



GreenCape

**Supporting the
business of green**

MAY 2023



Who we are

GreenCape is a non-profit organisation that drives the widespread adoption of economically viable green economy solutions.

We work with businesses, investors, academia and government to help unlock the investment and employment potential of green technologies and services, and to support a transition to a resilient green economy.

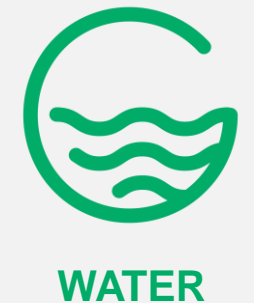
GreenCape was established in 2010 to support the development of the green economy in the region.



The team

Since being established in November 2010, GreenCape has expanded from three team members who focused on renewable energy, to a multidisciplinary team of close to 50. The GreenCape team is made up of professionals with qualifications and backgrounds in engineering, environmental science, finance, development and economics.

We place high value on giving our members and other stakeholders professional, yet practical, support. We take a robust approach to solving problems. The GreenCape team of analysts and sector experts make it their business to fully understand these shifting dynamics, so they can provide useful and relevant support to existing and potential green businesses and to other stakeholders.



Our impact over 10 years



> ~ 19 000 local jobs



> ~ 2 000 members



~ R 42 billion

facilitated
investment in the
Green Economy



1st African Cleantech
cluster member of the
International Cleantech
Network

Market Intelligence Reports

For more information on green economy opportunities in South Africa please read the [GreenCape Market Intelligence Reports](#).

Each report provides an overview of the market within a sector, including key developments and achievements, the key players, legislation and regulation, market opportunities and challenges, funding opportunities, and an overview of general green economy investment opportunities.

To view the 2023 video summary of the opportunities identified in all of the reports [click here](#).

[Green Economy Industrialisation in South Africa Opportunity Brief 2023](#). The report focuses on the renewable energy, water, and sustainable agriculture sectors, providing practical information that may support decision-making for manufacturers interested in investing in South Africa.



