SEA Distributed Generation Training

Topic: South African Wind Power Market

20 MAY 2024

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Wind Energy History, Context and Challenges

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South African Wind Energy Association

01

SAWEA INTRODUCTION

SAWEA AT A GLANCE

A BRIEF HISTORY

1998 — Founded

2005 — Officially registered as a Non-Profit Organisation and tax-exempt entity

2005 - 2008 — Formal governing structures implemented with 241 stakeholders listed

2009 — SAWEA gains momentum as the wind industry develops in South Africa

2011 — Opening of SAWEA's first business premises in Rosebank

2011 — First Windaba Conference & Exhibition

VISION

A thriving commercial wind power industry in South Africa, part of a growing domestic and international renewable power industry that is recognised as a major contributor to social, environmental and economic security.

140

We currently have 140 members across the wind energy value chain, including IPPs, Developers, Wind Farm Companies, Consultants, Investors, Logistics, Research & Academia.

PURPOSE

PURPOSE

SAWEA's purpose is to perform to its highest ability the unique role that a member-driven association can play in enabling its vision to be realised.

02

INDUSTRY OVERVIEW

INDUSTRY OVERVIEW

2010 - 2020

2010 -2019

Launch of Bid Windows 1 - 4

2020

RMIPPPP: Launched in 2020 to urgently bring new generation onboard

2021 - 2023

2021

Launch of Bid Window Five (**BW5**) of the Renewable Energy Independent Power Producer Procurement Programme resulting in **1608MW of wind** procured

2022

- Announcement of the removal of **100MW distributed generation cap**
- **NECOM** established in August
- **BW6** launched with 4.1GW of wind bids submitted and **no wind procured** deals a blow to the wind market in SA

2023

- Eskom releases the **Interim Grid Capacity Allocation Rules (IGCAR)** in March then a more considered version in June.
- Eskom releases the **Proposed Gated Connection Process (PGP)** in August.
- **ERA Bill**: Parliament consults on ERA Bill

INDUSTRY OVERVIEW

2023...

QUARTER 1 OF 2024

2023

- **Curtailment**: South Africa's power utility Eskom publishes its proposed curtailment framework
- Launch of **Bid Window Seven (BW7)** of the Renewable Energy Independent Power Producer Procurement Programme

2024 JANUARY

- Calls for public comments on the **Draft IRP 2023**
- **Curtailment:** Generation Connection Capacity Assessment (GCCA) 2025 Addendum published

2024 FEBRUARY

Draft IRP comments deadline extended to March 2024

2024 MARCH

- SAWEA Calls for complete overhaul of **Draft IRP2023**.
- National Assembly passes **Electricity Regulation Amendment (ERA) Bill**

2024 MAY

- **Election Day**: 29 May 2024
- **BW7** Submissions: 30 May 2024

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03

Renewable Independent Power Producer Programme (REIPPP)

REIPPPP UPDATE POST BW4

The Renewable Energy Independent Power Producer Procurement Programme is an initiative by the South African government aimed at bringing additional megawatts onto the country's electricity system through private sector investment in wind, biomass and small hydro, among others.

REIPPPP BW5 launched in April 2021 with bid submissions in August 2021 resulted in preferred bidders of 1608MW of wind projects from an allocation of 1600MW

REIPPPP BW6 launched in April 2022 with bid submissions in August 2022 resulted in NO wind projects being awarded preferred bidder status despite a wind allocation of 3200MW and submitted bids of 4116.4MW

Ministerial determination in December 2022 which stipulates plans to procure:

- 3940MW PV; 9600MW Wind and 1231MW BESS

REIPPPP BW7 launched in December 2023 with expected bid submission in May 2024 which has an allocation of 3200MW of wind and 1800MW of solar PV.

Grid capacity constraints has meant that REIPPPP projects are competing with other procurement rounds such as RMIPPP which launched in 2020 saw 11 projects of 1995.8MW announced as preferred bidders as well as the GASIPPPP, ESIPPPP as well as private off-taker projects.

PRIVATE OFFTAKER PROJECTS – **3GW** potential projects over the next 2 years with **587MW** of projects having being procured.

