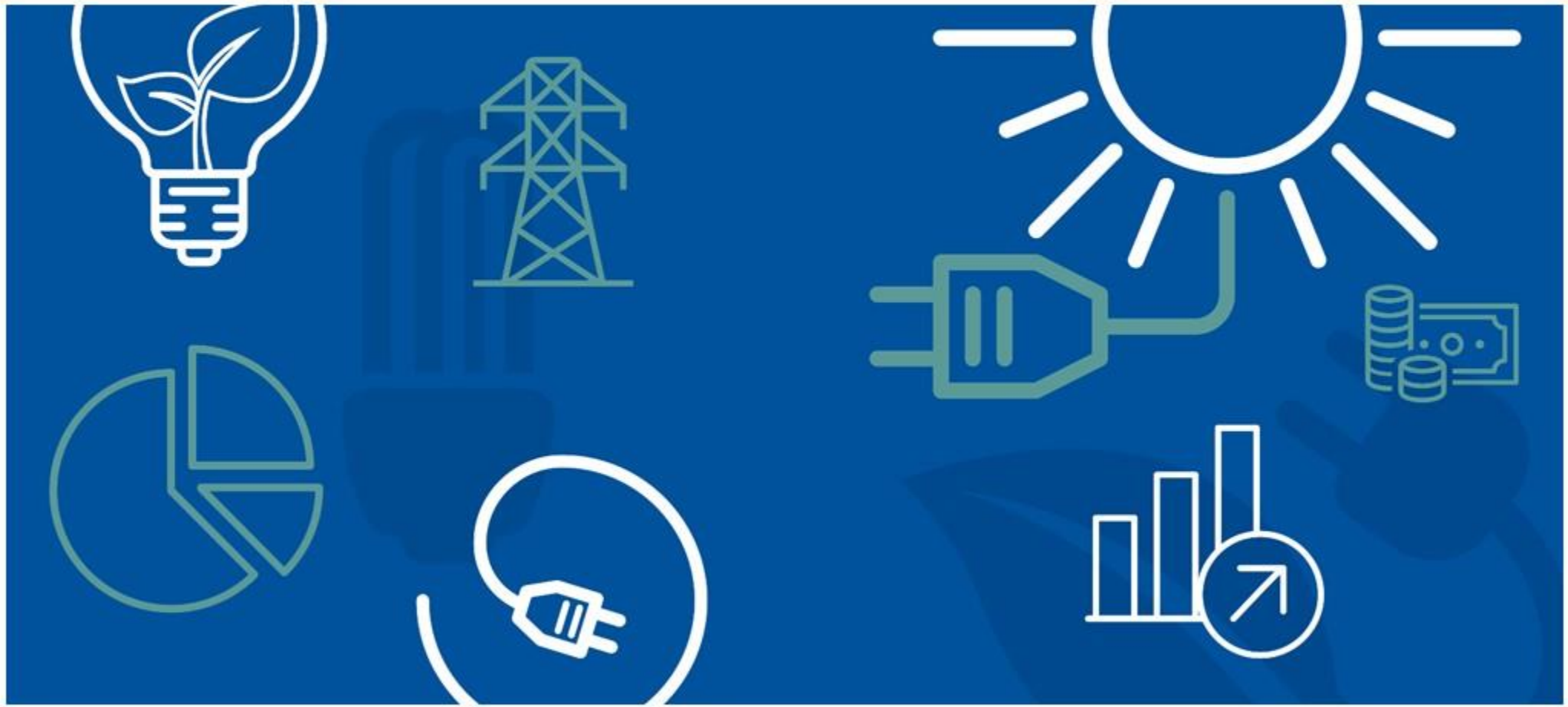
Media briefing

Eskom



26 April 2024

State of the System - Winter 2024 Outlook Briefing

Dan Marokane

April 2024

Key Takeaways

- The **Winter 2023 performance was within the forecast frequency range -** load shedding mostly contained between stages 2 and 4
- The **Generation Recovery Plan** – focusing on people, plant performance and processes & governance **gained traction from the beginning of Winter 2023** and is executed by Eskom in collaboration with NECOM structures.
- **Between April 2023 and March 2024, the reliability of the power plants is showing improvement** on the back of the of the Generation Recovery Plan, with **a YoY improvement of 9% in unplanned losses, and 19% decline in unit trips**
- **Since April 2023 to date, the frequency and the intensity of loadshedding has declined** as should be expected as the Generation Recovery Plan execution progresses.
- **NO loadshedding for 30 consecutive days – with the diesel spend 50% lower than the spend in the same month last year.** FY25 load factor of 9% compared to that of 18% in FY24.
- There is **a considerable shift in the unreliability assumption** for Winter 2024 forecast – a 1000 MW downward revision
- **For Winter 2024, the likely scenario indicates that loadshedding will be limited to Stage 2**
- **Over the winter period**, targeting a further **1.7GW from reduction in unplanned losses (1.3GW) and driving Demand management initiatives (382MW)**
- Ending load shedding is a **collective effort** and we will be counting on your support for our **energy saving campaign in the month of May**

