Winter Outlook Briefing

May 2023

Executive summary

- Despite several positive developments to address Eskom's challenges, loadshedding has intensified with a devastating impact on our economy.
- The winter outlook indicates an **increased risk of supply shortfall against expected demand**, with our worst-case scenario indicating that loadshedding could intensify to stage 8, if our interventions are not successful.
- The **increase in loadshedding levels does not mean there is a greater risk of a national blackout**, instead loadshedding is one of the processes we use to prevent such an occurrence by managing the demand for electricity at a given time.
- **Efforts to reduce and ultimately end loadshedding require us to work together** to drive interventions both on the supply side (improving available generation) and demand side (reducing peak demand)
- **Eskom remains committed to increase the amount of available generation**, with a specific focus over the winter period, by:
  - Reducing our unplanned losses in the generation fleet
  - Managing planned maintenance to the minimum level of maintenance required over winter
  - Increasing diesel burn at the open cycle gas turbines (OCGT)
- We are driving the **Generation Operational Recovery Programme with the support of our Board** to sustainably recover the performance of the plants over the next 24 months.
- **Leadership stability, skills interventions, partnering with industry and other Government departments** are some of the enablers we have put in place to ensure we succeed.
- Despite all these efforts, **more needs to be done to reduce the level of electricity demand specifically during the peak**. We believe **the public can greatly support efforts to mitigate impact of the energy crisis** especially over the winter period

Despite several positive developments to address Eskom's challenges, loadshedding has intensified impacting the economy

	Developments	Impact
Establishment of NECOM, EAP and appointment of electricity Minister	• Intergovernmental structure established, followed by the President's Energy Action Plan overseen by the Electricity Minister	✓
MES / air quality consultation panel	• Independent advisory panel to assess impact of MES / air quality challenges and consider mitigations to security of supply • Exemption for Kusile temporary solution	✓
Positive developments in Eskom's financial challenges	• NERSA determination with NT debt relief solution is a positive development towards a sustainable ESI	✓
EAF deterioration	• EAF has deteriorated from target of 60% at the time and currently 52% • Load losses associated with Flue gas duct incident at Kusile and delays to Koeberg resulting in loss of ~ 3080 MW generation capacity	!
Limited impact from sec 34 determination REIPP BW5&6, RMIPPP, etc.	• Developers experienced delays in reaching commercial close (global economic challenges) - 279.2 MW added since April 2022, • BW 5 and 6 anticipated to come online 2024 and 2025 respectively • Release of **RFP** for **BW7 & Gas Programme** highly dependent on available grid capacity	!

