation of multiple stakeholders within both government and the private sector.

The Energy Security Roadmap was released in 2016, with this being the updated 2018 edition, to accommodate changes that are taking place in this critical sector. In summary, Small Scale Embedded Generation (SSEG) has grown significantly in importance, with the resultant emergence of the potential of wheeling of energy between small scale generators on a municipal grid, together with private energy trading.

2. Overview: Vision and Strategy for Change

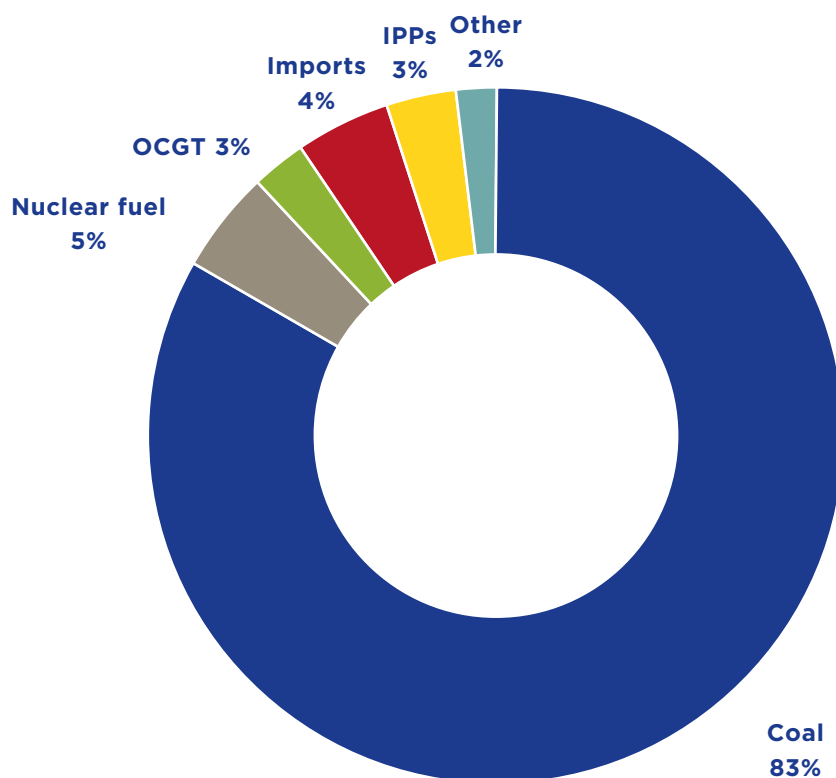
a. The Challenge

The need to define a new energy future for the province is the overriding imperative.

Climate change and its effects has been recognised as a global challenge, and there has been a renewed commitment by the international community to rigorously investigate and implement ways of transitioning to a low carbon economy. The advancement in the development of affordable, scalable and clean energy solutions has presented many nations, including South Africa, with the opportunity to re-imagine and re-design their energy futures in an effort to increase their resilience.

South Africa has made major strides in incorporating clean energy into its energy mix, with the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) having procured approximately 6000 MWp of renewable energy (RE) since its inception, with just less than 3000 MWp of it commissioned and connected to the grid. However, as illustrated in Figure 2, South African electricity generation still relies heavily on coal, with over 80% of electricity generation still being derived from fossil fuels.

Figure 2: Electricity generated in South Africa (Source: StatsSA)



Considering the significant improvement in the price competitiveness of renewable energy technologies, and the abundance of renewable resources in South Africa (particularly solar radiation and wind), RE is expected to play a greater role in the energy mix of South Africa as it moves towards becoming a cleaner economy with a low carbon footprint.

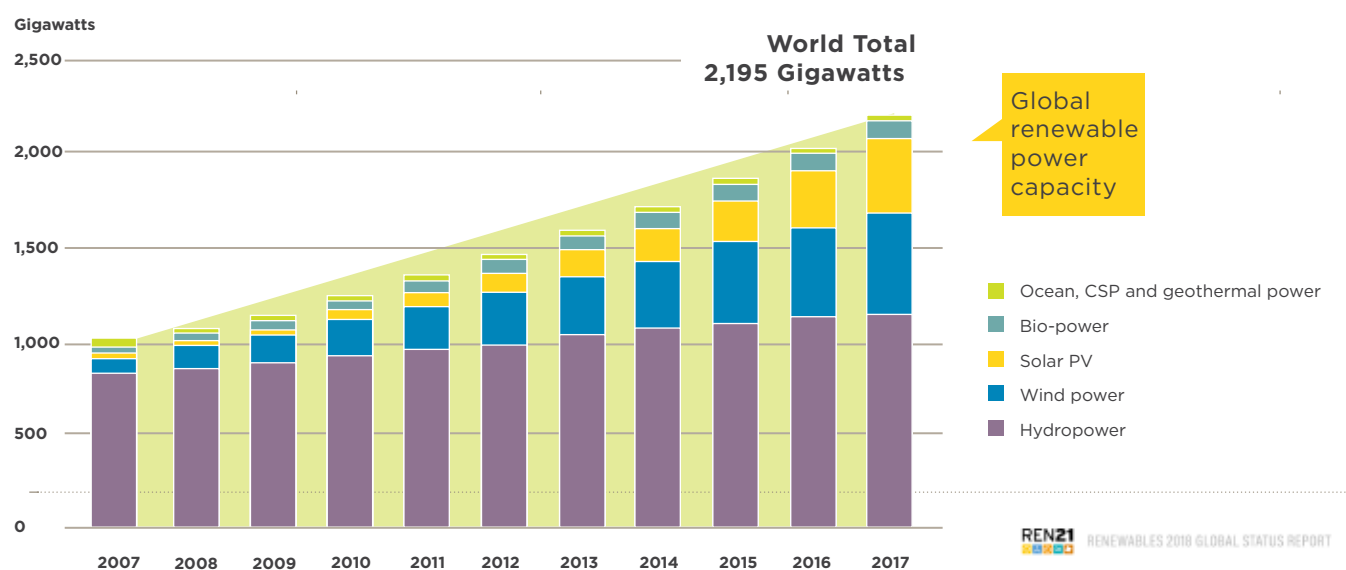
Global trends in power generation

According to REN21's Renewables 2018 Global Status Report, "2017 was another record-breaking one for renewable energy, characterised by the largest ever increase in renewable power capacity, falling costs, increases in investment and advances in enabling technologies".

Renewable energy accounted for an estimated 70% of net new global power generating capacity in 2017, largely due to the continued improvements in the competitiveness of solar PV and wind power. 2017 saw more solar PV capacity being added than the net additions of fossil fuels and nuclear power combined.

Figure 3: Global Renewable Power Capacity, 2007-2017¹

Global Renewable Power Capacity, 2007 - 2017



The global investment in renewable power has continued to grow with 2017 seeing an investment of USD 279.8 billion (if hydropower projects larger than 50 MW are included this increases to USD 310 billion), the eighth year in a row where investments have been over USD 200 billion. This investment is three times that being invested in fossil fuel capacity. This has led to renewable energy producing an estimated one fifth of the world's electricity in 2017, up from 6.9%, in 2011. In 2016, renewables generation prevented the emission of some 1.7 gigatons of carbon dioxide.