#WeCanEndLoadsheddingTogether

Our approach to this Winter 2024 outlook briefing

Recap on the winter 2023 outlook and performance

Set the context for this winter 2024 outlook

Provide an update in tackling unreliability of the units

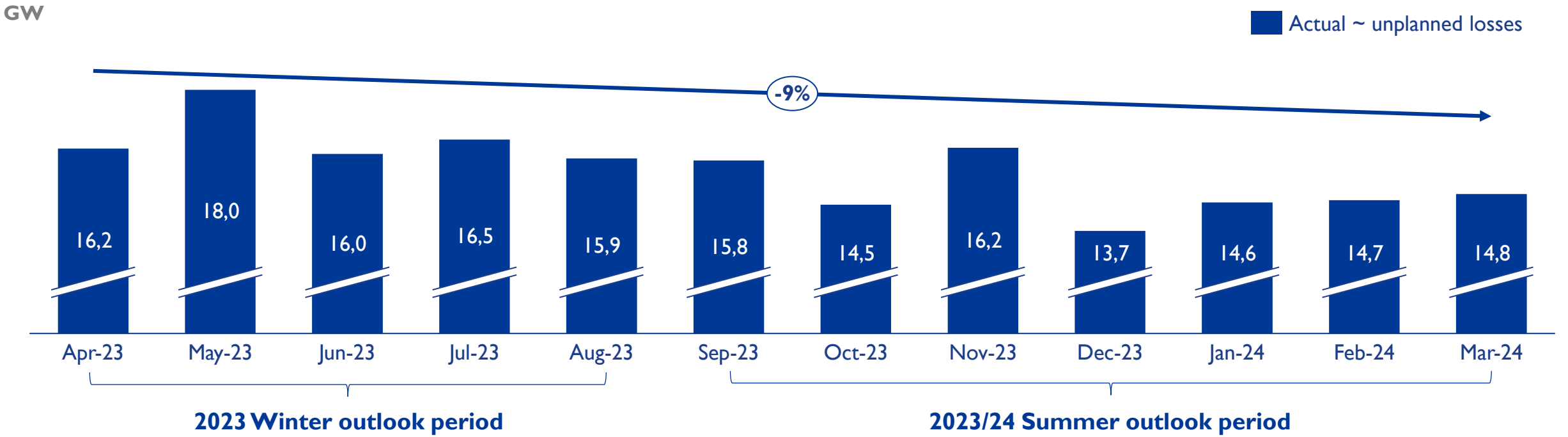
The actual system performance for Winter 2023 was within the forecast range

Winter 2023 – 1 April 2023 to 31 August 2023 (153 days)							
Scenarios		**Base case: 15 000 MW UCLF**		**Base case +1500MW : 16 500 MW UCLF**		**Base case + 3000 MW 18 000 MW UCLF**	
Number of LS days OCGT costs		122 Days R 12.1bn		152 Days R 12.5bn		153 Days R 12.5bn	
Highest stage of LS		Stage 5		Stage 6		Stage 8	
Month	Peak residual forecast	Load reduction days	Max load reduction stage	Load reduction days	Max load reduction stage	Load reduction days	Max load reduction stage
May	**32 499**	27	**5**	31	**6**	31	**7**
June	**32 572**	18	**3**	30	**6**	30	**7**
July	**32 378**	28	**5**	31	**6**	31	**8**
August	**31 413**	28	**5**	31	**6**	31	**8**

Average **actual unplanned losses** were around **16.5GW** and the majority of the **loadshedding** was **contained to stages 3 and 4 (with a maximum of stage 6)**

Since last winter, Eskom's investment in maintenance and disciplined execution of the recovery plan has resulted in a gradual reduction of unplanned losses

Gx actual performance on unplanned losses[2]



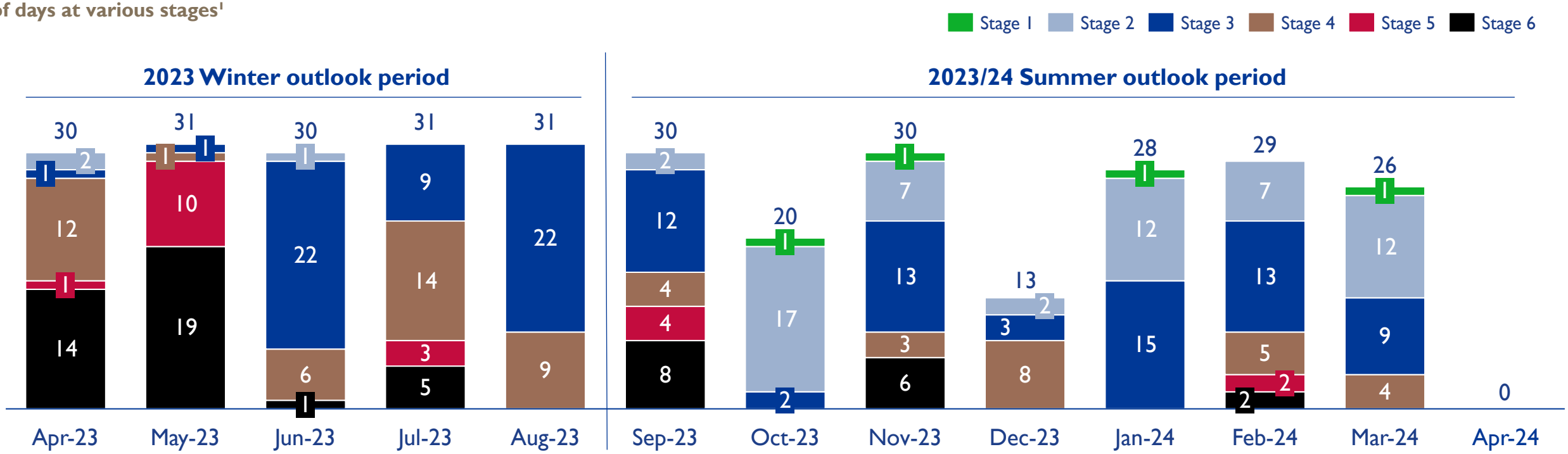
- **Downward trend** in unplanned losses **especially at the priority 6 stations** (Tutuka, Majuba, Kusile, Kendal, Matla, Duvha):
  - Year-on-year overall **unit trips are declining**, indicating the fleet is becoming more reliable – **19.2% reduction between FY23 vs. FY24**
  - **Return of 4 Kusile units**: U1-3 that were impacted by the flue duct collapse which have been recovered and U5 has been synchronised to the grid
  - Multiple projects are in **progress to reduce Partial Load Losses** – e.g. cooling tower refurbishments at Kriel and Tutuka, re-bagging at Majuba
- **Current unplanned losses of 14.2GW** (~30%) are however **still unsustainable** hence the **target is to reduce load losses to below 14GW**[1]