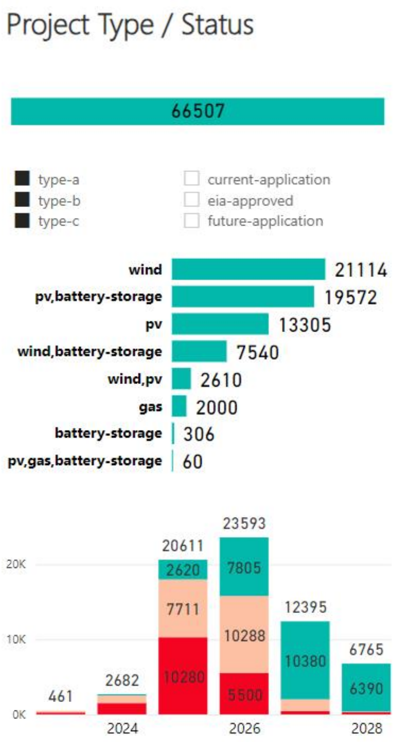
PROJECT DEVELOPMENT PIPELINE - SA

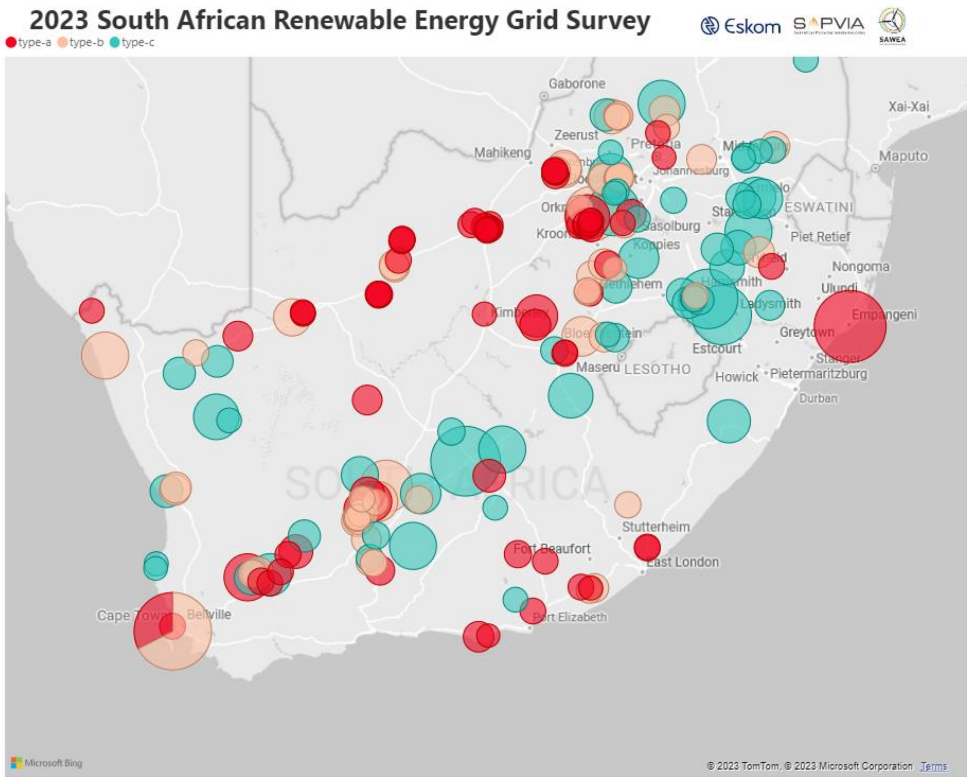
South African RE Grid Survey 2023

Total 31 264 MW

Projects in SA

Type of Project	South Africa
Pure Wind Projects	21 114 MW
Wind + Battery Storage	7540 MW
Wind + PV	2610 MW
Total	31 264 MW





Source: 2023 SA Renewable Energy Grid Survey – June 2023 South African Renewable Energy Grid Survey - Eskom

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PROJECT DEVELOPMENT PIPELINE - SA

Wind projects which could be developed in the short term:

10 279MW of projects in the next 3 years

SA Renewable Energy Masterplan Pillars

(SAREM)

MARKET OPPORTUNITIES

INDUSTRIALISATION

MANUFACTURING

SKILLS DEVELOPMENT

JOB OPPORTUNITIES

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Source: *2023 SA Renewable Energy Grid Survey – June 2023* [South African Renewable Energy Grid Survey - Eskom]

RENEWABLE ENERGY DEVELOPMENT - SAREM

South African Renewable Energy Masterplan

VISION

Industrialisation of the renewable energy value chain to enable inclusive participation in the energy transition, serving the needs of society, and contributing to economic revival.