There has been growing investment in energy smart technologies. Asset finance for smart meters and energy storage, plus equity raised for specialist companies in energy efficiency, storage and electric vehicles, totaled a record \$41.6 billion in 2016, up 29%.

Despite the record installation of renewables, and the unprecedented activity in energy smart technologies, overall energy-related carbon dioxide emissions continue to run at more than 32 gigatons per year.

Reliability of South Africa's Generation Fleet

As witnessed during the recurring national power shortages in 2015, the disruption of electricity supply not only has an adverse impact on the personal lives of energy consumers, but also impacts negatively on economic growth and has an unfavourable bearing on its outlook as an investment destination.

¹Author: Ren21, The Renewables 2018 Global Status Report is available at <http://www.ren21.net/status-of-renewables/global-status-report/>

There has been notable improvement in the general performance of the Eskom generation fleet in the recent past, with the average Energy Availability Factor (EAF) increasing from an average of 70% in 2015 to approximately 77.3% in January 2017, and a concerted effort made to implement the planned maintenance interventions required to ensure the continuous reliability of installed infrastructure.

This improvement has resulted in a 1.1% year-on-year increase in electricity generation (production) as of September 2017, with seasonally adjusted electricity generation decreasing by 1.8% in the third quarter of 2017 compared with the second quarter of 2017. Although there is no apparent threat of imminent power outages, the short-to medium-term outlook for security of supply remains uncertain. Currently, at periods of peak demand, the recorded reserve margins are still significantly below the desired international standard of 15% of total demand. In addition, Eskom is facing increasing challenges with coal supplies. Looking ahead, with most of the Eskom coal generation fleet nearing end of life and approaching decommissioning, the challenge of a constrained grid will only worsen in the coming years if there is no new generation capacity being commissioned.

Therefore, there remains an urgent need to diversify energy sources that are cheaper, sustainable and cleaner.

The message in short therefore is that there is insufficient power to support the economic growth rates that the Western Cape is aspiring to, and even a slight uptick in the economy could result in power outages. So, we are not out of the woods, and a special effort is needed to change the energy landscape of the Western Cape to support economic and population growth.

b. Our Goal

Levers of Change and Key Performance indicators

“ To ensure energy security that supports economic growth in the Western Cape, incorporating diverse and low carbon sources of energy by 2020 ”

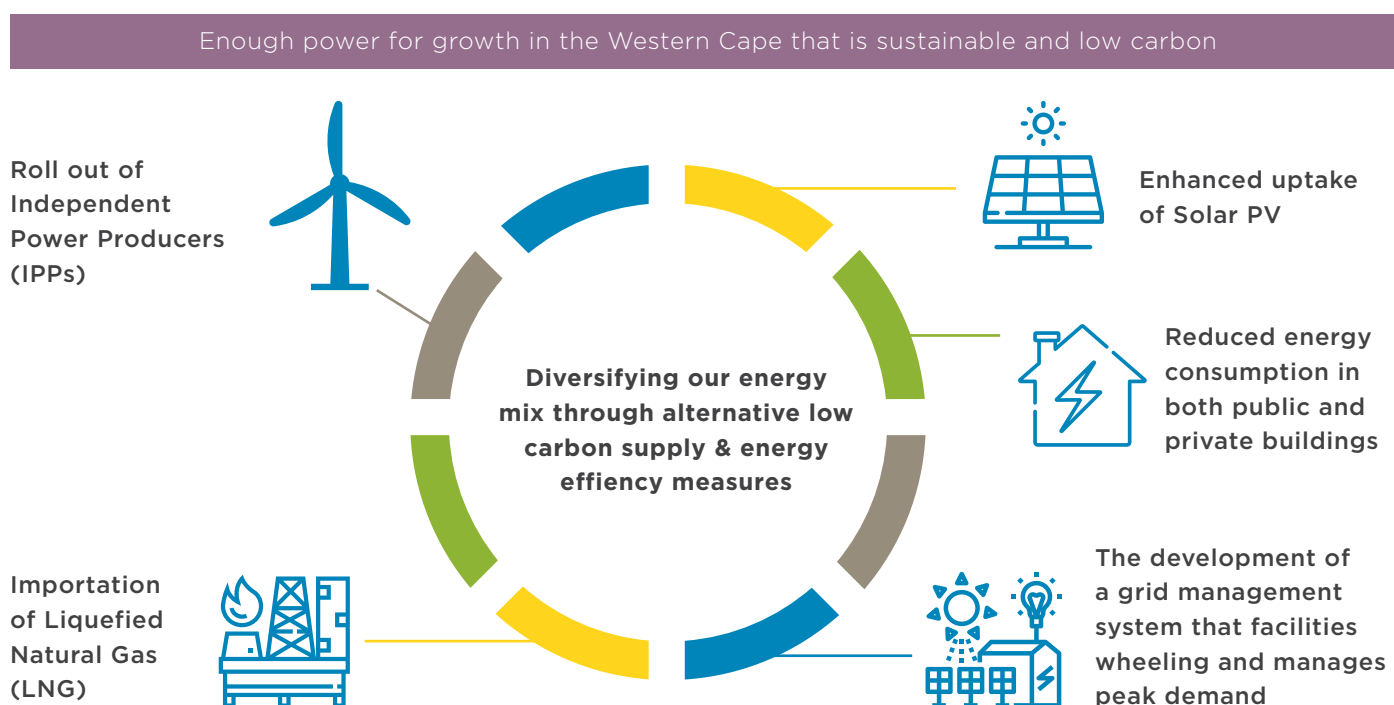
Our key performance indicator for the goal is a **10% reduction in demand from Eskom.**

This will be achieved through a number of levers to change the energy demand patterns in the Western Cape, with a focus on small scale embedded generation (SSEG), particularly Rooftop Solar PV, and more efficient management of energy usage by government, businesses and households. While the municipal procurement of electricity from IPPs has not yet been legally resolved, and the Gas IPP process has stalled, there will be continued intensive lobbying by the WCG over the remaining period of this game changer.

Figure 4 details the levers of change and the desired outcomes.

Through a process of stakeholder engagement, the targets and indicators for the different levers were agreed. Each lever has specific outcome(s), with indicators and progress targets for each year leading up to 2020.