Source: State of the system outlooks; Eskom Public Data Portal
Note 1: The targets for FY25 is still under review; 2: UCLF+OCLF. Gx – Generation, UCLF – Unplanned Capability Loss Factor

The continuing improvement in Generation plant performance and the accompanying reduced loadshedding intensity has informed our updated outlook

Overview of loadshedding intensity and frequency between April 2023 and March 2024

of days at various stages[1]



- Eskom implemented loadshedding on over 90% of the days between April 2023 and March 2024, though there is a **clear decreasing trend** and the **majority of loadshedding has been contained to between stages 2-4**
- The **return of Kusile units** ahead of schedule and recovery of unplanned load losses **assisted in reducing the frequency** and **intensity** of **loadshedding** in the FY2024 summer period
- Eskom **has not implemented loadshedding for 30 consecutive days**

Source: 2023/2024 Load Shedding and Curtailment events Notes: 1: Indicates maximum stage per day

Winter 2024 loadshedding forecast to be within stage 2

Likely scenario

Winter 2024 – 1 April 2024 to 31 August 2024							
Scenarios		**Base Case: 14 000 MW unplanned outages**		**Base Case + 1500MW: 15 500 MW unplanned outages**		**Base Case + 3000MW: 17 000 MW unplanned outages**	
Number of LS days Diesel costs		5 Days R 3.3bn		~~65~~ 50 Days R 8.8bn		~~128~~ 103 Days R 16.0bn	
Highest stage of LS		Stage 1		Stage 2		Stage 5	
Month	**Peak Residual Forecast**	**Load reduction days**	**Max load reduction stage**	**Load reduction days**	**Max load reduction stage**	**Load reduction days**	**Max load reduction stage**
April	**29,354**	0 √	0	~~15~~ 0	~~2~~ 0	~~25~~ 0	~~5~~ 0
May	**31,205**	0	0	10	1	23	2
June	**32,204**	2	1	8	2	22	5
July	**32,182**	0	0	19	2	31	5
August	**31,336**	3	1	13	2	27	5

Considerable change in performance showing a recovery of 1000 MW has improved our confidence
With unplanned losses **maintained between 14GW-15.5GW**, loadshedding intensity **over the Winter period is anticipated to be contained within stage 2, with a worst-case scenario of stage 5 at unplanned losses of 17GW**

LS - Loadshedding

Agenda

- **Generation recovery overview**
- Demand management overview
- Conclusion

Execution of the Generation recovery plan initiatives has led to a considerable improvement in plant performance

Implementation complete | Implementation in progress

1 Set up for success

- **Set-up the enabling structures**
  - Turnaround plans
  - Generation recovery office
  - Key enablers
- **Guard performance** at current **flagship stations**
  - Medupi, Lethabo, Matimba and Peaking
- Focus on the **Priority stations**
  - Tutuka, Duvha, Majuba, Matla, Kendal, Arnot, Kriel, Koeberg
  - Kusile removed from priority list
- **Execution of Koeberg 1 Outage**
- **Source external specialized skills**

2 Execute excellence

65%[1] EAF

Actions for FY24

- **Successful execution of Koeberg 1**
- **Sustain Excellent Medupi performance**
- **Embed principles of Operational Excellence**
- **Address internal skills gaps**
- **Prevent outage slips**
- **Return of Kusile 1, 2 and 3**
- **Synchronisation of Kusile 5**
- **Review plant shutdown dates based on system requirements**