Renewable Energy in SA

Focus: Renewable Energy &
Energy Services

Key Highlights & Opportunities

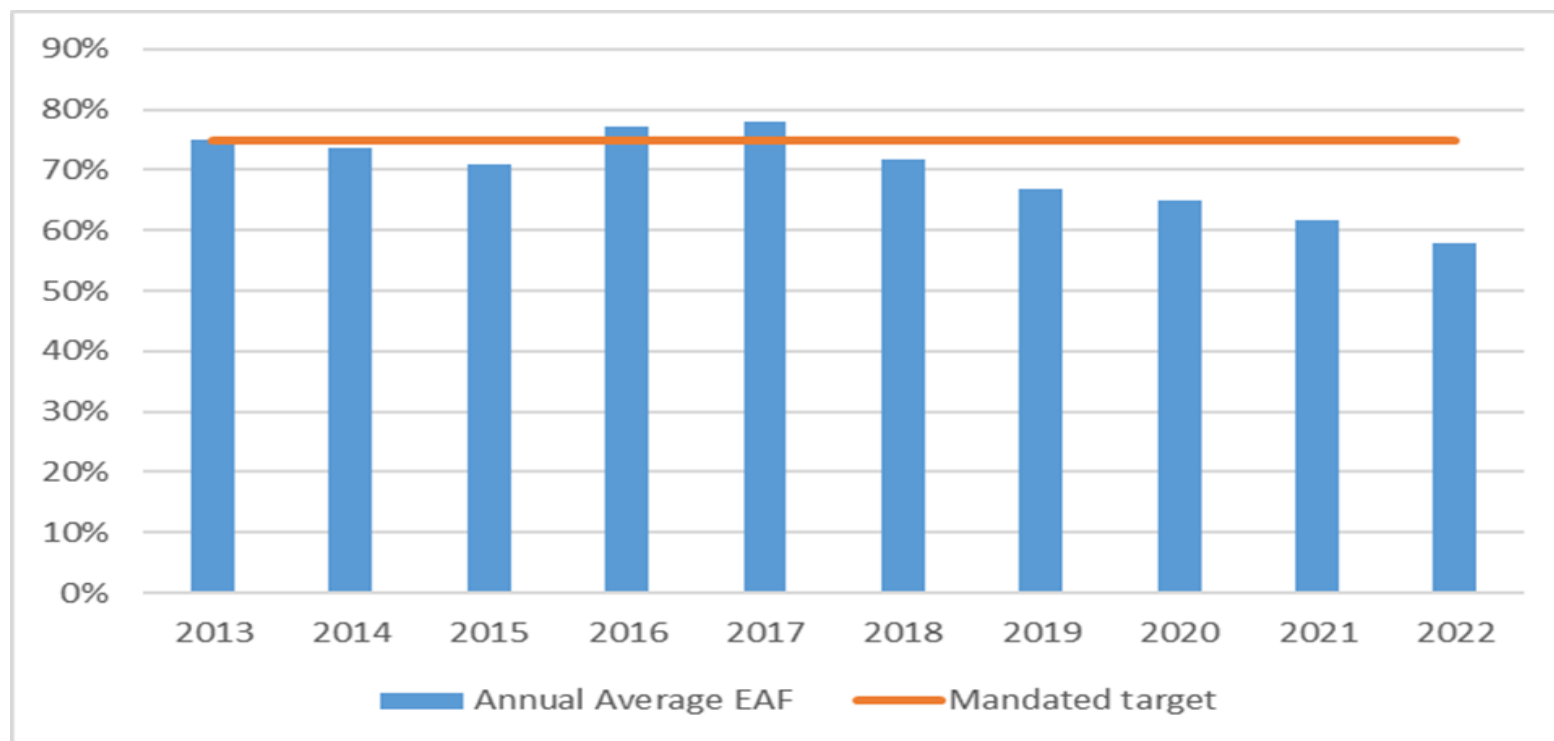
May 2023



1. South Africa's Electricity Landscape

Context

- SA has a single utility power generator Eskom which supplies ~95% of SA's electricity demand; remaining 5% is through municipalities, imports and independent power producers (IPP)
- Installed capacity of **~53.7 GW** dominated by coal-fired power generation with **~73% coal-powered**
- Historical supply and demand imbalance in SA's single buyer energy model resulted in intensive **rolling blackouts** or **load-shedding** countrywide starting in **2008**
- Load-shedding expected for next **~3 - 10 years** (depending who the source)



2022, load shedding for over 1 775 hours – a 227% increase from 2021. Eskom cut 11 797 GWh of electricity in 2022 – more than 372% of the 2 521 GWh it shed for 2021

1. South Africa's Electricity Landscape

Context

- **Integrated Resource Plan (IRP)** is the official long-term government plan for new electricity generation capacity, last updated in 2019
- **IRP2019** aims to double the electricity capacity through a diversified energy mix, mainly coal, gas, nuclear and renewable energy, with **42% of total added capacity being renewable by 2030**, equating to **17 800 MW**
- In 2010 the Independent Power Producers Office became operational and initiated the **Renewable Energy Independent Power Producers Procurement Programme (REIPPPP)**
- The REIPPPP has executed 7 auction-type bid windows to procure renewable energy and has been responsible for the majority of Renewable Energy in SA – 6 323 MW procured