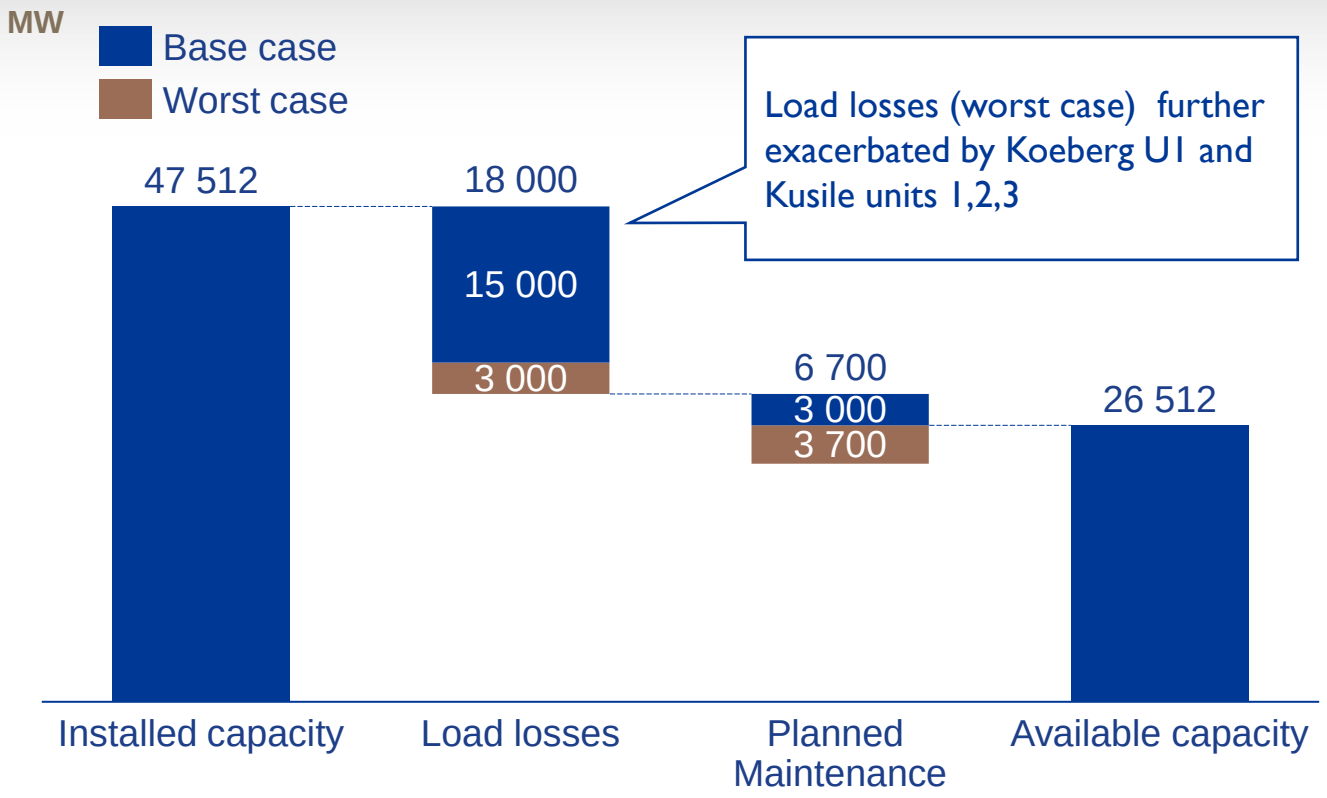
Impact

- 2022 experienced the highest levels of loadshedding
- Reduced Q3 real GDP growth by **2,1 percentage points**
- R300 bn cost to the economy
- ~ 5% of SA GDP lost in 2022

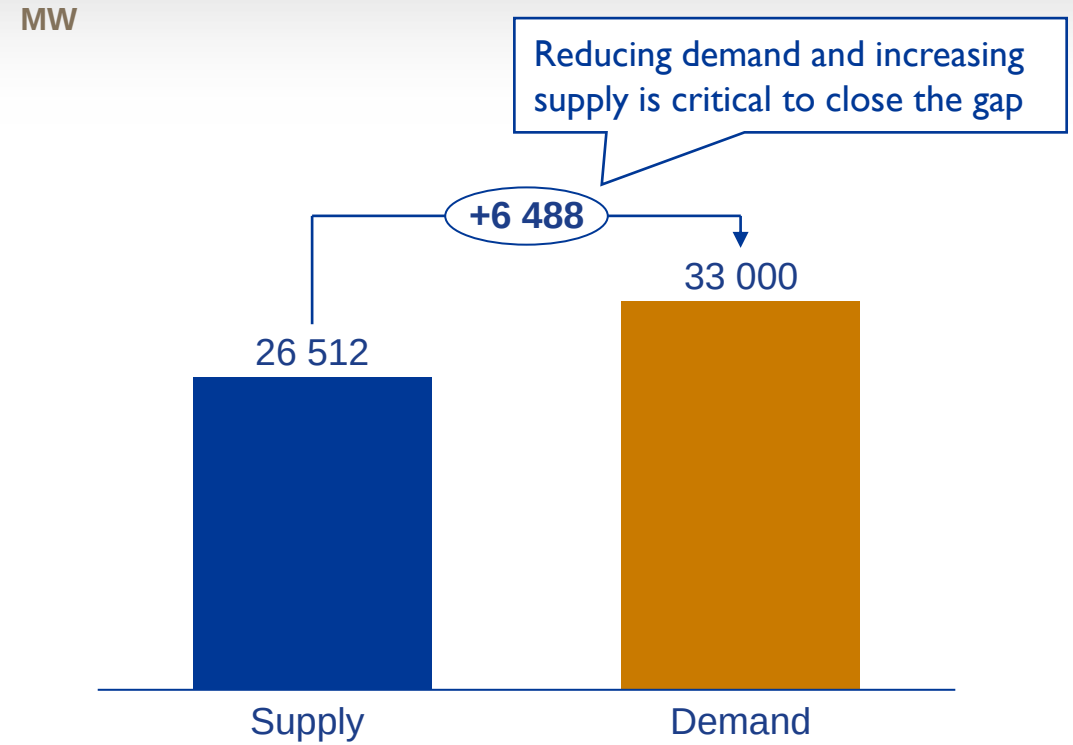
The winter outlook indicates significant risk of demand and supply imbalance

SS

Available supply based on winter outlook (Base case + 3000MW)