3 World class performance

70%[1] EAF

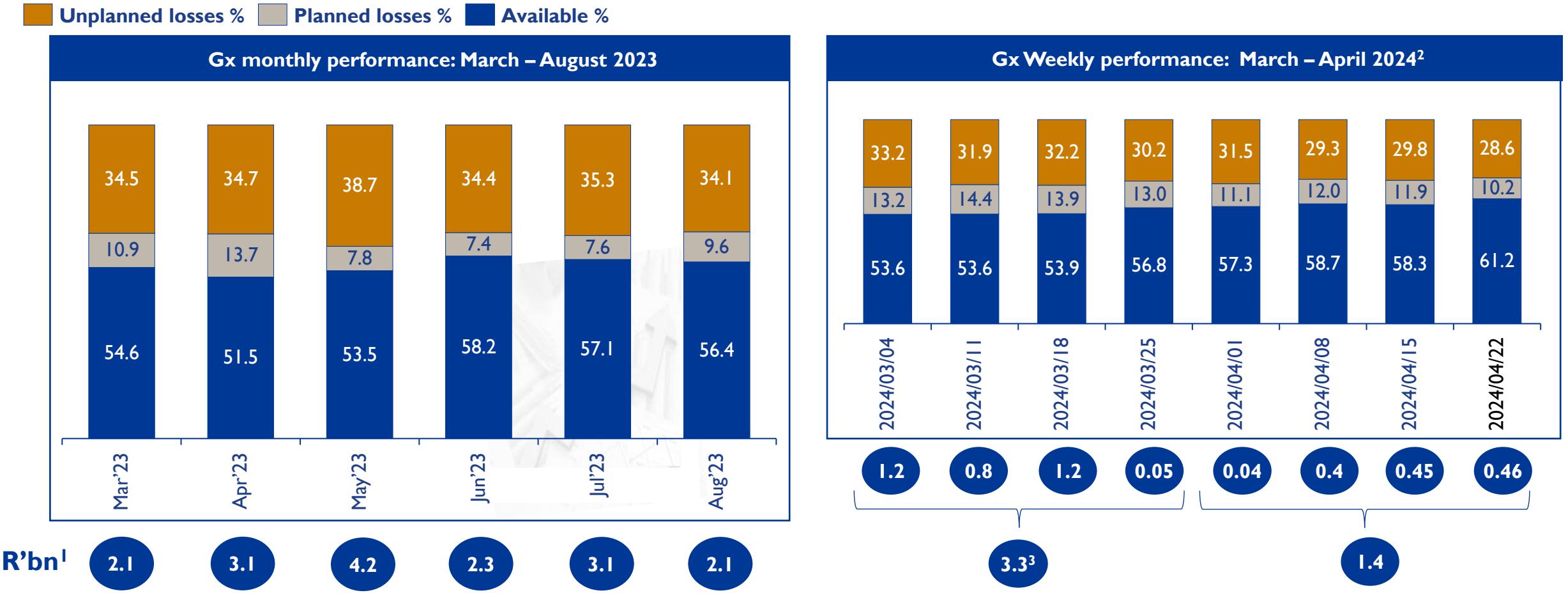
Actions for FY25 onwards

- **Return of Medupi 4** from long term forced outage (Sept 2024)
- **Commercial operation of Kusile 5** (Jun 2024)
- **Synchronisation of Kusile 6** (Oct 2024)
- **Continuous focus on current and future skills**
- **Ensure successful implementation of Koeberg 2 steam generator and long-term operating projects** (Sep 2024)

Continuous execution of Culture transformation and Strategic Levers as per the Generation recovery plan

Note: 1. MTD for March 2024 and March 2025

Eskom has managed to increase plant availability and decrease spend on expensive OCGT generation, especially across Mar and Apr 2024



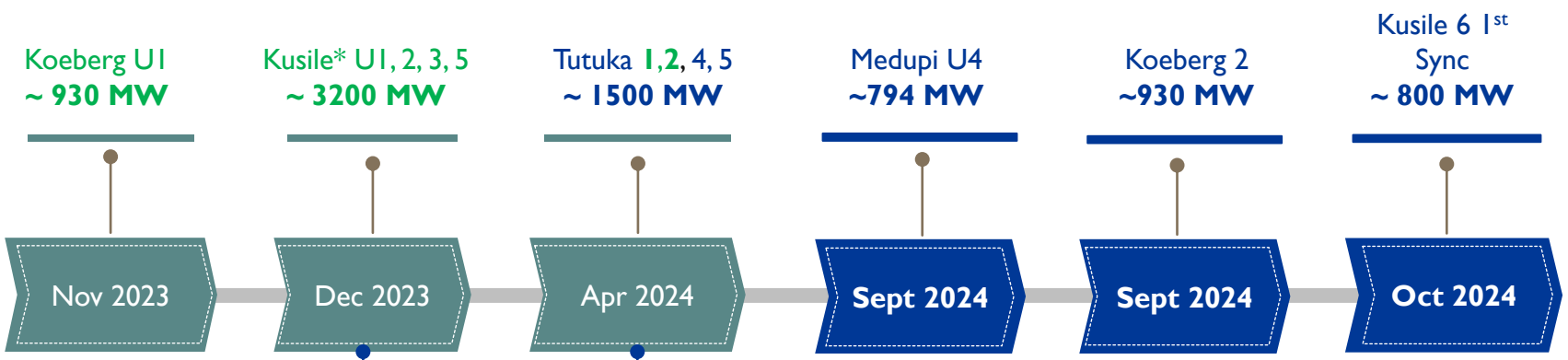
- Eskom's **plant availability** has been **trending upwards**, especially for **Mar and Apr 2024**, supported by **decreasing unplanned losses**
- The increased availability has supported **decreasing spend** on **expensive OCGT generation**
- OCGT are part of the energy mix utilized for meeting peak demand as required by the system operator

