System Status and Outlook Briefing

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11 May 2022

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Overview and summary of Eskom system year-to-date performance (1/3)

- We continue to see a **varied performance** by our operating divisions year-to-date, with generally good performance from Transmission and Distribution. The **unsatisfactory performance from the Generation division continues.**
- The **Distribution technical performance** is positive in terms of **duration and frequency of outages** as well as **restoration times.**
- On the **Transmission side, we see good performance** with system reliability, the number of interruptions and maintenance execution that meets planned objectives. We have had **no major incidents** year-to-date.
- **Municipal debt** and **Energy losses** remain a challenge and working closely with government, communities and the public to implement the strategies towards resolution.
- **Koeberg Nuclear Power Station Unit 1** continues to operate safely and has been online for 196 days today. **Unit 2** commenced with a normal maintenance and refueling outage on 18 January 2022 during which the reactor vessel head and the three steam generators were to be replaced (SGR).
  - Due to the significant risk to the grid posed by delays in carrying out the SGR installation according to the outage plan, we **decided to postpone the SGR** to the next refueling outage. **The reactor vessel head replacement continues during the current outage.**

Overview and summary of Eskom system year-to-date performance (2/3)

- **Kusile Unit 4** was first synchronised on 23 December 2021 and achieved full load (800 MW) on 11 January 2022. On 28 March 2022, the 72-hour full load test run was achieved and on 27 April 2022, the **30-day reliability run** was successfully accomplished and declared complete, as commissioning tests continue towards commercial operation. Commercial Operation planned for 2022. **On course for commercial operation by July 2022.**

- **Coal stock levels are healthy** – average **of 38 stock-days**, 77 stock-days when including Medupi, which has excess coal.

- The **Generation** side of the business remains a concern, specifically the availability of the coal power stations. **End-March 2022 Energy Availability Factor (EAF) at 62.0% is below the the targeted performance level.** A key contributor to the low EAF was **high levels of planned maintenance** over the summer months. The high levels of unplanned outages remain a concern, however, we continue to drive our **Reliability Maintenance Recovery Programme to reduce these**.

- The **Reliability Maintenance Recovery Programme:** More effort has been applied to ensure that the key funding and enabling contracts are in place to support the objectives of this critical programme within the maintenance space that can be made available – ensure 80% outage readiness.

Overview and summary of Eskom system year-to-date performance (3/3)

- **Rain Readiness plans** have generally held up against high summer rainfall and with the sustained rains in April there are further opportunities identified for continuous improvement.
- Unfortunately, as at **10 May 2022** increasing breakdowns and low plant availability forced Eskom to implement **loadshedding** totaling **31 days** since **01 January 2022,** compared to **26 days** between **January 2021** and **10 May 2021**. Due to the system constraints, we have used more that the anticipated levels of diesel for our **Open Cycle Gas Turbines** (OCGTs).
- **Environmental matters** such as emissions have shown good improvements year-to-date, but are not yet at the set targets. **Safety is better than the tolerance levels.** Regrettably, however, we have had **3 employee** and **2 contractor fatalities** by the end of the 2022 financial year.

Transmission Performance as at end March 2022

SM<1 of 2.88

vs YE target of 3.53

98.8 % Maintenance Execution

2 Major Incidents

vs YE target of 2

26 Interruptions

vs YE target of 34

- **System reliability performance:** A very good **System Minute <1** performance was achieved, supported by a relative low number of interruptions.
- **Two Major Incidents** have occurred, which is within the planned limit.
- **High level of maintenance execution** has been sustained.
- Asset condition risks require **increased asset renewal investment** for future operational sustainability.
- **Ongoing theft** and **vandalism** has **impacted operations,** creating risks for interruption incidents.

Distribution Performance as at end March 2022

Electrification

97 948

vs.

YTD Target of 99 724

SAIDI

35.46

vs.

38.00 Tolerance

SAIFI

12.34

vs.

19.60 Tolerance

Planned Maintenance Completed

95.15%

vs.

YTD Target of 93%

Refurbishment Spent

R286m

vs.

YTD Target of R540m

Restoration Time

93.39%

vs.

91% Target

- **Network performance** has been sustained, as measured by **SAIDI and SAIFI.**
- **Restoration Time** was better than target, while **Planned Maintenance** was completed as scheduled.
- The **Electrification** programme was hindered by material availability during the latter part of the year.
- Key **Refurbishment** projects not completed during the year will be rolled over into the new financial year.
- **Increased theft** and **vandalism** of network equipment continues to impact operations and system reliability.
- **Electricity theft** continues to manifest as an operational, financial and public safety risk.

Group Capital Performance as at 30 March 2022

1 594 MW YTD

vs YTD target of 1 594 MW

(Jan 2021 to April 2022)

Execution of Major Plant Defects Correction

vs plan

- **Kusile Unit 4 first synchronised** on 23 December 2021 and achieved **full load (800MW)** on 11 January 2022. On 28 March the unit achieved the **72-hour full load run**, and on 27 April 2022, the **30-day reliability run was successfully completed**. Commissioning tests continue towards commercial operation.
- The **recovery programme on Medupi Unit 4** has progressed well. The targeted return date is August 2024.
- **Major plant defects correction:** At Medupi, **boiler plant modifications have been implemented** on all six units, except for the long lead time milling modifications and the duct erosion modifications on Unit 6. At **Kusile** Units 1 & 2: the **boiler plant modification outages have been completed.** In February 2022 commenced on Unit 3, to end during May 2022.
- **Execution of emissions control projects:** Steady progress achieved in the projects; however, some construction, commercial challenges and COVID-19 constraints have impacted execution.
- **Execution of ash dam projects:** Significant progress achieved with ashing at Camden and Majuba. However, some construction, commercial challenges, inclement weather and COVID-19 constraints have impacted execution
- **Battery Energy Storage Systems (BESS) Project:** In March 2022, pre-contract award discussions were held with the two recommended bidders for Phase 1. Draft contract documents were shared with the bidders. **Medupi Flue Gas Desulphurisation (FGD):** Functional specification completed for sign-off. Contract Strategy draft document finalised and being signed off.