Figure 4: Outcomes of the Energy Security Game Changer



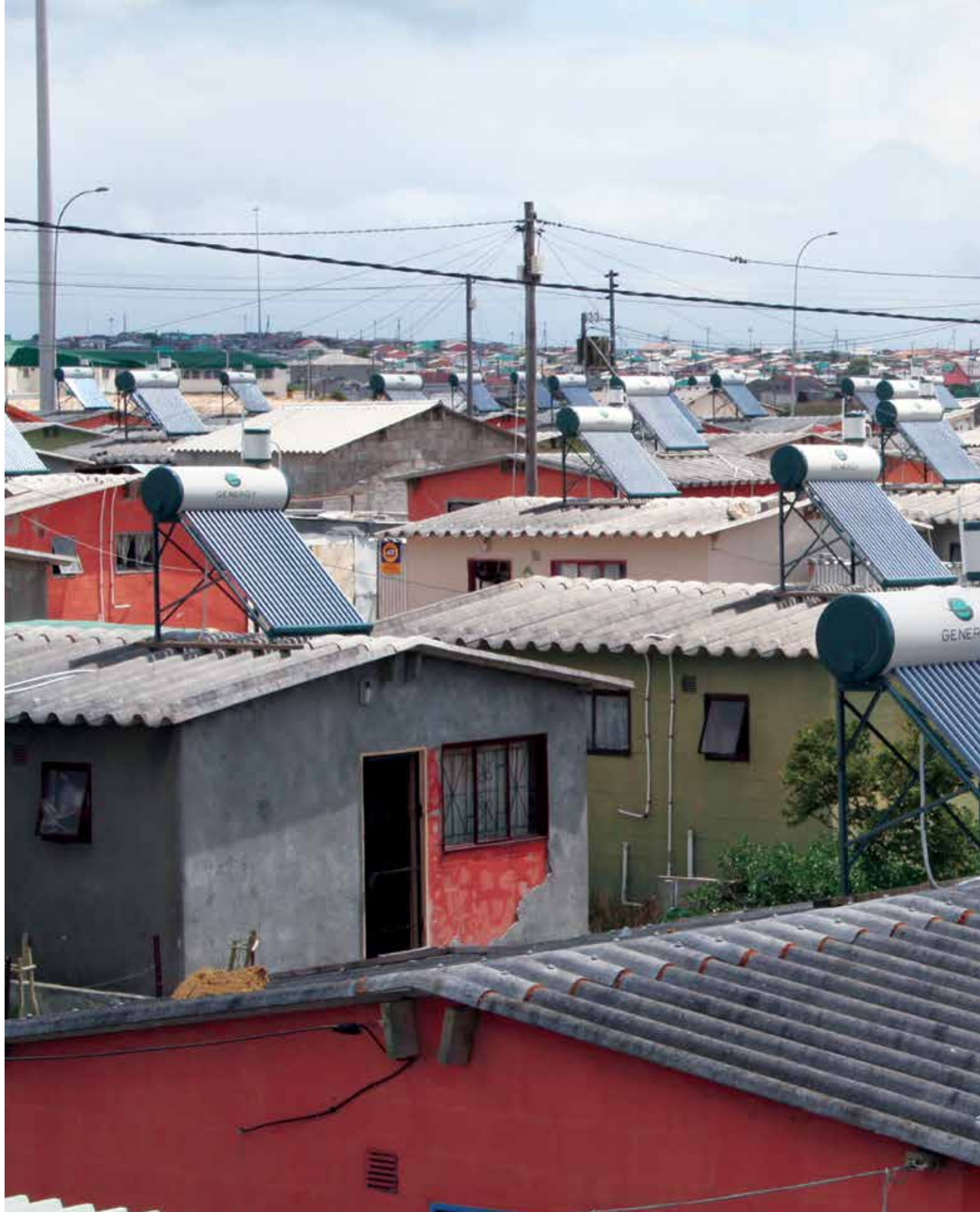
Energy efficiency has to be the first intervention by businesses and households. As a demonstration of leadership and commitment, the WCG has set an ambitious target of energy saving for its building facilities and has made excellent progress. In addition, it has rolled out rooftop solar PV on various provincial buildings and is using new delivery and financing mechanisms to support and speed up the necessary investment in energy efficient technology.

Alternative energy sources are the major focus of this Game Changer to change the energy landscape.

Our primary strategy is the introduction of Small-scale Embedded Generation (SSEG) on a wide scale, with the key focus on **rooftop solar PV installed in the first place by businesses** and then by households (the cost is still high for households). Crucial to our strategy is to ensure that households and businesses stay on the grid and feed the solar energy that they are not using back into the grid, for which they receive a payment. This ensures there is a benefit to the municipality – the consumer continues to support grid maintenance and investment through their own usage of municipal power and through supplying additional energy into the grid. There is also a benefit to the consumer, as the effective payment from the municipality for their power contributes to their investment in solar PV, making it much more cost effective.

This Game Changer has had considerable success in getting the system in place to enable the take-up of rooftop PV. Cape Town was the first municipality in South Africa to receive approval from the energy regulator (NERSA) for a feed-in tariff for rooftop PV, and through this game changer, the WCG government and its partner, GreenCape (which supports businesses to invest in the green economy) have worked with other municipalities to get tariff approval from NERSA. To date, 22 municipalities allow grid-tied rooftop solar PV and 16 have feed-in tariffs in place. The support provided to municipalities to adopt the necessary policy, by-law and feed-in tariff has been endorsed by SALGA and the Association of Municipal Electricity Utilities (AMEU) as the standard to follow. Another key focus is to ensure installation costs are brought down through a number of key interventions.

Overall, this Game Changer's work to support investment in rooftop PV has been highly innovative, having provided the necessary framework for municipalities throughout South Africa and not just in the Western Cape. Global shifts in renewable technology and investment have confirmed that we are very much on the right path. We will continue with our work to bring in **liquefied natural gas (LNG)** into the West Coast as this is a new energy source that complements renewables. While the introduction of LNG is the responsibility of national government, the WCG is playing an important facilitating role to support the decisions that need to be made for an LNG roll-out, in particular through providing research and expert knowledge.



Section 3



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3. The Delivery Plan: What success looks like

Lever 1: Increased Solar PV Uptake

With the remarkable solar resources that South Africa has, PV technology is an obvious low carbon consideration. The extension of PV technology utilisation is therefore an integral part of the Energy Security Game Changer. This lever aims to increase the uptake of rooftop PV to 135 MWp by 2020. The focus is on encouraging both businesses and household consumers to consider the benefits of taking up PV while remaining on the grid. While this will rely primarily on increasing awareness, it will also require a concerted effort to ensure that there exists a favourable environment for SSEG in the Western Cape.

The success of this lever will rely on the availability of national SSEG guidelines that promote SSEG, affordable Smart Meters and a national DC wiring standard, all of which are outside the direct control of the Western Cape Government. However, through consistent lobbying and engagement by the WCG and GreenCape with the relevant national authorities, significant influence is being brought to bear on these processes. Considerable success has also been achieved in ensuring that municipalities have the appropriate structures and systems to support legal expansion of PV usage, with smart meter standards approved in 2017.