Notes:
1: Draft numbers, still to be audited 2: unplanned losses includes OCLF; 3: Includes 1-3 March spend

xx Denotes Eskom and IPP OCGTs MTD and WTD actual costs

Beyond the winter period, units on long term outages and the remaining Kusile units will be brought online as part of the Recovery Plan

Units on long term outage - return dates



- Units 3, 1 and 2 have been returned to the grid and are providing power up to 2400 MW
- Unit 5 post sync optimisation to 800 MW full load is in progress

- Unit 1 completed on 12 Jan 2024
- Unit 2 returned on 27 December 2023.

Key insights

Kusile - Kusile units 1 to 3 (with temporary stacks) were returned to service ahead of schedule by end 2023.

- Additionally, Kusile U5 synchronised to the grid on 31 December 2023. Post sync unit optimisation to full load is progressing
- Kusile U6 is planned to first synchronise by Oct 2024

Tutuka RTS dates

- Unit 4 planned outage for Low Pressure turbine rotor and HPH replacement, return to service (RTS) end April 2024
- Unit 5 on Major outage with RTS April 2024.

Medupi U4 is planned to be operational in September 2024 with the second-hand stator. Stator arrived in South Africa in February and arrived at Medupi on 5 March.

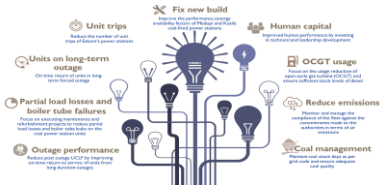
Koeberg U2 outage started on 11 December 2023, estimated completion is September 2024

1. Data as at 25 Mar 2024; LP: Low pressure; HPH: High-pressure heaters; RTS: Return to service

Recommendations from the independent reviews including the recent VGBe report have been incorporated into the Gx Recovery Plan

Timeline for the independent reviews

9 Point plan approved



Dec 2018

Ministerial Technical Review Team

- DPE led team to conduct a technical review of Eskom's baseload fleet performance

May 2019

Ministerial Technical Review Team (II)

- DPE led review, with a focus on assessing the Eskom EAF recovery plan (9 Point plan)

Dec 2020

World Bank

- World Bank independent review of the issues associated with declining EAF performance

Sep 2022

Approval of the Gx Recovery Plan

- Establishment of the Recovery office to actively provide oversight to the recovery plans per station

Mar 2023

VGBE Report

- National treasury assigned VGBE to conduct an independent assessment of Eskom's operational situation

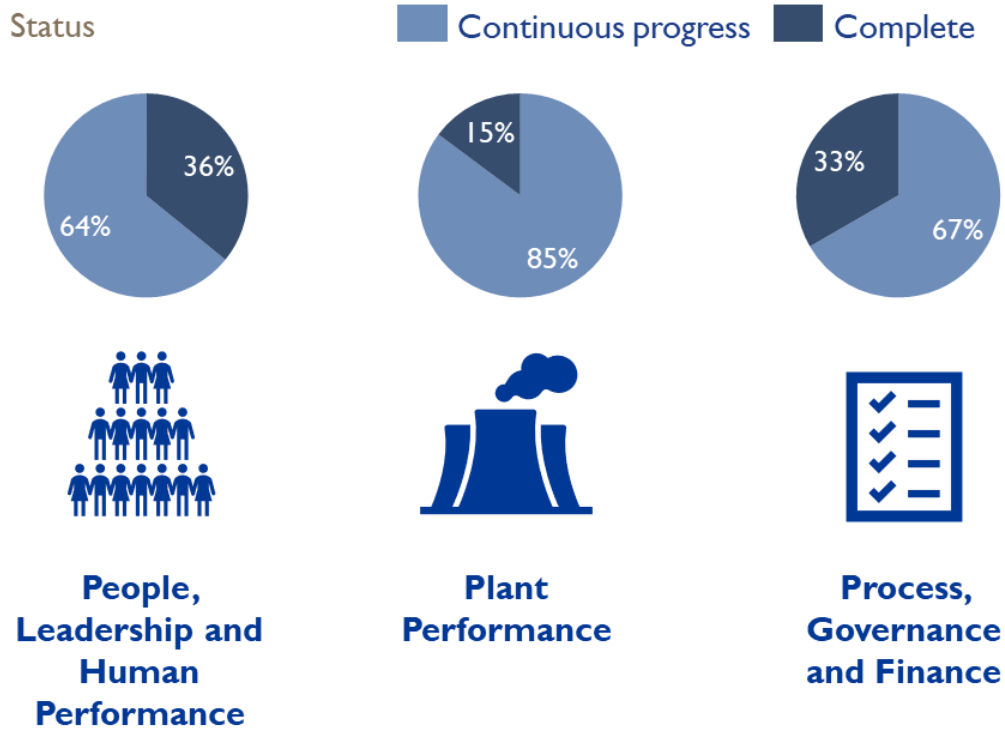
Aug 2023

WSP

- The Eskom Board appointed WSP in March '23, to independently review and stress test the effectiveness of the current Gx Recovery Plan