Status of GCD New Build Programme (inception to date):

Focus is on bringing new capacity online and driving plant defect corrections

Target schedule ✓ Achieved CO on or earlier than target

Completed Units

FY 2015 – FY 2022

Latest Eskom Board Approved Target Dates

FY 2022 – FY 2025

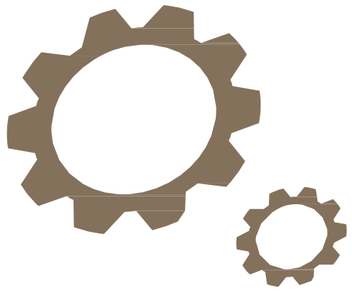
- **Sere Wind Farm** Mar-15 ✓ — 100
- **Ingula Unit 4** **Mar-17** Jun-16 ✓ — 333
- **Ingula Unit 2** **May-17** Aug-16 ✓ — 333
- **Medupi Unit 5** **Mar-18** Apr-17 ✓ — 794
- **Kusile Unit 1** **May-18** Aug 17 ✓ — 800
- **Kusile Unit 2** **Jan-21** Oct-20 ✓ — 800
- **Medupi Unit 1** **Jul-21** Jul-21 ✓ — 794
- **Kusile Unit 4** Jan-23 — 800
- **Kusile Unit 6** May-24 — 800

- 794 — **Medupi Unit 6** **Jun-15** Aug-15 ✓
- 333 — **Ingula Unit 1** **Jul-17** Aug-16 ✓
- 333 — **Ingula Unit 3** **Jan-17** Jan-17 ✓
- 794 — **Medupi Unit 4** **Jul-18** Nov-17 ✓
- 794 — **Medupi Unit 3** **Jun-19** Jul-19 ✓
- 794 — **Medupi Unit 2** **Dec-19** Nov-19 ✓
- 800 — **Kusile Unit 3** **Mar-21** Mar-21 ✓
- 800 — **Kusile Unit 5** Dec-23

8 596 MW installed since 2015 &
14 733 MW installed since 2005 ….

… 2 400 MW to be installed over the next 4 years

Nuclear – Koeberg Performance end March 2022



76.24%

EAF Actual YTD vs.
YTD Target of 82.70%

2

UAGS Trips vs. YTD
target of 2 for FY22

2.86%

Forced Loss Rate vs.
YTD Target of 3.47%

- The lower than planned **EAF** is primarily due to the delays experienced in returning Unit 1 to service during the refuelling outage during 2021.
- The high reliability of Koeberg is reflected in the low forced loss rate, which remains below the target even though there have been two unit trips during FY22.

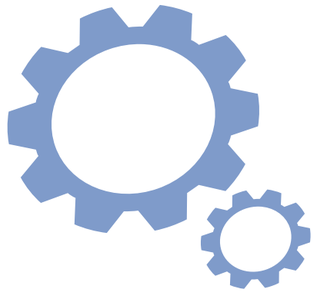
Koeberg Nuclear Power Station

- **Unit 1 has since been on-line for 196 days** (as of today)**.**
- **Unit 2 had been on-line for 454 days** when it was shut down for a 155-day outage on 18 Jan 2022 with **an uninterrupted run since completing its last refuelling outage in October 2020.**

- **Koeberg Long-Term Operation** (LTO)
  - The LTO activities to enable Koeberg to **operate for another 20 years beyond 2024/25 continue**. The formal application to extend the operating license has been **submitted** to the National Nuclear Regulator and **accepted for further processing**.
  - Eskom **will by June 2022 submit the required supporting submissions** to the NNR for evaluation. The required studies and reports remain on track and as expected **no safety concerns** have been identified that would preclude long term operation.
  - As part of the review of Koeberg life extension progress, **an International Atomic Energy Agency team of nuclear experts carried out a review of the life extension activities** during March 2022. The IAEA was **satisfied** with the safety aspects of the life extension project.

- **Upcoming Unit Outages and Steam Generator Replacement:**
  - **Unit 1 will commence a long outage in the last quarter of 2022** during which the three steam generators will be replaced (excluding reactor vessel head replacement which has **already been completed on Unit 1**).
  - Unit 2 SGR will undergo a similar long outage towards the end of 2023.

Generation performance for End March 2022 reflects the challenges being faced with plant availability and reliability