Available supply against forecast peak demand



- Unplanned load losses have deteriorated to ~16 000 MW, impacted by Kusile, 1-3, 5, Medupi U4, and Koeberg U1
- **Should load losses deteriorate to 18 000 MW (base case +3000)** and the forecast peak demand materialise – **this could result loadshedding beyond stage 6 driven by variance of ~4000MW in UCLF.**
- Efforts are underway to return units from outages, reduce partial load losses and maintain planned maintenance between 1300 - 3000 MW over the winter period
- Eskom will be **intensifying demand side management** and **increasing diesel production** to reduce the supply deficit within stage 6 loadshedding

Winter period comparison between 2022 and 2023 shows a net reduction in Capacity ~3000MW over winter

SS

Eskom

Capacity		Demand
Decrease of 3080 MW due to unavailability of Kusile 1,2,3, and Koeberg 1		Demand in winter 2023 is expected to be similar to 2022 at around 34 000 MW
Planned maintenance reduced over Winter to range of 1300MW - 3000MW, however same principle between 2022 and 2023		151 MW increase in Demand Response (DR) from April 2022 to April 2023
IPP of 75 MW has been added to the grid and a 100MW Standard Offer participant has signed to deliver by winter		DSM is 57 Mw higher in April 2023 than in April 2022
290 MW from the Emergency Generator Programme is expected during winter 2023		Power alert delivers up to 270 MW at peak, but is mature and not expected to increase

The scenarios of the winter outlook indicate loadshedding could intensify to stage 8 if our interventions are not effective

SS

Eskom

Winter 2023 – 1 April -31 August (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

If **unplanned outages average 18000MW** for the winter period, **load shedding** will be required **everyday and will be implemented up to stage 8**

Risks & uncertainty with regards to System Operators winter outlook

Load shedding is implemented to maintain the stability of the national power system. Schedules are available up to Stage 8 load shedding so that it can be implemented in a controlled way to ensure that the required operating reserves are maintained. Beyond stage 8 SO will determine the amount of MW to be reduced per area

The winter outlook is "tight" and any significant outage slips will have a knock-on effect that will influence the plan from that point forward.

The winter outlook does not cater for difficulties that could arise at power stations due to industrial action or other protests.

There is a ± 2 000 MW variance in UCLF (4 000 MW). This is often the variance in one week (168 hours). This cannot be predicted and makes planning uncertain. Trend analysis suggests that this variance could increase to ± 4 000 MW by the end of the outlook period (March 2024)

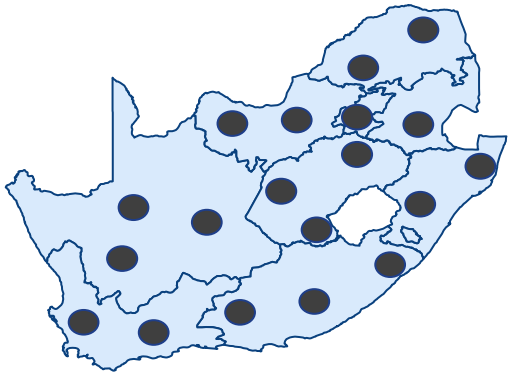
The unavailability of Kusile units 1, 2 & 3 as well as Koeberg Unit 1 has removed 3 080 MW of Capacity from the power system for winter 2023. This is equivalent to 3 stages of load shedding.

Increased loadshedding does not mean greater risk of a national blackout

SS

Eskom

Increased loadshedding



- **Controlled reduction** of electricity demand to match supply
- **Scheduled** ahead of time, **sequenced** for specific areas
- **Proactively managed** through a **well established process** from the national control

≠

National blackout

- **Uncontrolled loss of energy** in the entire power system
- **Multiple systems would have to fail** at the same time for a black out to occur
- Generally, occur as a **result of cascading tripping of critical transmission lines**, possibly caused **by significant weather events** (tornadoes, storms)

Loadshedding does not increase the risk of a national blackout
Loadshedding is implemented to *prevent a national blackout*