Additionally, efforts are being made to unlock the financing mechanisms for Rooftop PV, which have been identified as a key driver for uptake.

| Outcome: Increase the uptake of rooftop PV Overall Target: 135 MW in the Western Cape by 2020 | | |
|--|--|---|
| What Does Success Look Like (Annual Targets) | | |
| 2016 - 2017 | 2017 - 2018 | 2018 - 2019 |
| <ul style="list-style-type: none"> Communication campaign developed and implemented for businesses (with differentiation between CT and non-metro/ and between sectors) | <ul style="list-style-type: none"> Communication campaign developed and implemented for business. 33 One-on-ones with CEOs completed | <ul style="list-style-type: none"> Communication campaign developed and implemented for business 26 One-on-ones with CEOs completed |
| <ul style="list-style-type: none"> Smart meter standard approved. National DC wiring standards developed. SSEG Tariff Guidelines adopted. Competency test developed for PV installers and accepted by CCT. System in place with installers to receive data on quarterly basis | | <ul style="list-style-type: none"> National DC wiring standards approved |
| | <ul style="list-style-type: none"> Engagement with 2 banks on commitment to funding in the SSEG market | <ul style="list-style-type: none"> Green Finance report for industry on various finance options developed to increase PV uptake |
| | <ul style="list-style-type: none"> Complete investigation into PV localisation requirement | <ul style="list-style-type: none"> PV localisation investment increased |

| | | |
|---|---|---|
| <ul style="list-style-type: none"> • SSEG Tariffs applications submitted to NERSA for 12 munics by Jan 2017 (4 by May 2016) • SSEG systems in place for 5 local munics (IT/ billing System, business processes, support, capacity to deal with applications, data requirements) | <ul style="list-style-type: none"> • Additional 7 munics with SSEG systems in place • Additional municipalities SSEG tariffs submitted (20 by 2020) | <ul style="list-style-type: none"> • Further support municipalities with expertise and capacity for implementation of SSEG policies. |
|---|---|---|

Lever 2: Energy Efficiency in Government Buildings

Energy efficiency is viewed as the “first fuel” of sustainable energy practices, with the focus on doing more with less through behaviour change and/or the installation of new technology. The marketplace for energy efficiency has grown rapidly, being driven by increased awareness of the need to reduce carbon emissions, rising electricity costs, and the improvements in and financial returns of energy-efficient technologies. This second lever places the focus on the WCG leading by example through reducing consumption across provincial building portfolios and exploring innovative models to do so in order to reduce impact and relieve tight budget constraints.

In the wake of the extreme drought being experienced in the Western Cape, there has been a drive to expand the energy efficiency programmes to include much-needed water saving interventions – in other words, putting the emphasis more broadly on resource efficiency. However, some provincial departments, such as Agriculture and Health, have had to shift resources to water efficiency which has slowed down implementation of energy efficiency initiatives.

In partnership with the City of Cape Town, a study was recently completed to verify the level of compliance with SANS 10400 XA2 Energy Efficiency Standard for water heating in the municipality. The research indicated a good level of compliance with the requirements of SANS 10400 XA2 but identified a few process issues which are being dealt with. The Energy Security Game Changer has extended this work to the largest local municipalities, namely Drakenstein, Stellenbosch and Saldanha Bay municipalities. To make the work useful for these municipalities, the compliance checking has been undertaken as new buildings undergo the inspection process, as opposed to retrospective analysis.

| Outcome: 30% reduction in energy usage in government buildings by 2020 | | |
|--|--|---|
| What Does Success Look Like (Annual Targets) | | |
| 2016 – 2017 | 2017 – 2018 | 2018 – 2019 |
| Department of Transport & Public Works | | |
| <ul style="list-style-type: none"> • PV installations in 5 buildings • Metering installed in selected buildings • Signed Green Lease Addendums in place with Landlords • 5th Property Efficiency Report published • Feasibility of ESCo pilot assessed | <ul style="list-style-type: none"> • Expand PV installations where cost effective • Expand installation of smart metering (budget dependent) • 6th Property Efficiency Report published • Green Lease Arrangements signed with 5 landlords • ESCo pilot tender implemented | <ul style="list-style-type: none"> • Expand PV installations where cost effective • Expand installation of smart metering (budget dependent) • 7th Property Efficiency Report published |

| Department of Agriculture | | |
|---|--|---|
| <ul style="list-style-type: none"> Completed energy audit of Elsenburg and Kromme Rhee with recommendations for potential savings. | <ul style="list-style-type: none"> Behavioural change interventions implemented Tariff switching for Agri Accounts implemented Ways of monitoring energy consumption devised and implemented Energy savings implemented | <ul style="list-style-type: none"> Expand metering and facility management training to experimental farms Installation of PV at Elsenburg and Kromme Rhee |
| Department of Health | | |
| <ul style="list-style-type: none"> DoH energy champion appointed. Metering implemented in identified WC hospitals. Cost recovery programme implemented. Behavioural change programme initiated. Appropriate engineering interventions implemented. System in place to incorporate energy efficiency into new designs. | <ul style="list-style-type: none"> Replace chiller water plant in Groote Schuur Investigate feasibility of PV in hospitals Load analysis for identifying wasteful practises in hospitals Identification and mentoring of energy champions at hospitals Big switch off campaign implanted Cost recovery based of metering data implemented Ongoing replacement of direct water heating with heat pumps | <ul style="list-style-type: none"> Big Switch-Off Campaign run Energy efficiency implemented via EScO contract BMS upgrade / replacement at underway at Groote Schuur and Tygerberg hospital to facilitate improved energy management and cost control on the introduction of TOU energy tariff. |
| Energy Efficiency in the Residential Sector | | |
| <ul style="list-style-type: none"> Conduct inspections in City of Cape Town and Drakenstein Municipality. | <ul style="list-style-type: none"> A simplified methodology of enforcing SANS10400XA is piloted in identified municipalities. Green Home Checklist piloted with an estate agent. | <ul style="list-style-type: none"> Roll out of SANS 10400XA reporting to 3 municipalities across the province. Roll out of Sustainability Checklist with one estate agent in the Western Cape. |

Lever 3: Load Management and Storage

One of the energy challenges South Africa has faced is not having electricity at certain times of the day, called 'peak times'. The country's generation capacity must match electricity demand at peak times, and to do this Eskom must keep its nuclear and coal-fired power stations continuously operational, which provides a baseload power that is often in excess of what is required in the country, especially at night.

If South Africa were able to shift significant electricity demand away from the peaks, the following would be the benefits:

- More of the excess electricity supply would be utilised during "off-peak" times, resulting in more efficient use of generation capacity;
- The grid would be more stable, as it would not have to deal with such significant fluctuations in energy usage and would not take as much strain when demand is very high;
- South Africa would require less generation capacity;
- The City would save significant amounts of money, as they are charged "time of use" and "maximum notified demand" tariffs by Eskom: when the peak times occur, tariffs are at their highest, and the City is actually

subsidising consumers. By shifting demand from the peaks, the City saves money, and this places a downward pressure on tariffs (and results in other benefits that accrue with City savings, such as increased service provision);

- Should South Africa experience significant supply constraints similar to previous load-shedding periods, it could avoid some of the load-shedding if overall electricity usage patterns had shifted to provide a more equitable distribution of demand throughout the day.