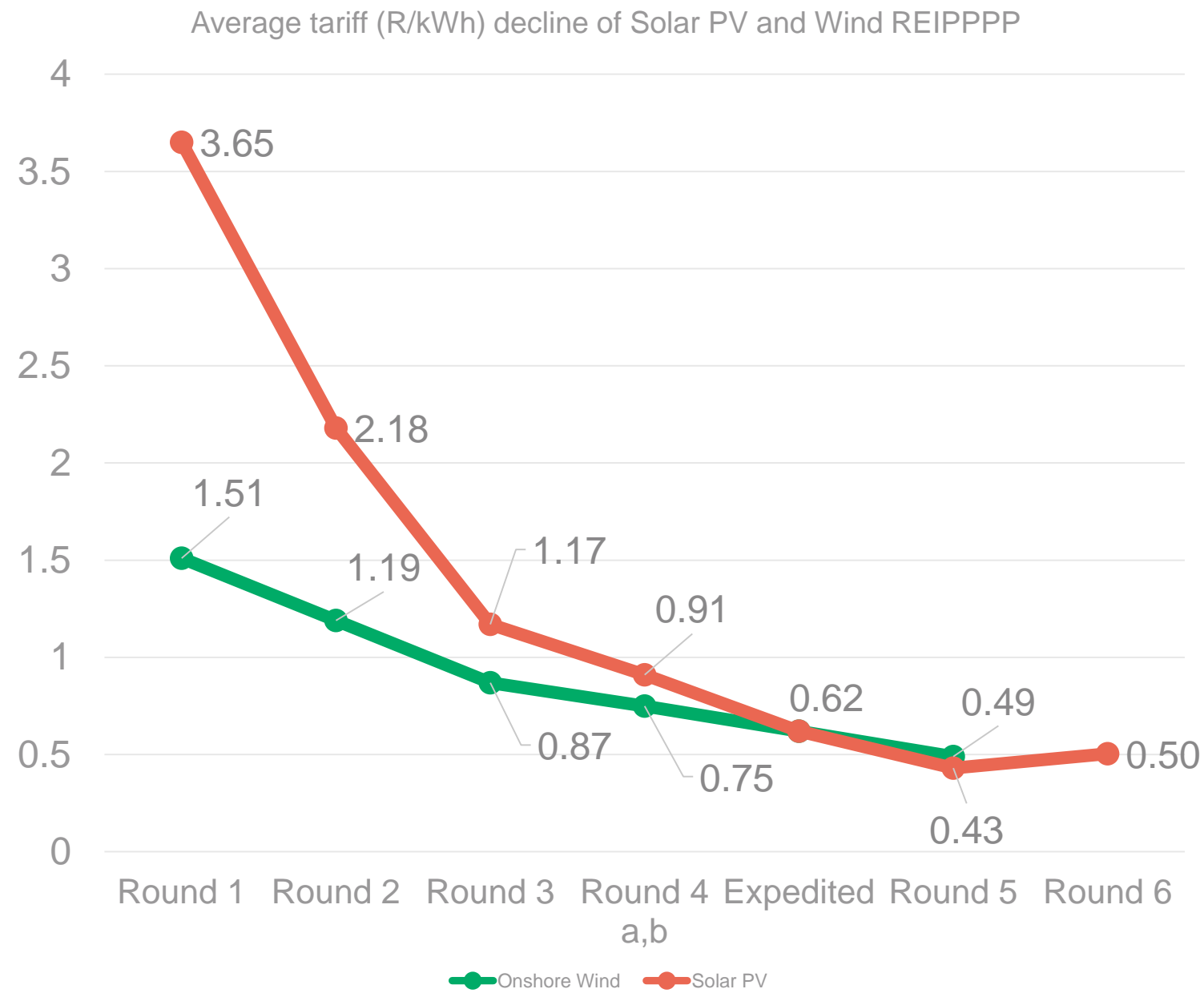
1. South Africa's Electricity Landscape

Supportive energy policies and regulations by the local and national government

- Department of Mineral Resources and Energy (DMRE) has approved municipalities (in good financial standing capacity) to buy electricity and formulate an energy plan that does not rely solely on the government-run Eskom [25%]
- IRP, being revised, is expected to have an increase in new renewable energy allocations
- DMRE removed any capacity limit (previously 100MW) to procure power without requiring a generation license from NERSA
- Country-wide rollout of national SSEG rules, regulations and tariffs promote safe and legal uptake of SSEG
- Wheeling agreements allows generators allow generators to transport electricity over existing grid infrastructure to a willing buyer anywhere in municipality or in country
- Private sector energy trading using national and local distribution networks