62.02%

Availability vs 74%

YE target for FY22

697

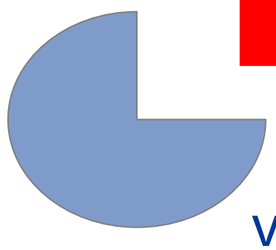
UAGS Trips vs 392 for

YE target for FY22

25.36%

Unplanned load losses vs

14% YE target for FY22



4 851MW

Partial load Losses

vs **3 969MW YE target** for FY22

10.23%

Planned maintenance vs

10.5% YE target FY22

R6.4bn*

Open Cycle gas

turbines cost vs

projected R8.5bn

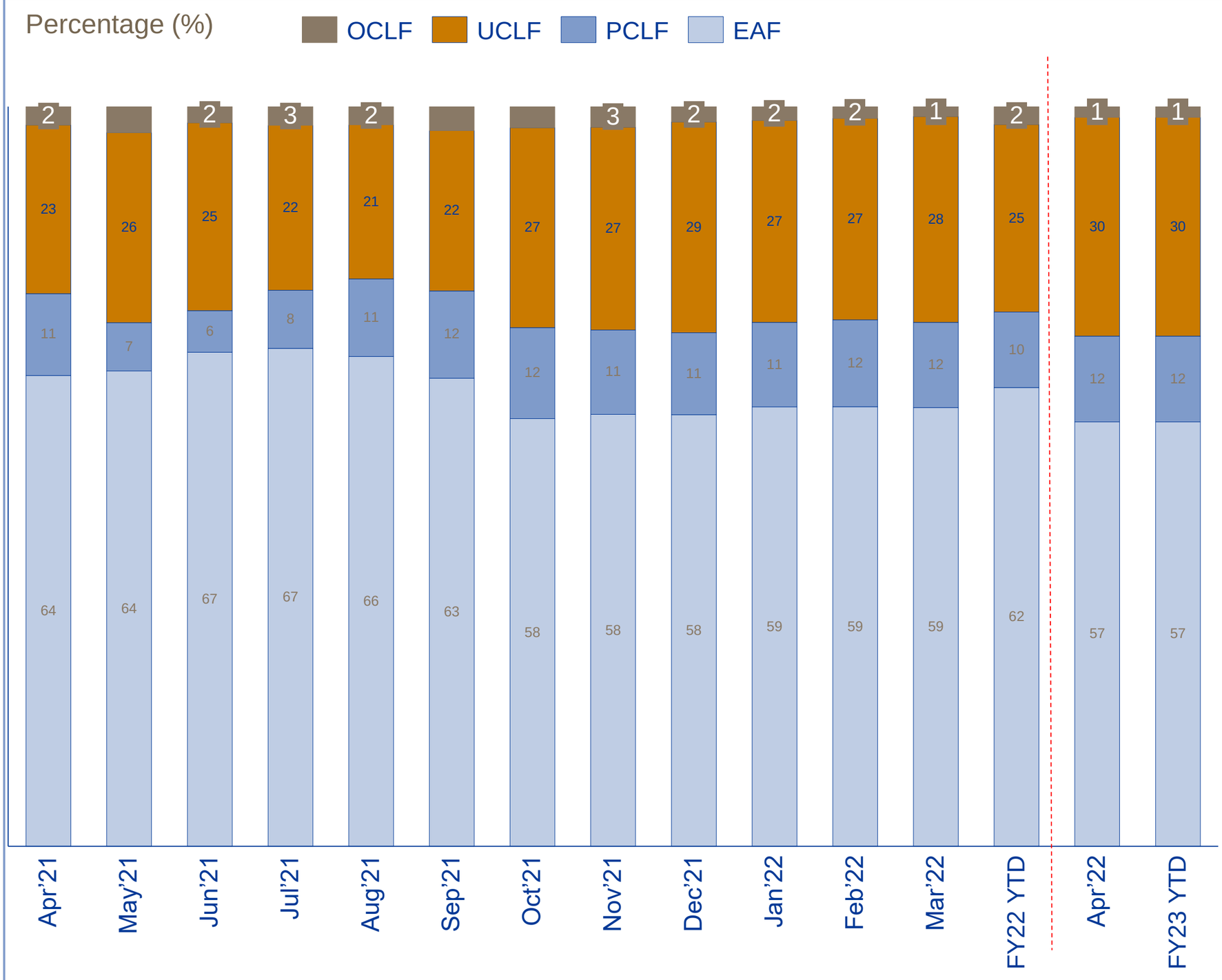
*** Eskom OCGTs only as at end March 2022**

Technical Targets as per FY22 SHC

Figures as at end March 2022, though it must be noted that figures are still to audited

The FY2021 EAF performance was lower overall compared to the FY2020 performance. The FY2022 performance continues to be lower than the aspiration resulting in intermittent load shedding.

Generation monthly and YTD performance



Contributing factors

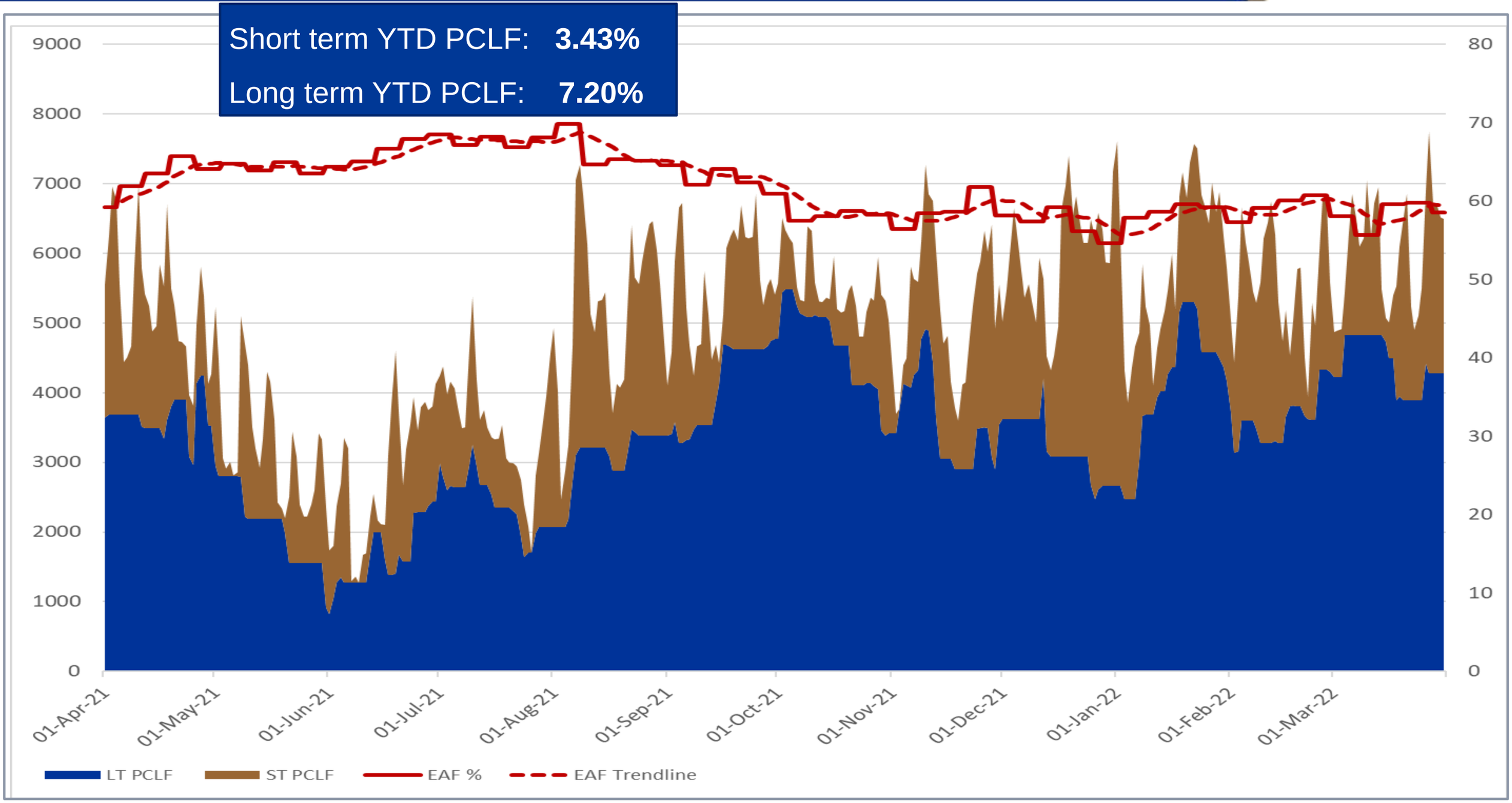
- Slips, trips, boiler tube failures, partial and full load losses all contributed to the high UCLF.
- Generation fleet end-March EAF at 62.02% is below the Year-End target of 74%.
- During the year, a delicate balance was required to giving the plants opportunity for planned maintenance and the having the plants available to support the system. The ratio of short-term to long-term is about 1:2