Key objectives by 2030:

- Grow the economy by fostering the rollout of renewable energy and battery storage projects
- Grow the industrial capacity in the renewable energy and battery storage value chain
- Create and sustain decent employment across the value chain
- Build the capabilities needed for the industry
- Build a transformed industry throughout the value chain
- Contribute to a just energy transition

Supporting demand

- Market certainty
- System readiness

Driving Industrial develoment

- Localisation
- Input materials
- Trade promotion

Fostering inclusive development

- Transformation
- New entrants
- Just transition

Building the capabilities

- Skills and technology development

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Source: *2023 SA Renewable Energy Masterplan – July 2023* [SAREM]

SA WIND ENERGY ACHIEVEMENTS

34
operational wind farms

3442 MW
installed capacity

46480
GWhs of Wind Energy Contributed to the National Grid

3.6mil
ave. households powered annually

23 307
job yrs
82% in construction

38.8 Mton
CO2 emissions avoided

R89.6 Billion
invested in wind energy

50%
reduction of wind energy cost from 1.88c to 0.94c

84%
domestic investment

33%
black SA shareholding

R24billion
47%
of project value spent locally

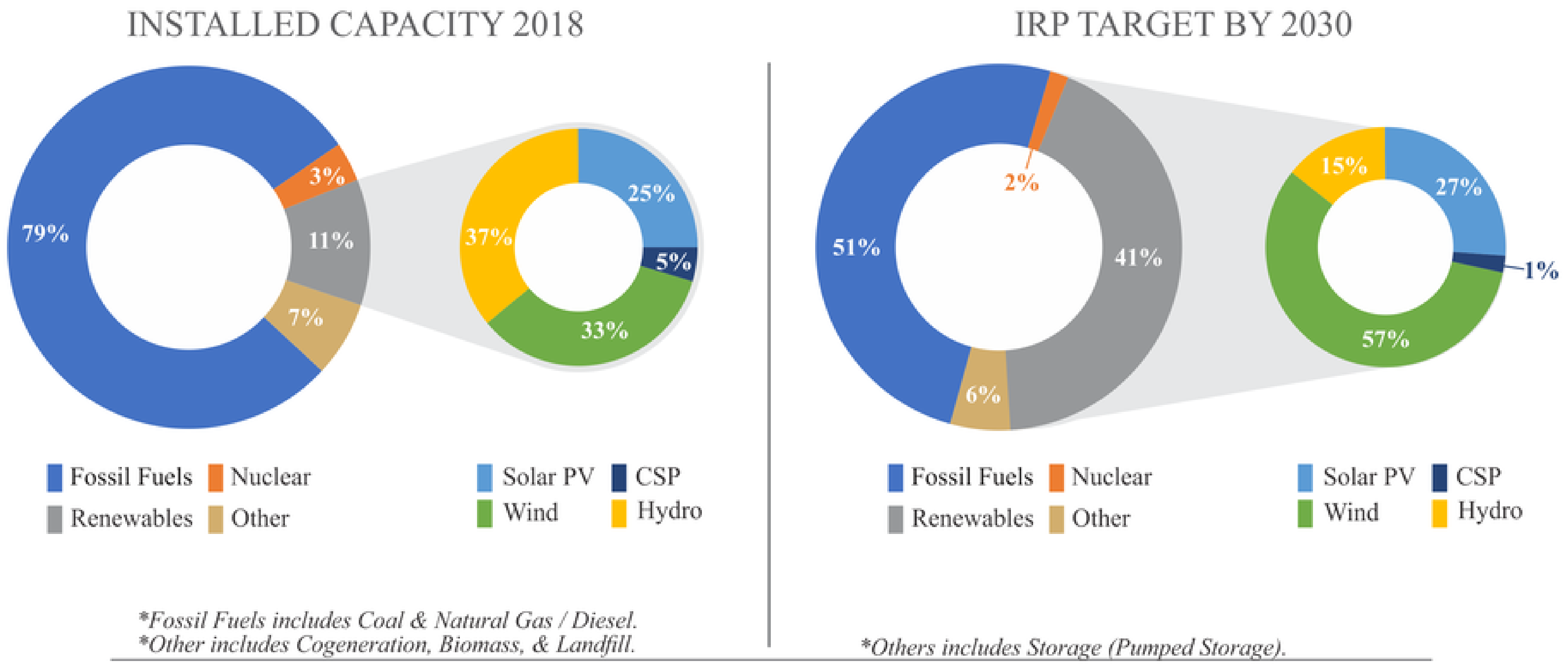
R898mil
SED and ED initiatives

Source: *DMRE REIPPPP Focus on Wind – Dec 2021, 2023 IPPO Q4 Overview* https://www.ipp-projects.co.za/Publications

04

UNPACKING SOUTH AFRICA'S INTEGRATED RESOURCE PLAN (IRP) 2023

2030 OUTLOOK - IRP 2019



Data collected from IRP 2019. Graph by Seth Owusu-Mante.

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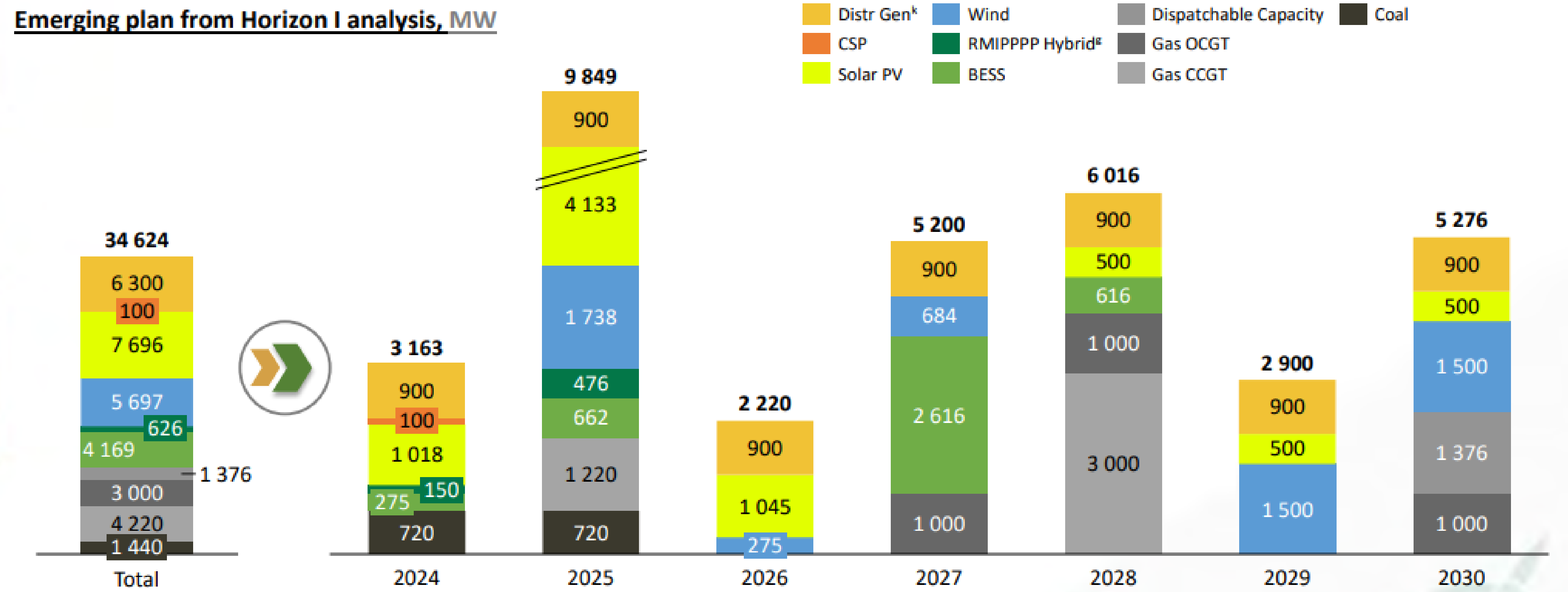
2030 OUTLOOK - IRP 2023