Jan 2024

Initiatives in progress from independent reviews



Key successes

- Improved collaboration with **OEMs and NECOM** for capacity building
- **Optimised** internal and external **procurement processes**
- **Outage readiness improvement** as a result of sufficient budget allocations

MTRT – Ministerial Technical Review Team, WB – World Bank, VGBe – VGBe Energy IS US, NECOM – National Energy Crisis Committee

Key enablers are being implemented to ensure that the Recovery Programme is sustainable

✓ Implementation complete ✓ Implementation in progress

Enablers and progress status	
Leadership Stability	✓ **Delayered and stabilised leadership** team by **closing critical vacancies** (Appointment of Gx GE, critical PSGM vacancies, removing cluster structure) ✓ Executive **coaching** and **psychosocial** supported via **EmpowerU intervention** ✓ Implemented **Management Development, Technical training and authorisations** (GTLP and MDP implemented with over 40 individuals over three years in the program; technical training reinstated through EAL with 11 Gx artisans currently involved; Top Talent and Millennials programs instituted)
Critical Vacancies	✓ Closed **critical vacancies** through **crowdsourcing and recruitment -** focus on **Engineering, Operating, Maintenance, Commissioning and Procurement** (since Apr 2023; over ~2500 vacancies closed either through external appointments or internal promotions) ✓ **Industry support on priority stations and general technical support** on valves, pumps, waste water recovery system, and coal conveyors
Maintenance & Inventory Management	✓ **Prioritised insourcing of critical maintenance with labour support** and **limited outsourcing to credible service providers** ✓ **Establishment of inventory management and recovery team** for turbine, boiler, and auxiliary plant (ERI actively implementing recovery plan to improve quality of service; barcoding system piloted at Duvha for improved inventory management)
Government Support	✓ Leveraging **other SOE support** - Engaging Denel to leverage state capability on security and SAA on technical support for gas turbines ✓ **Gained environmental exemption** to allow for Kusile U1, U2 and U3 to operate at full capacity with temporary stack (returned all 3 units to service during 2023 to support the grid) ✓ Minimum emissions appeal to DFFE for multiple power stations (Awaiting DFFE feedback) ✓ Government support for Eskom's **participation in clean energy investments to support RE growth, e.g. gas and pumped hydro storage and nuclear schemes**

PSGM – Power Station General Manager; GTLP – Generation Technical Leadership Program; EAL – Eskom Academy of Learning; ERI – Eskom Rotek Industries

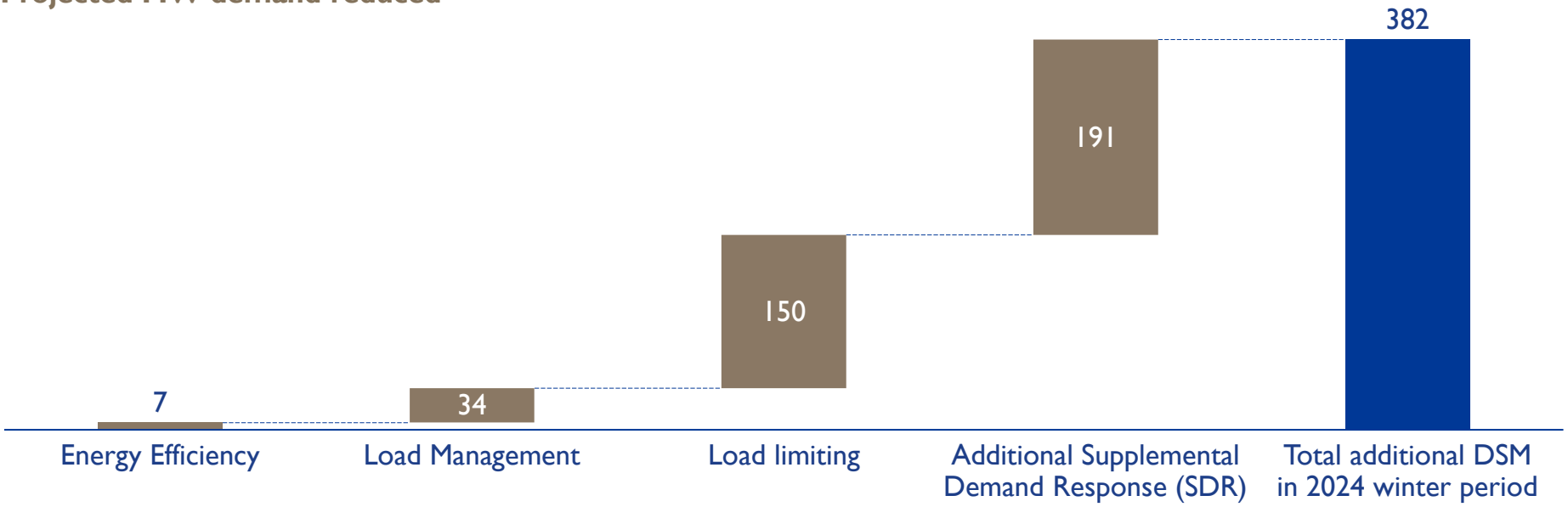
Agenda

- Generation recovery overview
- **Demand management overview**
- Conclusion

Demand management initiatives with a target of ~382 MW have been identified for the 2024 winter period