YTD Figures as at End April 2022 (Prelim)

Long Term maintenance decreased from mid May to end June 2021, which is typical for the winter period, and increased for the summer months

Short term YTD PCLF: **3.43%**

Long term YTD PCLF: **7.20%**



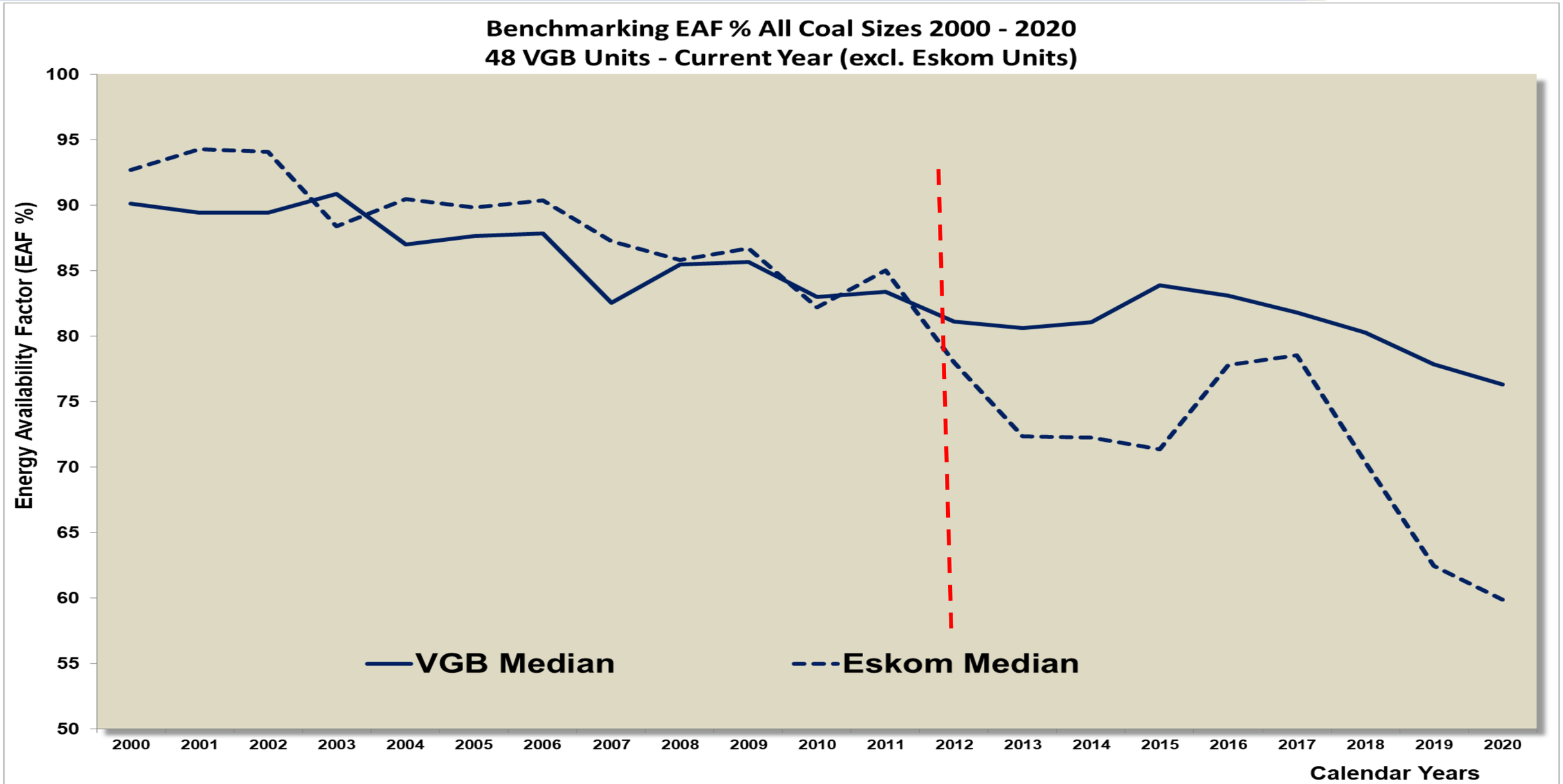
Overview

The maintenance is still showing seasonal trend which is typical for planned outages, reducing in the winter and increasing in the summer period. However short term is fluctuating depending on the space available in the system.