The City has utilised its load management mechanisms of Steenbras Dam (pumped storage) and diesel turbines. The current focus is to shift certain customer segments to a Time of Use Tariff (TOU), starting with the City's Large Power Users.

A new and innovative focus of the Game Changer in the coming period will be on wheeling and private energy trading. These present alternative electricity supply options, especially for municipalities facing constrained supply from Eskom, and they will catalyse rooftop PV uptake in the province. Energy trading strategies and their implementation are being investigated in conjunction with municipalities, and there has been significant interest.

| Outcome: A grid management system is in place in the City of Cape Town which facilitates wheeling and manages peak demand. | | |
|--|---|--|
| What Does Success Look Like (Annual Targets) | | |
| 2016 - 2017 | 2017 - 2018 | 2018 - 2019 |
| | <ul style="list-style-type: none"> Communication Campaign for Time of Use Tariffs for Residential and Commercial | <ul style="list-style-type: none"> Introduction of Time of Use Tariffs for Large Power Customers and Voluntary TOU for Commercial Small Power Customers |
| | | <ul style="list-style-type: none"> Smart Meter tender awarded by CCT. |
| | <ul style="list-style-type: none"> Private-to-Private energy sales pilot initiated in one municipality CCT draft wheeling framework completed | <ul style="list-style-type: none"> Private-to-Private energy sales pilot implemented in one municipality CCT start process to test wheeling |

Lever 4: Increased diversity of electricity supply in the Western Cape

All of the electricity in the Western Cape is supplied by Eskom, and it is generated from a nuclear plant (Koeberg) and from coal-fired power stations. Half of our electricity supply is imported into the Province from Eskom power stations in Mpumalanga, resulting in transmission losses.

It is the overall goal of the game changer to diversify both the forms of energy and the providers of that energy, and to ensure that this is low carbon. This requires Municipalities in the Western Cape – in particular the City of Cape Town – to be able to enter into Power Purchase Agreements with Independent Power Producers who are able to generate power from wind and solar resources. The City requested a Ministerial Determination to this effect from the Minister of Energy in 2017; in the absence of a positive response, the City has filed court papers in

which it is requesting clarity on the interpretation of the law that prohibits municipalities from buying electricity from independent producers without the Minister's permission.

In addition, the WCG wishes to introduce natural gas into the Western Cape so that industries can switch from other fuel sources, such as coal and heavy fuel oils. This will overall provide cheaper energy and will also cut down significantly on greenhouse gas emissions. The central goal of this lever is to facilitate the importation of Liquefied Natural Gas (LNG) into Saldanha Bay, the development of gas-fired power, and the industrial uptake of gas in preparation of its availability. Although Saldanha Bay was not chosen as a location for the Department of Energy's Gas-to-Power IPP Phase 1 Programme, the WCG is actively exploring projects outside of the IPP Programme. The WCG has secured funding of R11 million from the USTDA to update gas demand for industrial purposes and to conduct an in-depth assessment of the socio-economic impact. Further funding is being sought from the DBSA for a full-scale infrastructure feasibility study.

| Outcome: Increased diversity of energy supply in the Western Cape | | |
|---|------------------------------|--|
| What Does Success Look Like (Annual Targets) | | |
| 2016 - 2017 | 2017 - 2018 | 2018 - 2019 |
| • n/a | • Secure funding from USTDA. | • USTDA funded study completed. |
| • n/a | | • Secure DBSA funding for infrastructure feasibility study. |
| • n/a | | • City / DoE legal case settled out of court, alternatively case listed on the court roll. |

Special Projects

Creating an Enabling Environment for the Uptake of Electric Vehicles

A new focus area for both the WCG and City of Cape Town is electric vehicles (EVs). Globally these are seen to be a big disruptor in both the energy and transport space, with projections indicating that all new mass market vehicles will be electric by 2030. While the uptake may be slower in developing economies such as South Africa, it is critical for the Western Cape to be prepared by creating an enabling environment and identifying what economic and job opportunities can be harnessed in the province. A key area of interest for the Energy Security Game Changer is to ensure that there is an alignment with the use of solar PV when rolling out electric vehicle charging stations. To this end an electric vehicle framework for the province will be developed.

Guiding IPPs in investing their Socio-Economic Development Spend

With the signing of the latest round of REIPPPP projects, the Western Cape is set to have an additional 3 renewable energy power plants built. This will bring the total number of IPPs in the Western Cape to 12. A critical element of the REIPPPP programme is for IPPs to spend at minimum 1.5% of their revenue on enterprise development and socio-economic development in the surrounding communities, as well as establishing a community trust which owns a portion of the IPP. This presents a significant flow of funds over a 20-year period into these communities. Based on discussions with a number of IPPs and stakeholders, the Game Changer has begun a programme of engaging with the new and existing REIP projects to guide the nature of their investment, in line with provincial priorities and our understanding of the development needs in the targeted communities.



ANNEXURES



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Annexure A

Performance Tracking

a) Background

The successful implementation of a Game Changer relies heavily on the ability to track the performance of the people, processes and systems that will ensure that all targets are meant on time. There are a number of guiding principles related to the performance tracking of the game changers:

- **Real-time data:** where possible, systems have been put in place to ensure real time data is collected and fed through to the game changer teams. Too often, project teams are reliant on outdated data to make critical project decisions.
- **Relevant indicators:** significant effort was spend selecting a core set of indicators that will provide regular updates on the progress of the game changer strategies and programmes.
- **Utility and usefulness of the data:** data is used to determine whether the interventions and projects are making the anticipated difference. The data is therefore not used for compliance but for improvement and refinement purposes.