Emerging Plan from Horizon I Analysis – Total new build, (Business initiatives +Government)



- The emerging plan considers more than 30 000 MW of new capacity by 2030
- Wind, CSP, PV and rooftop PV account for close to 60% of new build

Source: https://www.energy.gov.za/IRP/2023/Draft-IRP2023-Virtual-Public-Workshop-18Jan2024.pdf

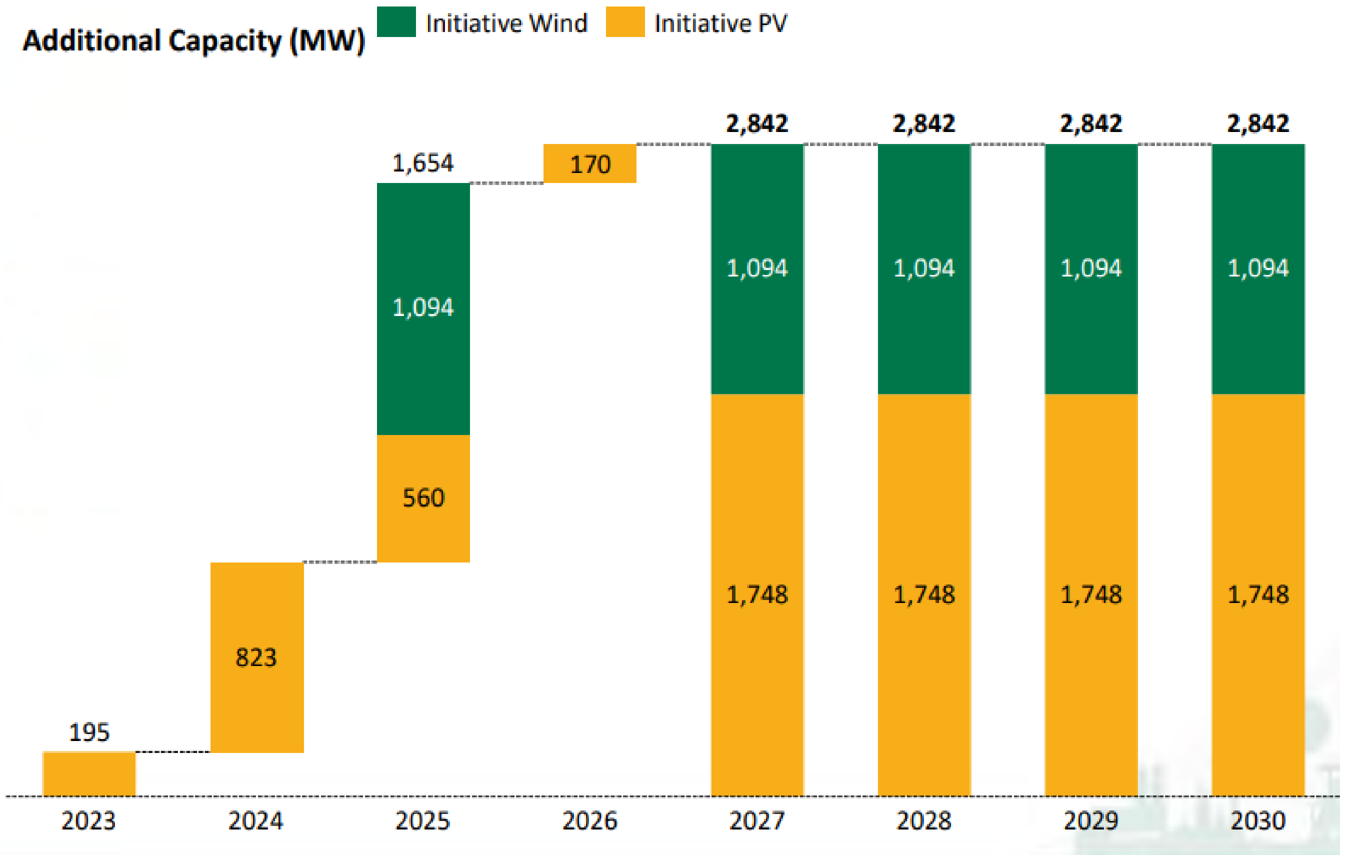
2030 OUTLOOK - IRP 2023

Comments

- Criteria for 'highly likely' considers projects that are either under construction or have Environmental Impact Assessment (EIA) approval, reached financial close, record of decision and reserved grid capacity
- **Risk Mitigation** - projects totalling 150 MW expected in 2024
- **Business Initiatives** - A total of 2 842 MW, considered priority by Business is expected by end 2025
- **REIPPP BW5** - projects to yield 784 MW expected in 2025