Generation Performance in context - root cause is shortage of both system capacity and funding

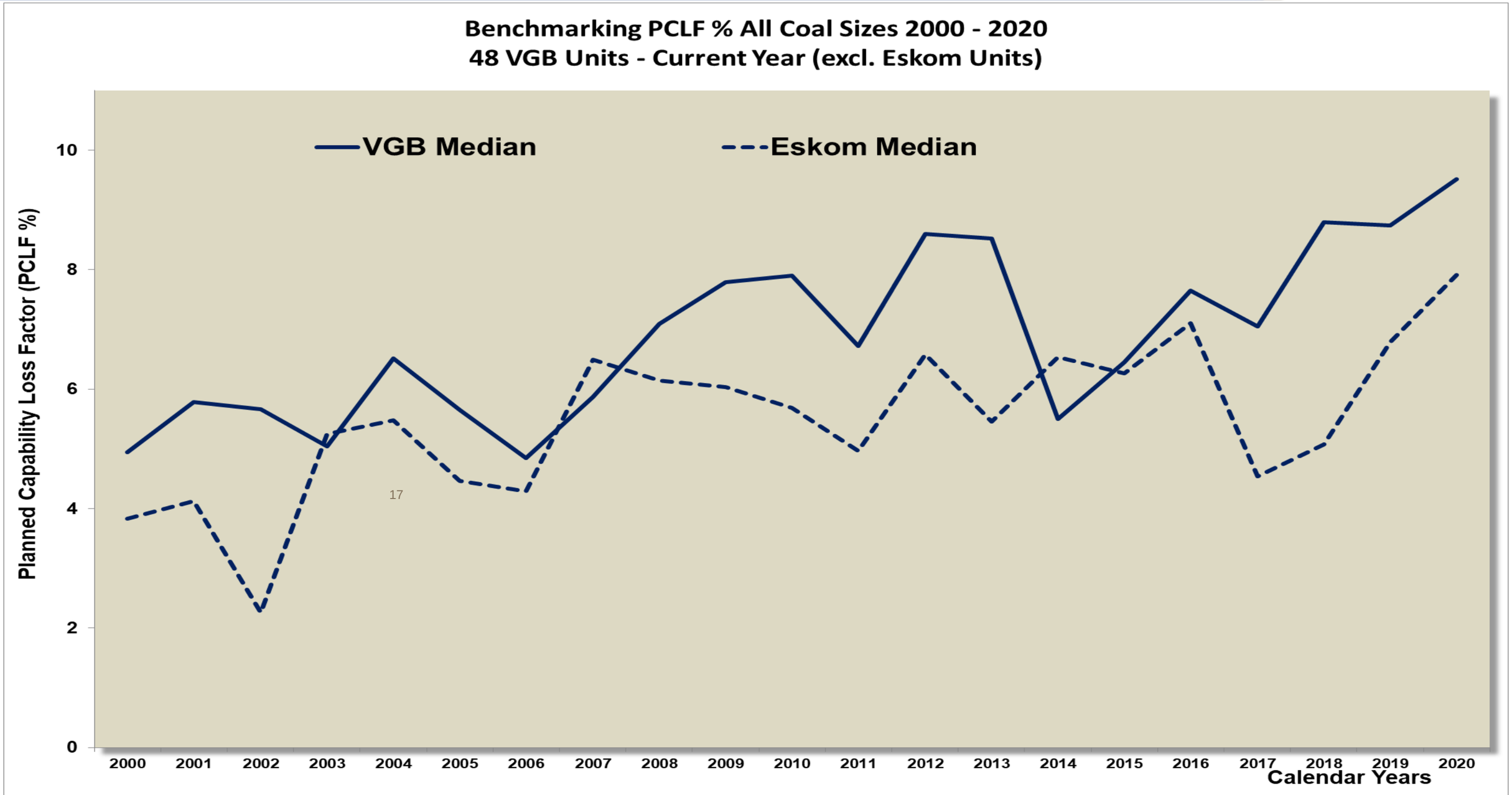
1. First contributor to capacity shortage is the **delay of adding new capacity** to the system**:**
   a. 1998 Energy White Paper stated that **investment decision** to build new capacity was needed by, **not later than, 1999 "to ensure that demand does not exceed available supply capacity".**
   b. Investment decision (business case) was **only made in June 2007** => needed capacity not available in time. This was exacerbated by **delays in commissioning** of both Medupi and Kusile.
   c. Therefore from 2002 onwards 'virtual' capacity was created by **running existing plant above normal design parameters** to 'Keep The Lights On'. In addition, particularly since 2008, necessary **philosophy maintenance was delayed** to avoid loadshedding caused by lack of capacity as units would have to be taken offline for maintenance.
2. As a result, **plant performance** and **availability started deteriorating** from 2nd half of FY 2012/13**:**
   a. Caused by the mechanism of creating **virtual capacity** from 2002, thus for 10 years by 2012 **.**
   This led to **even higher utilization** and **less time available** for maintenance outages**:**
   b. High utilisation of deteriorated plant and deferred maintenance created cycle of deteriorating availability
   c. Cycle could only be broken with **adequate funds** and **system space** in which to perform required maintenance.
3. Third contributor was **sub-cost-reflective regulated revenues** thus insufficient funds to create system space and to perform the required maintenance.
4. Summary: Underlying cause of deterioration in fleet's performance is **lack of sufficient generation capacity**, aggravated by **equipment age, insufficient funds** for **maintenance** and additional **system space**.

Eskom's plant availability (EAF) was better than or in line with peers until 2012