Overview of Demand Management initiatives

Projected MW demand reduced



- Beyond the winter outlook, Distribution will be driving initiatives worth 2282MW in the next 12 – 18 months, which include:
  - Residential load management from Metros (432 MW)
  - Load Limiting (1850 MW)

- Eskom is focusing on **4 areas to deliver 382MW of demand reduction during the 2024 winter period** which will assist to alleviate pressure on the electricity system. This is over an above the cumulative demand savings of 4 800 MW achieved since the program was initiated in 2005
- Some progress to date includes:
  - **Successful deployment of 50MW load limiting** through **smart meters** and to achieve **+ 150MW within the 2024 winter period**
  - **An incentivised demand management programme launched** April '23 - R3m/MW for load management and R0.41c/kWh for energy efficiency
  - Deployment of **Eskom Energy Efficiency Programmes** and **Power Alerts** driving behaviour change
- Working together with municipalities to address **ongoing infrastructure theft, vandalism and overloading – over 1000 isolated/ failed transformers** throughout the country.

In addition to demand reduction, Eskom is also focusing on five additional initiatives to relieve pressure on the electricity system

Initiative	Description
Small Scale Embedded Generation (SSEG)	• Incentivising customers to export excess energy and receive a credit to add energy to the grid • Efforts being undertaken to encourage customers to make safe inverter installations by registering with the utility - 429 systems with an equivalent capacity of 254 MW has been authorised to date • Battery energy storage commissioned with another 5 under construction and 2 in procurement
Microgrids	• Deploying microgrids as an alternative to grid-tied solutions, providing further relief to the system • 20 microgrids installed over 2023/4 with a target of 33 over 2024/5 financial year
Wheeling	• Driving virtual wheeling and traditional wheeling solutions to incentivise establishment of, and investment into generation facilities
Standard Offer	• Developed Standard Offer program that allows customers to sell excess energy to Eskom – 16 projects with a total capacity of 66 MW in the pipeline
Community Co-ops	• Driving collaborative partnerships with various communities in all the provinces to manage their electricity supply and infrastructure with the aim of reducing electricity theft and vandalism, providing further relief to the system

Eskom is working with the IEC to ensure that adequate plans are in place to ensure electricity supply

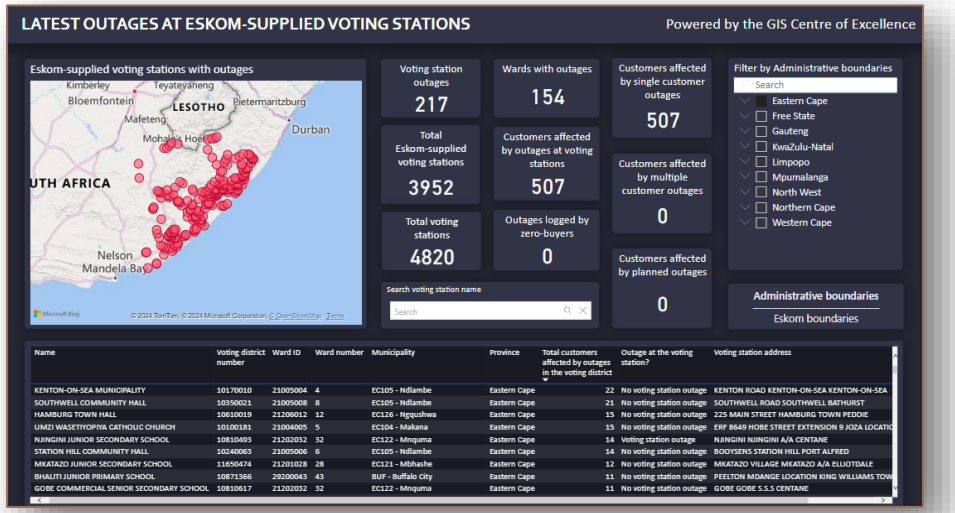
Election Preparations

- Distribution Tactical Command Centre is co-ordinating Distribution preparedness for the elections.
- Distribution Provincial Elections co-ordinators appointed.
- Engagements with external stakeholders (National and Provincial IEC) have commenced.
- Memorandum of understanding between Eskom and IEC concluded and has been signed off from Eskom side.

Operational plan

- **Outages and Maintenance**
  - Unplanned outages affecting voting stations will be escalated and prioritised in terms of dispatching.
- **Emergency Response Structures will be activated when necessary**
  - Provincial Joint Command Centre's (PJCC's).
  - Distribution Tactical Command Centre.
- **Situational awareness structures and Eskom's presence at IEC results centres**
  - Situational awareness structures at Provincial and National levels will be activated during election period to provide information to stakeholders in relation to total systems capacity and continuity of supply at the voting stations