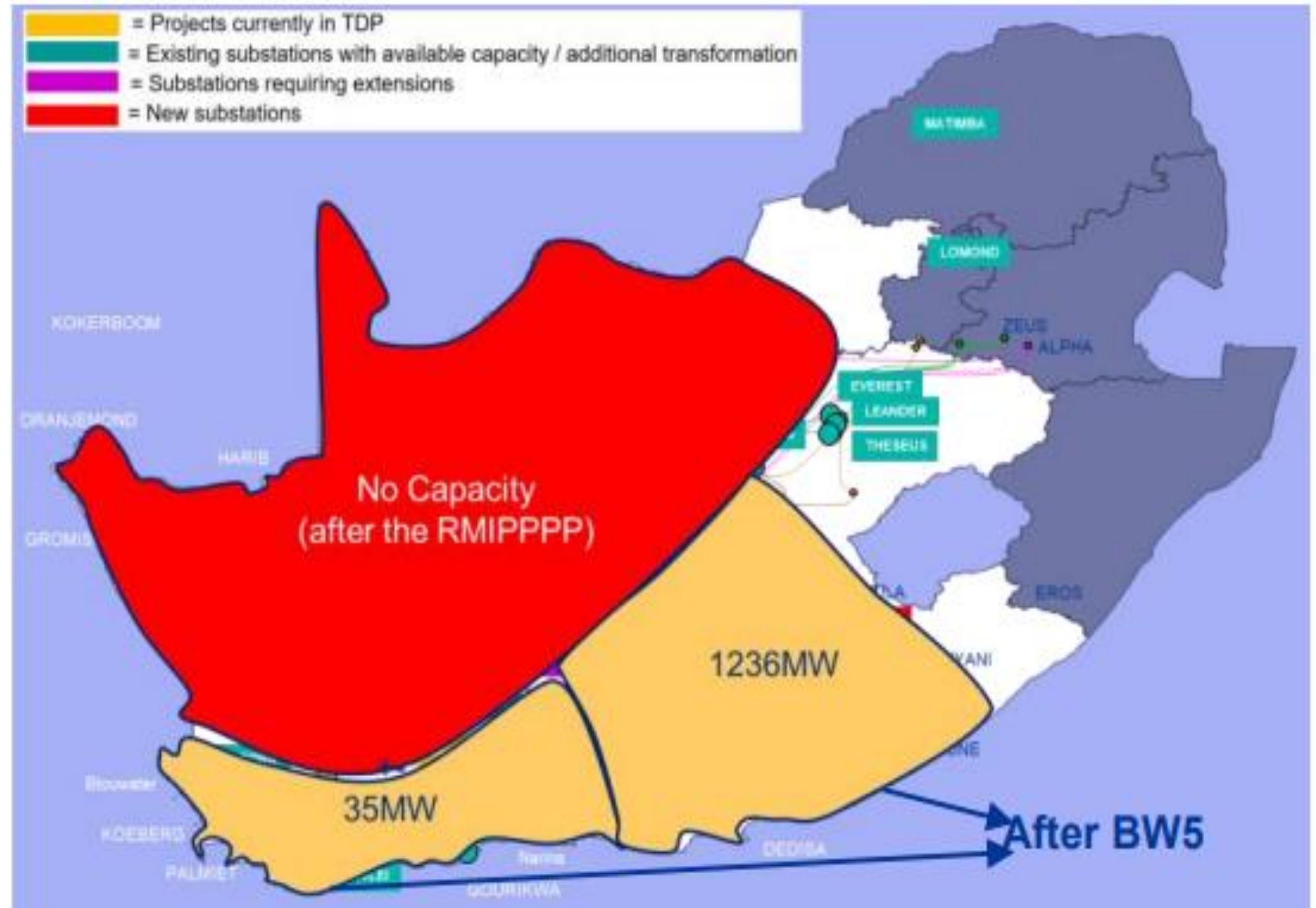
1. South Africa's Electricity Landscape

Tariff decline and capacity awarded for solar PV and onshore wind across all bid windows



1. South Africa's Electricity Landscape

- No connection capacity left in key resource areas
- Under utilized connection capacity in low resource areas (Mpumalanga)



Source: Eskom

2. Utility scale renewable energy opportunities

OPPORTUNITY	STAKEHOLDERS	KEY DRIVERS	BARRIERS	TERM	MACRO CONTEXT
Public procurement	<ul style="list-style-type: none"> Dept. of Mineral Resources and Energy (DMRE) Independent Power Producer Office (IPPO) Eskom Municipalities/IPPs, EPCs, OEMs, O&Ms Financiers and legal Energy-intensive users Industrialists Local manufacturers 	<ul style="list-style-type: none"> 20 GW by 2030 (IRP 2019) Expected 35 GW decommissioned coal by 2050 	<ul style="list-style-type: none"> Need for grid infrastructure investment to upgrade the grid Local government's lack capacity (Financial, technical, procurement planning) to leverage opportunity procure electricity directly from IPPs Only municipalities in good financial standing can procure from IPPs Policy and clarity of procurement rules 	Short term (Present)	<ul style="list-style-type: none"> Energy crisis High unemployment rates Economic recovery Just Energy Transition Infrastructure development plans Heavy industries and mining sector net-zero targets The global effort¹ to drive a hydrogen economy and elimination of CO₂ emissions by targeting renewable energy sources for hydrogen production COP26² (2021) & COP27 (2022)
Private procurement		<ul style="list-style-type: none"> Changes in electricity regulations on new generation capacity Declining renewable energy prices 	<ul style="list-style-type: none"> Capital requirements Wheeling frameworks only developed for a limited number of municipalities 	Short to medium term (3 – 5 years)	
Local manufacturing of renewable energy components and systems	<ul style="list-style-type: none"> Local manufacturers, OEMs, EPCs DTIC, DMRE, IPPO 	<ul style="list-style-type: none"> Local content in bid requirements International logistical challenges 	<ul style="list-style-type: none"> Policy uncertainty Procurement rule changes in REIPPPP Challenging local content requirements Commercial viability Market certainty 	Medium to long term (3 – 10 years)	