Firm Case amount to

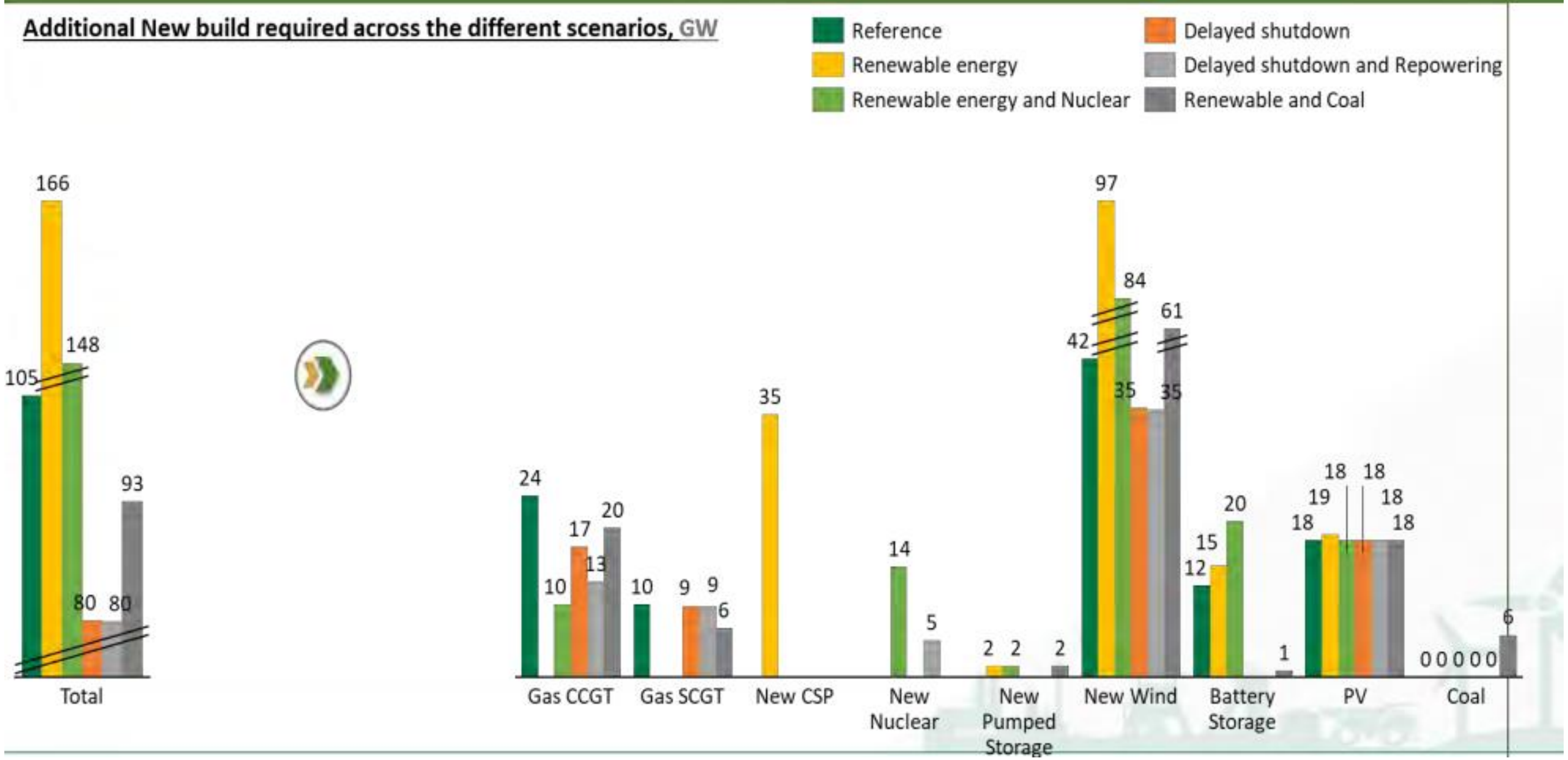
3.8 GW by 2030



Source: https://www.energy.gov.za/IRP/2023/Draft-IRP2023-Virtual-Public-Workshop-18Jan2024.pdf