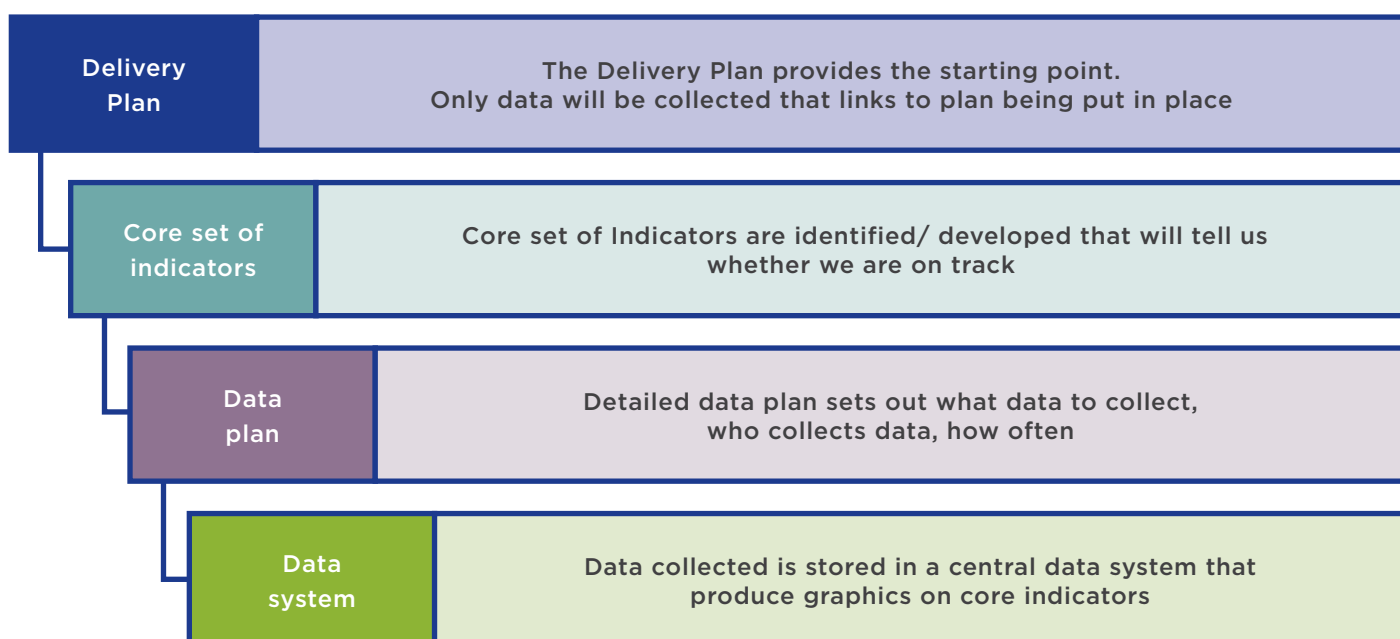
There are 3 key performance tracking tools to track progress of the game changers:

- The data plan determines what data needs to be collected and covers the tracking of outcomes, deliverables and milestones
- KPI level Targets and Trajectories
- The Premier's Stocktake report which has changed from a six weekly feedback to a quarterly feedback to the Premier and the responsible Provincial Ministers and departmental leadership to assess if the game changer is on target and the deliverables and milestone activities are being met.

Data plan

The performance tracking process starts with the finalisation of the delivery plans, followed by the identification of a core set of indicators that track the progress of the Game Changer. This informs the data plan, which feed into an integrated data system where all data is stored.

Figure 5: performance tracking process



In the Energy Security Game Changer, progress is tracked at the goal level, lever level and outcome level. Deliverables and milestones are tracked in the stocktake report and is therefore not included in the performance tracking plan. The strategies under Lever 3 and lever 4 do not have data attached to it currently, and hence no outcomes are being tracked for these levers. Instead, the progress in implementing these strategies is tracked through the milestone report. Table 1 below therefore only contains indicators for Lever 1 and Lever 2 as these are the areas of work where outcomes are anticipated to transpire during the Game Changer term:

Table 1: Energy Security data plan per lever

| Lever | Indicators that are tracked | Data source |
|-----------------------------------|--|---------------------------------------|
| Lever 1: Rooftop PV | Total MW installed from rooftop PV | PQRS and GreenCape |
| | % of surveyed businesses that a) are aware of the benefits of staying connected to the grid and b) are aware of the Switch and Save communication campaign | Business survey |
| | Average PV product Price | GreenCape |
| | Number of munics with an approved NERSA tariff in place | GreenCape |
| | Number of approved rooftop PV applications per municipality | Respective munics in the Western Cape |
| Lever 2: Energy Efficiency | DTPW & DOA: % reduction of energy consumption | Respective Government departments |
| | DTPW: kWh/m2 reduction | DTPW |

The performance tracking (data) plan expands on the indicators contained in Table 1 and includes the following detail:

- A description of the indicator, Target for the indicator (if available)
- Baseline value for the indicator
- The frequency of collecting data on the indicator
- The source of the data – i.e. where does this data come from.
- Person responsible for collecting the data on the indicator

Systems have been put in place the past two years to report on the progress of the indicators listed in Table 1 above. The data is utilised in many ways:

- a) included as part of the stock take reports to show progress on outcomes;
- b) to refine and improve the interventions and strategies to identify and remove possible blockages in delivery of projects;
- c) To keep key stakeholders informed of game changer progress

Stocktake report

The stocktake report conveys the overall performance of the Game Changer at a particular point in time. The stock take report therefore supports the tracking of progress in the following ways:

- Ensuring momentum of delivery is maintained through tight deadlines
- A focus on the key milestones for each outcome through a four-tiered assessment framework of green, amber green, amber red and red
- Continuous tracking of overall progress towards both outcomes and goal statement (see KPI level trajectory below)
- Using the data to ensure constant influence of the executive to drive delivery

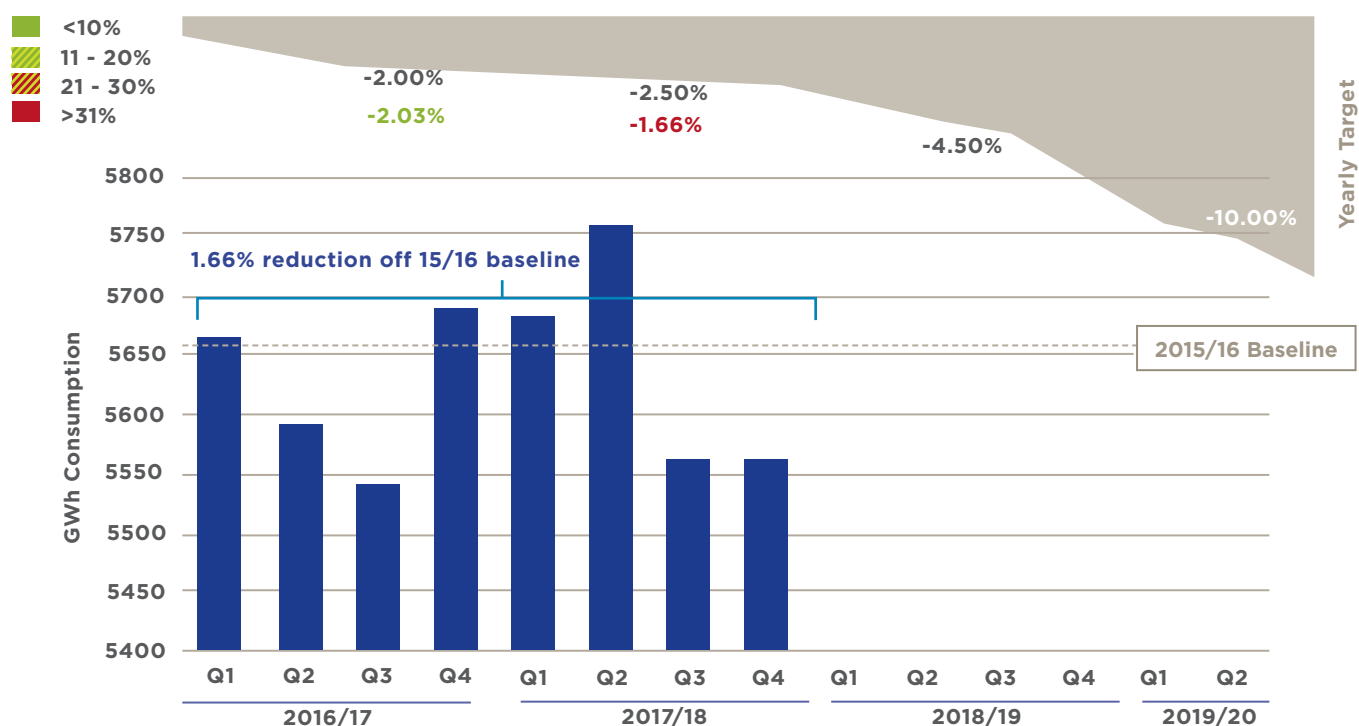
It is not feasible, nor possible to report on all indicators at each stock take and consideration therefore needs to be given to the availability of data. The overarching aim in terms of presenting and reporting on the indicators is to provide coherent storyline of the progress of the Energy Game Changer.