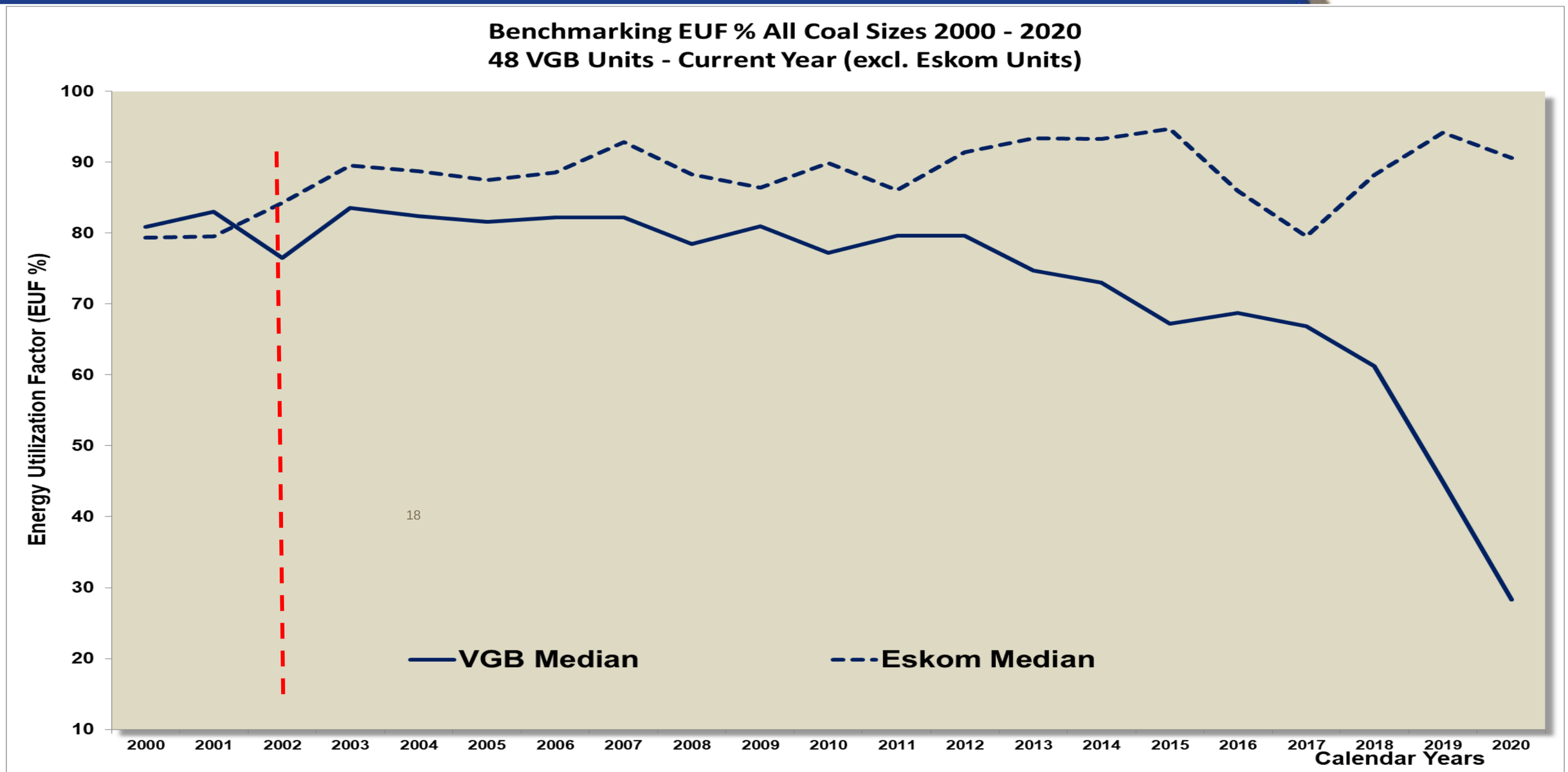
- The general trend, for **both Eskom and the VGB benchmark units is that of reducing availability.**
- This is **consistent with the expectation due to ageing fleet** with few or no new units being commissioned in this period.

Eskom plant's planned maintenance time (PCLF) below peers



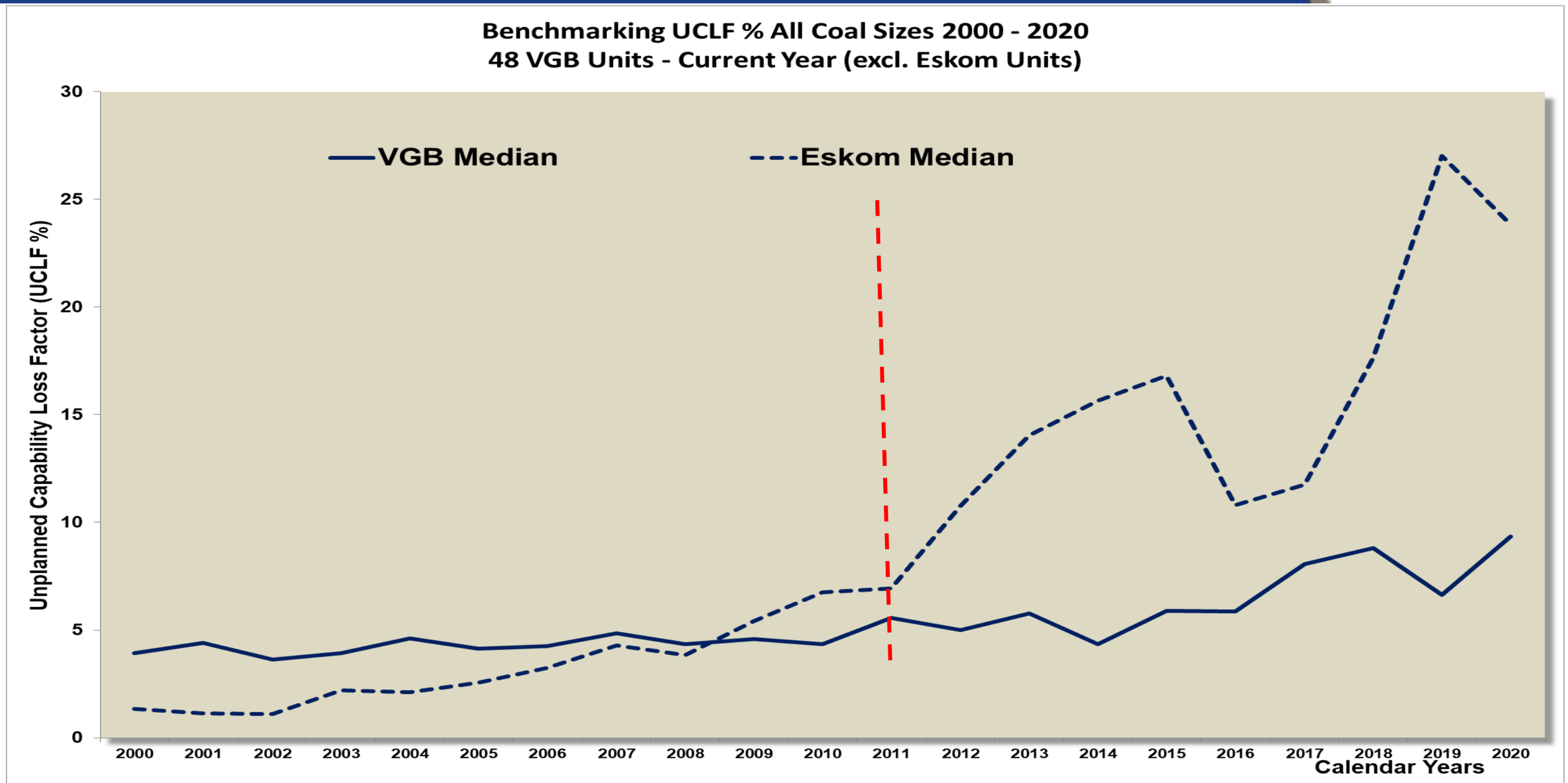
- The general trend, for the top quartile, for **both Eskom and the VGB benchmark units is that of increasing PCLF**. This is consistent with the expectation, due to ageing fleet with few or no new units being commissioned in this period.
- Since 2012, Eskom PCLF for top quartile units increased significantly