2030 OUTLOOK - IRP 2023

HORIZON 2: SUMMARY OF CAPACITY EXPANSION PLANS OF THE PATHWAYS



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Source: *https://www.energy.gov.za/IRP/2023/Draft-IRP2023-Virtual-Public-Workshop-18Jan2024.pdf*

KEY CHALLENGES

In South Africa the market also experiences its own challenges.

1.	2.	3.	4.	5.	6.
Lack of certainty on Grid Access allocation in wind resource rich areas	Pending Policy Reform in Regulatory Environment	Logistics in the construction of new projects	Supply chain challenges are still affecting operating assets.	Local manufacturing of wind turbine components, localization may unlock value chains in SA	Skilled workforce: The availability of a ready and able workforce with the necessary training and skills for the wind industry.
IGCAR **GCCA**	**ERA** **IRP** **TDP**	**Ports** **Vehicles** **Transport** **Cranes** **Operators**	**Logistics/ Shipping** **Competing markets**	**SAREM**	**WIIP, WRP, MDP**

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KEY CHALLENGES

Additional Challenges

1.	2.	3.	4.	5.	6.
Land Issues	**Permitting**	**Grid upgrades**	**Community Engagement**	**Forecasting**	**Contracting**
Owners (trusts)	WUL	Cost (Financing)	Expectations	Notice period	Based on REIPPP
Options for leasing	Mineral Rights	Self build	Inclusion	Level of accuracy	Lag between PB and FC
	Heritage Protection	Eskom build		LiDAR	Aggregators
	Environmental	Interdependence			
		Wheeling			

POLICY DEVELOPMENTS

National Development Plan (NDP) – 20GW RE by 2030

Integrated Resource Plan (IRP) 2019 – 17.8GW by 2030

Draft Integrated Resource Plan (IRP) 2023 – 3GW new wind by 2030

Electricity Regulation Act (ERA) Amendment Bill

- Regulate changing energy landscape – Increased IPPs + other participants
- Requirements for application of different categories of licences & registration of generators
- Establish and assign duties, powers and functions of NTCSA
- Open market to allow competitive electricity trading