KPI level trajectory

A trajectory is an estimated projection of an indicator's path over time from its baseline to the ultimate target. Trajectories were developed for KPIs of all the Game Changers but ultimately trajectories can also be developed for levers or at the outcome level. Trajectories assist in understanding the game changer's progress towards its target and provides an early warning should there be a gap between planned performance and actual performance. The progress towards the KPI is included in most of the stock takes.

The KPI level trajectory for the Energy Security Game Changer is depicted figure 6 below. The top grey bar indicates the trajectory to meet the 10% reduction in electricity consumed from Eskom with the percentages as the annual targets off of the 2015/16 baseline. The bar chart shows the quarterly progress in electricity consumed from Eskom.

Figure 6: KPI trajectory for the Energy Security Game Changer



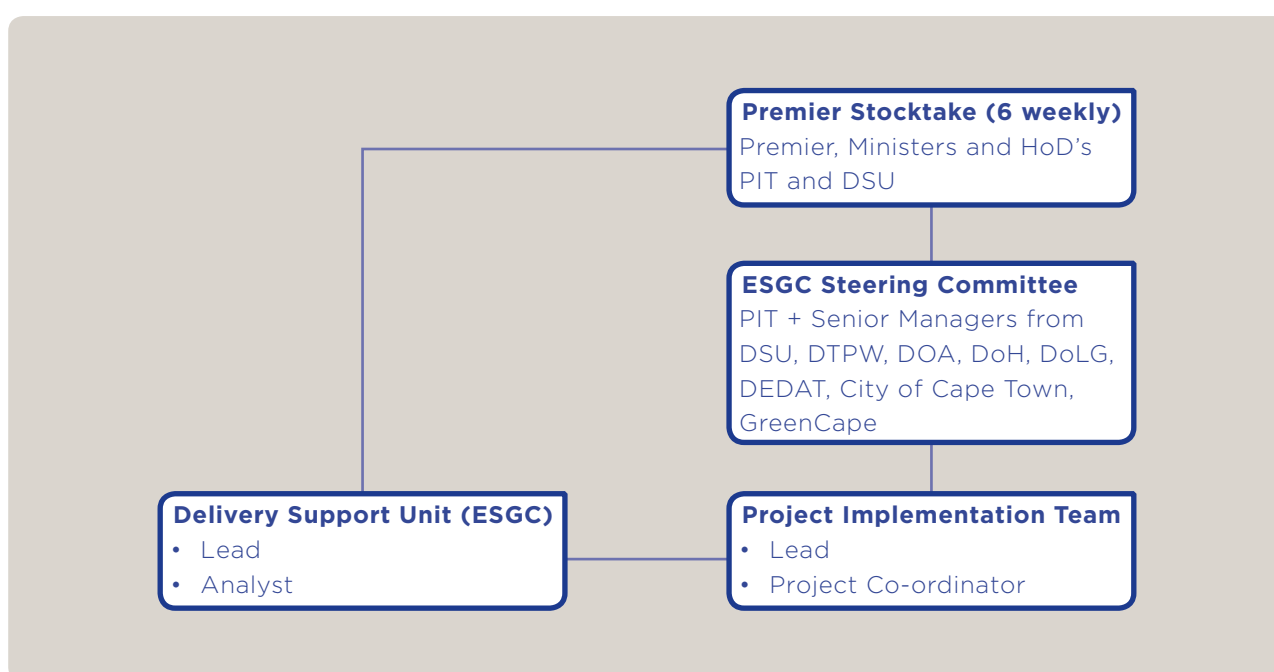
Source: Eskom

Annexure B

Leadership and Governance

There is an established and adequately staffed structure responsible for leading and managing the Energy Security game changer with the single accountable person being the Game Changer lead in the Department of Economic Development and Tourism. WCG, City of Cape Town and GreenCape convene regular management meetings to ensure momentum is maintained, with a high-level steering committee in place. Importantly, the main role players in the project report directly to the Premier of the Western Cape at a regular Stocktake Meeting, with performance tracked and evaluated in detail to ensure problems and blockages are resolved quickly and new solutions developed.

Figure 7: Energy Security Game Changer Governance Structure



Annexure C

Communication strategy and plan

1. Introduction

The Western Cape Government and the City of Cape Town are working together on an Energy Security Game Changer that is focused on both saving and generating energy in the province.

The main aim under this game changer is reducing the province's energy demand by 10% over the next few years. We aim to do this by diversifying our energy mix and promoting energy efficiency measures, while addressing the impacts on municipal revenues. A number of other municipalities are also partnering with us on this game changer including Stellenbosch, George, Drakenstein, Saldanha Bay and Mossel Bay.

Critical to achieving the targets set under our Energy Security Game Changer is citizens and business partnering with us and becoming more energy efficient. This is going to require some behavioural change amongst citizens and business. A proactive communication and advocacy campaign driven by the Western Cape Government (in partnership with municipalities) is going to be critical to motivating people to make a significant, sustained change to their energy usage.

2. Key success factors

Key success factors to ensuring this behavioural change include the following:

- Strong leadership
- Close collaboration between the Western Cape Government and municipalities and other stakeholders working in the energy security field
- A strong business case for becoming more energy efficient
- Communication and advocacy
- Relevant, compelling content

3. Objectives

Our objectives are to:

- Build support for the Energy Security Game Changer; and
- Encourage citizens and business to take steps to become more energy efficient and generate their own energy.

We will do so by providing relevant information and advice, and by engaging stakeholders using a variety of communication channels.

4. Stakeholder groups

We have to provide information to various groups of stakeholders on the game changer and the role they need to play in achieving our targets.

Our messages must include a mix of content catering for each stakeholder type, to address different kinds of issues that may concern them.