From 2002 there simply was insufficient generating capacity. In response Eskom created ‘virtual capacity’ by running coal units harder than those of VGB members since 2002



- EUF measures “how hard” the units are being run – an indicator of stress on systems and components.
- From 2003 Eskom’s median stations were running at similar or higher EUF than VGB best quartile, and since 2012 Eskom’s lowest quartile stations have been running at higher EUF than VGB best quartile
- **High utilisation** means plant systems are required to operate at their limits, leading to **strain, increased wear-and-tear, decreasing plant reliability** and **requirement for increased maintenance**

Eskom plant's Unplanned Energy Loss Factor (UCLF) was in line with or better than peers up to 2011, from which point the 10 years of high EUF and EAF started taking its toll



- The general trend, **for both Eskom and the VGB benchmark units is that of increasing UCLF**. This is consistent with the expectation, due to ageing fleet with few or no new units being commissioned in this period.
- Many influencing factors, but main **root cause is consistently running at high utilisation over many years** due to late start in building new capacity.

We remain committed to improving Generation performance – however the external market can play a key role in addressing the current capacity gap

- Generation have key **turnaround plans** in place to **improve performance** and these are being drive hard
- There is a current **capacity gap** of at least **4 000MW** in order to **service the countries demand**
- **This gap will need to be closed by external power suppliers** to provide the space to effectively execute on the Reliability Maintenance programme
- Due to the backlog in maintenance, this shortage of generating capacity in the country and the age profile of Eskom's generation fleet, **the risk of load shedding will remain until there is adequate capacity in the country**
- **Eskom will continue to drive performance improvement of its fleet within the constraints** of an inadequate system and inadequate funding, which is negatively impacted by below prudent and efficient cost reflective tariffs. However, this, on its own, will not be enough to fully mitigate the risk of load shedding.

Conclusion - GCOO

- We see a continuation of the **strong performances** from our **Transmission and Distribution** businesses.
- Our Group Capital division is making steady progress on the new build programme, with **Kusile Unit 4** now adding up to 800MW of additional capacity to the grid **during testing prior to commissioning**.
- The process to address the **design defects of Medupi and Kusile** is progressing well, and we are looking at additional enhancements.
- South Africa **desperately needs additional generation capacity** of 4 000MW to 6 000MW. **Bringing on new capacity onto the grid is critical.** With power stations reaching the end of their operational life, **the gap will increase.**
- **This gap will need to be closed by external power suppliers** to provide Eskom the space to effectively execute on the Reliability Maintenance Programme.
- We hope to see **positive progress** on government's emergency capacity procurement programme to close the **generation capacity gap** in order to fully **service the country's demand.**

Use Electricity Sparingly : Together we can make a difference

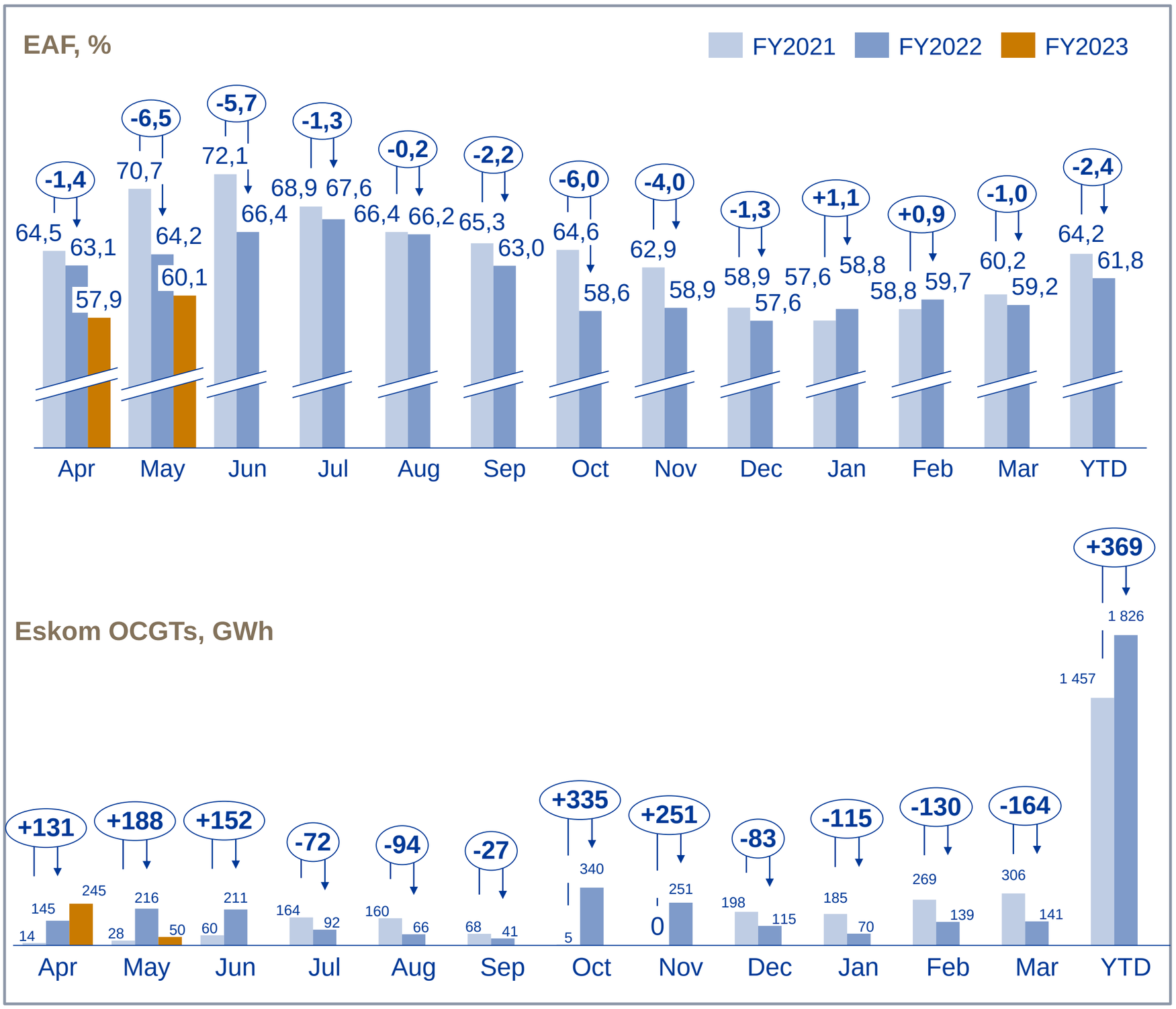
Minimise workplace energy use with these six super savings tips