3. Embedded generation and energy services

Positive regulatory movement and a strong PV business case has ignited the sector

Context

- Schedule 2 amendment removed SSEG license cap
- New projects dominated by rooftop solar PV (C&I and agricultural) with rapid growth in the **1 - 5MW system size**
- Current installed capacity of **~2GWp** (GIS data ~4GW)
- 70 municipalities across South Africa having already introduced rules

Opportunity

- Market could grow by as much as **7.5GW** of installed capacity by **2035**
- Total available market of R5 billion p.a. **~R75 billion by 2035**
- Secondary market for PV system components - Panels **~R5 billion in the next 5 to 10 years**. Inverters **~R2 billion in the next 5 to 10 years**

3. Embedded generation and energy services opportunities

OPPORTUNITY	KEY DRIVERS	REQUIREMENT/BARRIERS	MACRO ENVIRONMENT	TERM
Rooftop PV Installations	<ul style="list-style-type: none"> High, sustained demand – still large market potential Diverse and well developed project structures <ul style="list-style-type: none"> - Rebuy/ O&M - Bundling Successive/phased expansions of existing systems to on-site requirements 	<ul style="list-style-type: none"> High expertise needed to deliver high-quality service, manage risk & ensure good margins. Cash-strapped end users. Development and streamlining of municipal SSEG processes. 	<p>Enabling regulatory reform</p> <ul style="list-style-type: none"> removal of generating licenses incentivized feed-in tariffs trading license and wheeling frameworks/tariffs <p>Rising Eskom tariffs</p> <p>Loadshedding</p> <p>Potential formalization of voluntary carbon market</p>	<p>Immediate</p> <p>Competition shifting toward 1-100MW space</p>
Behind the Meter Storage	<ul style="list-style-type: none"> Industry & production line startup/shutdown cycles Decreasing cost of Li ion batteries, payback times shifting from 10 to years Peak cost shaving via energy arbitrage Increasing influence of AI to improve application of use cases Simplified maintenance vs diesel storage tanks/ generators. 	<ul style="list-style-type: none"> Diesel gensets still much cheaper Requires more complex, flexible & customized solutions than typical installations e.g. peak shaving vs backup power vs demand response 		<p>Immediate to Short term</p> <p>Dependent on reductions in capital cost</p>

3. Embedded generation and energy services opportunities

OPPORTUNITY	KEY DRIVERS	REQUIREMENTS/BARRIERS	MACRO-ENVIRONMENT	TERM
Smart Meters	<ul style="list-style-type: none"> Energy as a service model 10 million traditional prepaid meters will need to be replaced/upgraded SANS10400XA – energy efficiency requirement Energy performance certificate requirement Load curtailment programme requirements 	<ul style="list-style-type: none"> Public sector market will concentrate towards technologies in tenders/pilots Private sector market can be limited by understanding and negative perceptions of effectiveness. High M&V costs to prove savings and qualify for 12L 	<p>Enabling regulatory reform</p> <ul style="list-style-type: none"> removal of generating licenses incentivized feed-in tariffs trading license and wheeling frameworks/tariffs <p>Rising Eskom tariffs</p> <p>Loadshedding</p>	Short term 3 years
Alternative Energy Finance Instruments	<ul style="list-style-type: none"> Strong demand from project developers for PV Gaps in commercial finance risk appetite, provision of guarantees and capital 	<ul style="list-style-type: none"> Necessitates strong due diligence processes 	Potential formalization of voluntary carbon market	Immediate



Thank you

lisa@green-cape.co.za

www.greencape.co.za