Multiple levers are being implemented to reduce the level of loadshedding

BN

Eskom

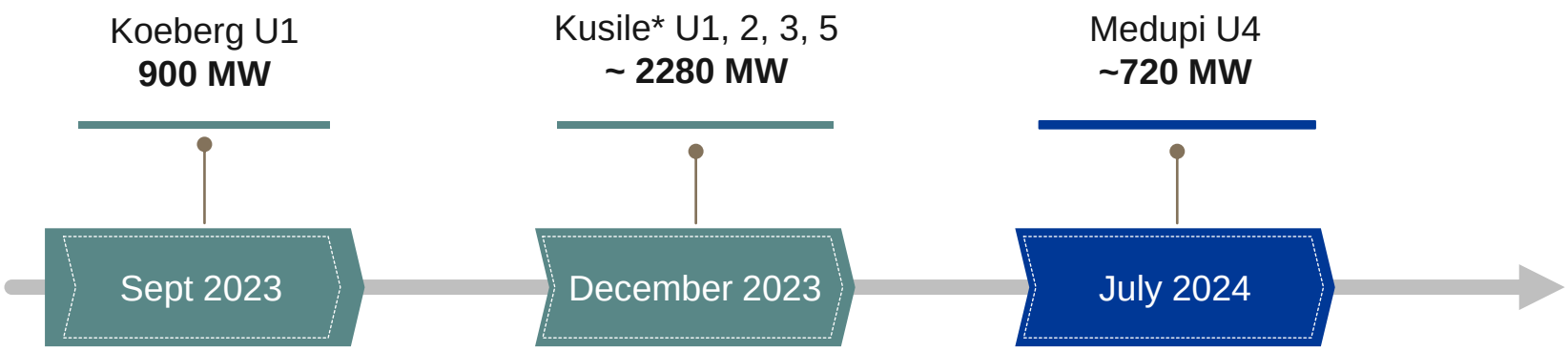
Lever	Description	Potential impact for winter months	Comments
1 Reduce unplanned losses (UCLF)	• Returned Medupi U6, Lethabo U6, Tutuka U2&3 & Matla U6 from unplanned outages • Ensure UCLF reduces and is managed below 15000 MW • Addressing load losses at priority stations	~2000 MW	• ~6 000MW target over next 24 months • Enablers being implemented to ensure sustained recovery
2 Manage planned maintenance (PCLF)	• Maintaining maintenance between 1 300 MW & 3000 MW over winter with a focus on statutory maintenance • Between end of May 2023 until late June 2023 only three units will be on outage • Expediting return of units off load and address outage slips	~1700 - 3000 MW	• Maintenance will be increased in the summer months when demand is lower
3 Increase diesel generators utilisation	• Increase the utilisation of Open Cycle Gas Turbines (OCGTs) to a 20% load factor for the winter period • Budget for diesel in FY2024 has been secured	~482 MW	• 20% load factor for the installed capacity of 2409 MW
4 Drive Demand Side Management (DSM)	• Fast-track the COUNTRY initiatives to encourage the management of consumption and demand initiatives to incentivize customers to add to the existing base of Demand Management Programs of 4.5 GW. • Demand Response of through the recently launched Distribution Demand Management Programme (DDMP) by Eskom in partnership with municipalities	~740 MW	• Aggressive Media Campaign "Use What you need" • Energy losses radio campaign currently flighted on National and Regional stations

The delivery against these levers will be managed through the Generation winter period that is intended to create a single-minded focus on reducing load losses in the shortest time possible to reduce the impact of loadshedding

1 We will return four Kusile units and Koeberg unit 1 before the end of 2023

BN

Units on long term outage - return dates



Key insights

- Due to the delays being experienced in replacing the steam generators at Koeberg U1, the commercial operation date is forecast to be September 2023
- Kusile U1, U2 and U3 will be operational by the end of December 2023 with the temporary stack but environmental exemption is required to operate at full capacity
- Kusile U5 will be synchronised to the grid by November 2023 and will provide 720MW
- Medupi U4 will be operational in July 2024 with the second-hand stator and the new stator will be operational in October 2025

Note: * Kusile U1, 2 and 3 output capacity limited to 520MW per unit due to environmental restrictions

The Generation Operational Recovery Programme is being implemented to sustainably recover the performance of the plants

BN

Eskom

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 **Top 6 priority stations**
  - Tutuka, Duvha, Majuba, Kusile Matla, Kendal
  - **Return of Duvha 2 (complete)**
- **Execution of Koeberg 1 Outage**
- **Source external specialized skills**

2 Execute excellence

65% EAF[1]

Actions for FY24

- **Focus on the next priority stations**
  - Kriel & Arnot
- **Successful execution and RTS of Koeberg 1 - 14 Sept**
- **Sustain Excellent Medupi performance**
- **Embed principles of Operational Excellence**
- **Address internal skills gaps**
- **Prevent outage slips**
- **Return Matla 6 (complete)**
- **Return of Kusile 1, 2 and 3 – Dec 23**
- **Synchronisation of Kusile 5**
- **Review plant shutdown dates based on system requirements**

3 World class performance

70% EAF[1]