Grid Connection Capacity Assessment (GCCA) – Curtailment

- 3.47GW Grid capacity unlocked for 10% curtailment
- Implementation uncertain

Transmission Development Plan (TDP) – Eskom

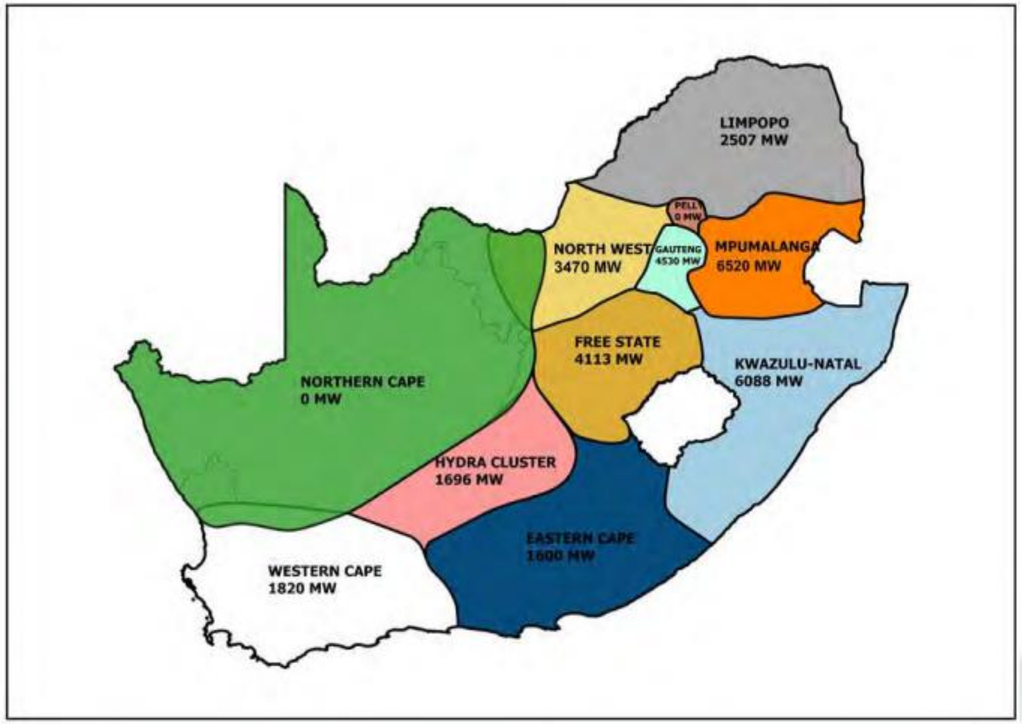
Just Energy Transition Investment Plan

South African Renewable Energy Masterplan (SAREM)

GRID ACCESS – GGCA 2025

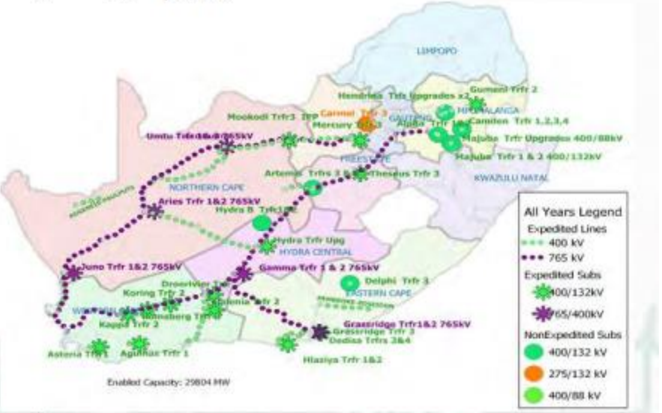
By accepting a reasonable share of no more than 10% of curtailment, 3 470 MW of additional wind generation can be connected to the grid almost immediately, with 2 680 MW in the Western Cape and 790 MW in the Eastern Cape.

MW of new generation capacity that can be added based on grid availability



Insights

- Grid availability per province as per the Generation Connection Capacity Assessment 2024
- Capacity reserved for REIPPP Bid Window 5 and 6 as well as RMIPPPP.
- Development of the Transmission Grid is as per the TDP 2023-2032
- Estimated new transmission lines total more than **14 000 km** and more than **170** transformers in the period



GRID ACCESS POLICIES

IGCAR/GCAR	CURTAILMENT	PROPOSED GATED PROCESS
○ IGCAR parameters have been resolved through NECOM ○ Seems that IGCAR application continuing ○ Eskom intend to codify the rules through NERSA and GCAC. (timelines unknown) ○ It would apply to all Licensees once part of the Grid Code, so municipal stakeholders are being consulted. ○ Draft rules are online. ○ SAWEA (Grid TT) will submit comments / questions through the Business Committee to NECOM	○ Eskom has a letter from NERSA saying they don't need to apply for approval ○ GCCA addendum has been released: 2 680 MW in the Western Cape and 790 MW in the Eastern Cape ○ Only applies when new generation capacity is connected ○ Business concerns remain on the cost recovery mechanism. (special focus on historical private projects) ○ SAWEA will request clarity from the IPPO on curtailment applicability to BW7. ○ SAWEA (Grid TT) will submit comments / questions on the implementation mechanism through the Business Committee to NECOM	○ Eskom is required to formally apply for approval by NERSA through a statutory process. ○ It will not be part of the Grid Code. ○ PGP wording to be updated to refer to GCAR/IGCAR as appropriate ○ Practicalities to accommodate merchant model and partial/ short-term PPAs in "RFP" criteria ○ Industry concerns include possible delays (stalling cycles) and potential discrimination ○ SAWEA (Grid TT) will submit comments / questions through the Business Committee to NECOM

SAWEA BUSINESS DETAILS

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