Our stakeholders include the following:

- Citizens (differentiated according to LSM groupings of: 1-3; 4-6 and 7-10)
- Business sector;
- Agricultural sector;
- Stakeholders working in the energy field;

- Municipalities
- National government departments
- Media

4.1 Stakeholder needs

Various stakeholders need specific information on the steps they can take to become more energy efficient, in addition to general information on the game changer.

Specific areas of interest include the following:

Citizens: need general information on the game changer, information on the steps they can take to become more energy efficient (ranging from no-cost steps to investing in products that will result in saving electricity and financial savings), best practice examples and regular updates on game changer progress.

The Business sector: need general information on the game changer, information on the steps they can take to become more energy efficient (ranging from no-cost steps to investing in products that will result in saving electricity and financial savings), the business case for the legal installation of grid-tied rooftop PV, best practice examples and regular updates on game changer progress.

The Agricultural sector: need general information on the game changer, information on the steps they can take to become more energy efficient (ranging from no-cost steps to investing in products that will result in saving electricity and financial savings), the business case for the legal installation of grid-tied rooftop PV, best practice examples and regular updates game changer progress.

Stakeholders working in the Energy field: need information on how they can partner with the provincial government and provide focused support in specific areas.

The **media** need updates on the progress of the game changer, examples of best practice, and news on key developments and the achievement of key milestones.

We will tailor content for specific interest groups while also providing information on the programme in general.

5. Key messages

At the beginning of 2016, just before the official launch of the Game Changer, surveys with households and businesses on their energy usage and attitudes when it comes to becoming more energy efficient were conducted. A total of 1319 household surveys and 293 business surveys were completed in Cape Town, Saldanha, Drakenstein and Stellenbosch.

The results of the surveys indicated that one of the core messages of the campaign to both households and businesses must be the cost savings related to becoming more energy efficient. Households and businesses need to be informed of the steps they can take to save electricity and how this will benefit them financially. As many of the households and businesses surveyed had already taken some no-cost steps around their homes, this is an opportunity to encourage further behaviour change and investment.

Based on the research, the game changer tagline is 'Take Charge, Switch and Save' as indicated in the identifier below.



Two secondary messages coming out of the research which will be used as part of our campaign is the positive impact saving electricity will have on:

- 1) The environment; and
- 2) Relieving pressure off the national grid.

Finally, the research survey also asked households and businesses what and how government should be communicating on when it comes to energy security (the how is discussed in the below section).

Households and businesses both wanted more information on the current electricity challenges and what government is doing to address this problem. Our messages will address the needs of each stakeholder group.

The importance of partnerships was a key message at the launch of the Energy Security Game Changer on the 19th of March 2016. We will continue to emphasise this theme and the importance of all stakeholders working together to reduce the province's energy demand by 10% over the next few years.

6. Key channels

Communication channels, or media, fall into three broad categories:

- Face-to-face
- Print
- Electronic

Face-to-face communication ranges from one-on-one meetings, presentations to relevant forums as well as presentations to partners in government and the private sector.

Print media range from leaflets and booklets to posters and billboards, regular coverage in internal newspapers and magazines, and coverage in the mass print media.

Electronic media include audio, video, radio and television, email, the web, the full range of social media, multimedia products, and the Western Cape's 110% Green website.

7. Preferred channels

The following are the most popular channels for receiving information from government, according to research by the Human Sciences Research Council:

- Television: 35%
- Face-to-face: 21%
- Print: 20%
- Radio: 12%
- Digital media: 12%

The figures vary by region, population group and income level.

Poor communities have a stronger preference for face-to-face engagement, while more affluent groups prefer print.

High income, well-educated groups show an interest in digital media. No groups listed this as their favourite channel for receiving information from government.

This may reflect poor user experience of government websites. This may change as we shift to providing quality services online and improve access to the internet.

While very poor communities like radio, results are mixed for radio across all groups.

Our research survey also asked households and businesses what communications channels they prefer when

receiving information from government.

The research reveals that the main communication channels we should focus on are:

- Social media for both households and business;
- Radio for both households and media
- Digital marketing, particularly targeting business; and
- Print, particularly targeting households

This will be augmented by face-to-face engagement; videos; presentations to forums, conferences and seminars; SMSes and featuring content on Western Cape Government websites.

We will use various channels of communication to provide overviews of the game changer programme, regular updates, and information and education that address areas of specific interest to the stakeholder groups described above.

8. Activity Plan

The launch of the Energy Security Game Changer on 19 March 2016 officially kicked off the communications campaigns of the game changer.

Face-to-face engagement: with different forums and business sectors

A Solar Water Heater/Heat pump campaign: this was run during 2016/17 to encourage home owners (in particular new buyers) to install solar water heaters/heat pumps in their homes. The communication channels used were social media, digital advertising, print and MyCiti busses. Due to efficient water heaters no longer being a separate lever for the game changer, we are no longer running a stand-alone campaign on this topic. This will be included as part of the various energy efficiency campaigns.

A Winter Savings Campaign: this has run with great success in 2016/17 and 2017/18 in the lead up to and during winter providing energy saving tips to households, which will also result in cost savings during the high energy consumption winter months. The communication channels used will include community radio and print, digital and social media; and MyCiti buses. Due to the drought and water crises experienced across the Western Cape in 2017, the campaign expanded the messages to cover both water and electricity saving. This will continue in 2018/19.

Staff Resource Efficiency Campaign: with a captive audience of 80 000 staff across the 12 Western Cape Government departments, this campaign was introduced in 2017. The focus was on sharing water and electricity saving tips which staff could use at the office and introduce at home. The campaign included the development of wobblers and tent cards which were placed in strategic locations in our offices. A wall mural was installed in the concourse at Wale Street. A successful Switch and Save staff competition was held with weekly prizes being given to three staff with the best water and/or electricity saving tips. This campaign will continue in 2018/19.

Rooftop PV for Business Campaign: as the business case is not yet cost effective for households, the focus has been on businesses and encouraging them to install rooftop solar PV. The campaign has used the tag line 'Go Solar. The Best Way to Save Under the Sun.' In 2016 the focus of the campaign was educating consumers on what rooftop solar PV is and the potential benefits for their business. In 2017 the campaign focussed on promoting the business case for installing PV, outlining the key benefits and drawing on case studies. The campaign has focused on print, digital and radio channels frequented by business owners. Research conducted in the middle of 2017 on the effectiveness of the campaign indicated that it had reached 23% of the respondents with a third indicating it had influenced their decision making on the installation of rooftop PV. Follow up research which was conducted after the campaign ran saw an increase in these numbers with 40% indicating they had seen/heard the campaign and 55% of those reporting that it influenced their decision-making process. This campaign will continue in 2018/19.

9.Sustaining the project

The successful campaigns will be continued in the final years of the Energy Security Game Changer, as indicated in the section above.

A final survey of businesses and households will be conducted in 2019 to test whether perceptions have changed since the baseline survey in 2016 and to test the effectiveness of the various campaigns that have been implemented.

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