Actions for FY25 onwards

- **Kusile fully operational** and **return of Medupi 4 (Jul 24)** from long term forced outage
- **Continuous focus on current and future skills**
- **Ensure successful implementation of Koeberg 2 steam generator and long-term operating projects**
- **Commercial operation of Kusile 5**

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

Note: 1. MTD for March 2024 and March 2025

Several enablers are being implemented to ensure that the Generation Recovery Programme is successful

BN

Eskom

Enablers and progress status

	Management Interventions and progress
Leadership Stability	✓ **Delayer and stabilise leadership** team by **closing critical vacancies** ✓ Executive **coaching** and **psychosocial** support via **EmpowerU intervention** ✓ Prioritise **Management Development, Technical training and authorisations**
Critical Vacancies	✓ Closing **critical vacancies** through **crowdsourcing and recruitment -** focus on **Engineering, Operating, Maintenance, Commissioning and Procurement** ✓ **Industry support on project management** (Medupi U4 and Kusile recovery) **and general technical support** on valves, pumps, waste water recovery system, and coal conveyors
Maintenance & Inventory Management	✓ **Prioritise 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
Government Support	✓ DPE minister initiative to leverage other SOE support - Engaging with Denel to leverage state capability on security and SAA on technical support for gas turbines ✓ **Environmental exemption** to allow for Kusile U1, U2 and U3 to operate at full capacity with temporary stack and for Hendrina, Grootvlei and Camden to operate until system is stable ✓ Support Eskom's **participation in clean energy investments to support RE growth, e.g. gas and pumped hydro storage schemes**

✓ **Implementation complete** ✓ **Implementation in progress** ✓ **Implementation not started**

CALL TO ACTION for WINTER: Protect our electricity supply – we can reduce stages if we do our bit

MB

Eskom

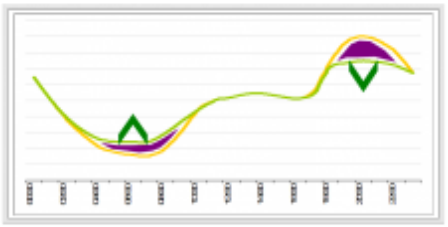
1 What have we done…

1. Eskom has **ACHIEVED 4500 MW** (Demand programs)
2. Eskom launched a **national incentive program targeting 1450MW over 3 years**
3. **SMART metering is being deployed** (>300 000) – customer support required
4. Aggressive Media campaign for a **CALL TO ACTION**
5. We have **implemented** a number of **pilots across various sectors**

2 What are we doing…

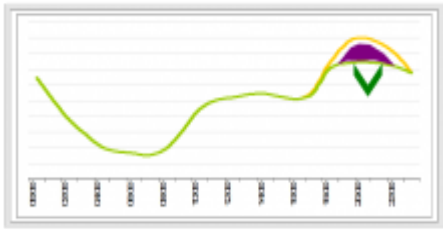
Program 1:

Load Management Programme (LM)



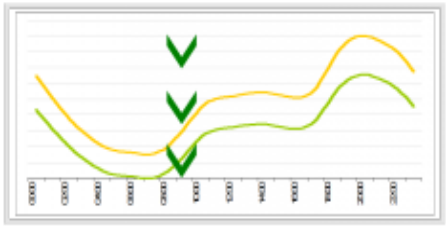
Program 2:

Residential Load Management (RLM)



Program 3:

Energy Efficiency (EE) Programme



3 What can you do….

How can you help to reduce loadshedding:

1. **Use only** the **electricity you need**
2. **Switch off** what is not needed
3. **Protect the electrical infrastructure** in your area
4. **Stop the Izinyoka** – they leave you in darkness
5. **Pay and be legal**
6. **Delay charging** should be implemented for **inverter systems**

In conclusion:

- **Eskom would like to apologise to all South Africans** for the negative impact caused by the implementation of loadshedding
- **We understand the impact loadshedding has on the economy and on the livelihood of all South Africans**, however loadshedding is implemented to maintain the stability of the national power system to avoid a blackout
- The **immediate winter outlook indicates a higher risk of demand and supply imbalance**, and scenarios indicate loadshedding could intensify to stage 8 if the interventions are not effective
- **Higher levels of loadshedding do not mean that we are at a higher risk of a national blackout** – we implement loadshedding to ensure that we prevent a national blackout
- **There are plans, systems and processes to prevent the possibility of a national black out.**
- **We will intensify efforts to overcome the winter period, and continue to implement the Generation Recovery Programme** which will sustainably improve the performance of our plants
- **The biggest impact we can all make as a nation is to use electricity sparingly, especially during the peaks**

END