Voting Station Dashboard Link



Voting Stations Per Province

Operating Unit	Total Voting stations	Voting Stations in Eskom supply	Voting Stations in Eskom supply with electricity	Voting Stations in Eskom supply with no electricity	Voting stations in Munic supply
Eastern Cape Operating Unit	4838	4068	3768	300	770
Free State Operating Unit	1553	680	547	133	873
Gauteng Operating Unit	2979	1365	1217	148	1614
KwaZulu-Natal Operating Unit	5011	3626	3375	251	1385
Limpopo Operating Unit	3267	2951	2768	183	316
Mpumalanga Operating Unit	1816	1326	1247	79	490
North West Operating Unit	1509	1187	1081	106	322
Northern Cape Operating Unit	757	407	377	30	350
Western Cape Operating Unit	1573	549	532	17	1024
Grand Total	**23303**	**16159**	**14912**	**1247**	**7144**

Agenda

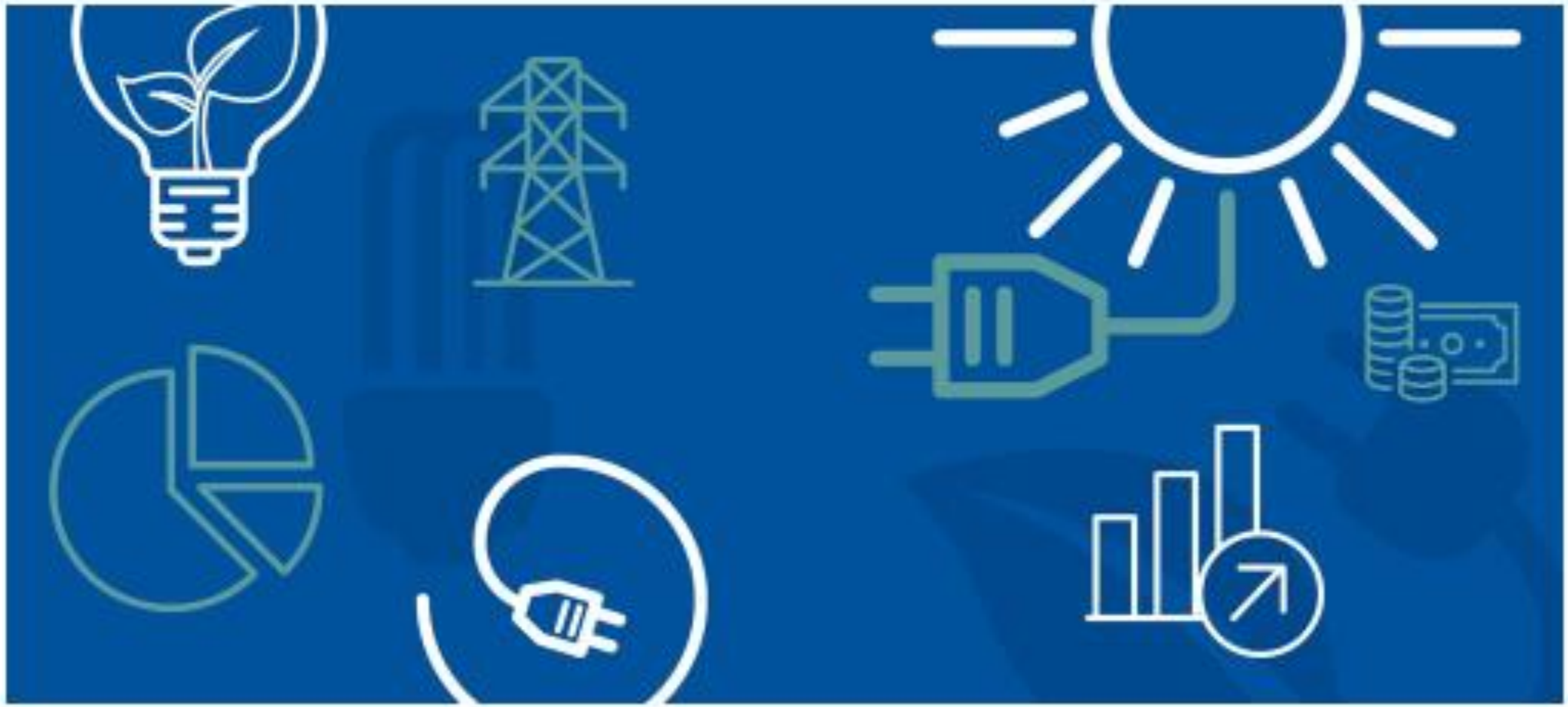
- Generation recovery overview
- Demand management overview
- **Conclusion**

In Conclusion

- We have seen a **positive trend in the reduction of unplanned load losses** leading to the **reduction in loadshedding intensity** and **frequency** over the FY24 summer period
- The **winter outlook likely scenario indicates loadshedding will be limited to stage 2,** given improvement in the generation fleet performance since last winter outlook
- Through **disciplined execution and single-minded focus on our Generation Recovery Plan,** we expect loadshedding intensity to continue to reduce
- We appreciate the efforts of our **employees and the NECOM partnership** for their contribution **towards reducing the intensity of loadshedding**
- The biggest impact we can all make as a nation is to **use electricity sparingly** and encourage **participation in the energy saving initiatives** during the month of May (**Energy saving month)**
- We **understand and apologise for the negative impact that loadshedding** has had on the South African people, but we remain steadfast in our plan to overcome it

Media briefing

Eskom



26 April 2024