- Don’t leave machines and equipment in standby mode; **switch off at the power button**.
- Use natural light where possible
- **Use efficient light bulbs**. Replace failed light bulbs with energy efficient lights / LEDs.
- When you leave the facility or building, **remember to switch off the lights, printers and air-conditioners.**
- Set air-conditioners’ average temperature in summer to **around 23ºC**
- Encourage staff to rather use the cold water taps to **reduce the energy consumption by geysers**

Please Use Only What You Need!

Contents

FY2022 System Performance (and up to May 2022 Commercial units)



System Performance

Commercial System EAF

- Financial year **Mar 2022 MTD** was **59%** which was one percentage points lower **(actual: 60.2%)** compared to last financial year March actual.
- Financial year **YTD Mar 2022** is **61.8%** which was about two percentage points **(actual: 64.2%)** lower than last financial year YTD figures.
- **FY2022 YE EAF** budget was **70%** versus **61.8% YTD**

Eskom OCGTs

- **MTD: Mar 2022** was **141 GWh** (7.9% load factor) compared to **306 GWh** actual for Mar 2021.
- **YTD: Mar 2022** was at **1826 GWh** compared to **1457 GWh YTD actuals** for last financial year.
- **FY2022 YE budget** was **211 GWh** (1% load factor) versus **1826 GWh YTD** (8.7% load factor)**.**

YTD Figures as at May 2022

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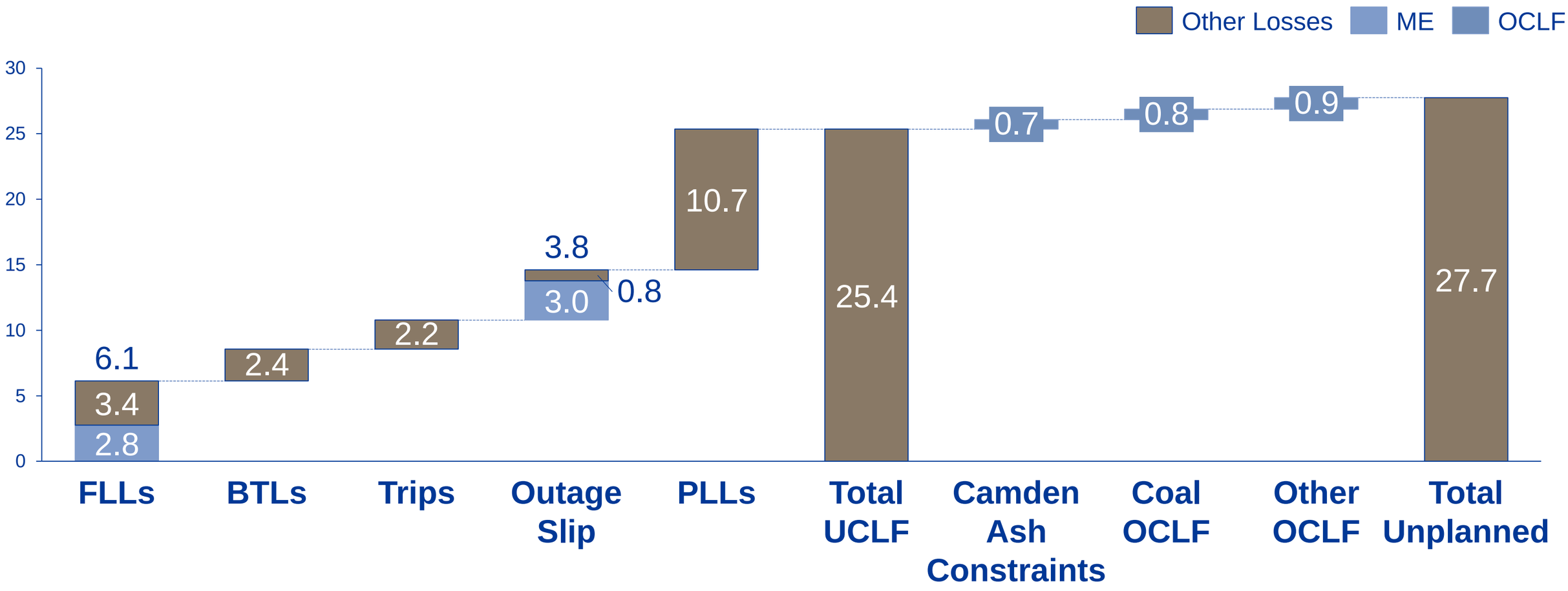
Lower Generation performance largely driven by high UCLF

Build-up of Unplanned Losses for FY2022 March 22 Y-End from major contributors



Key insights

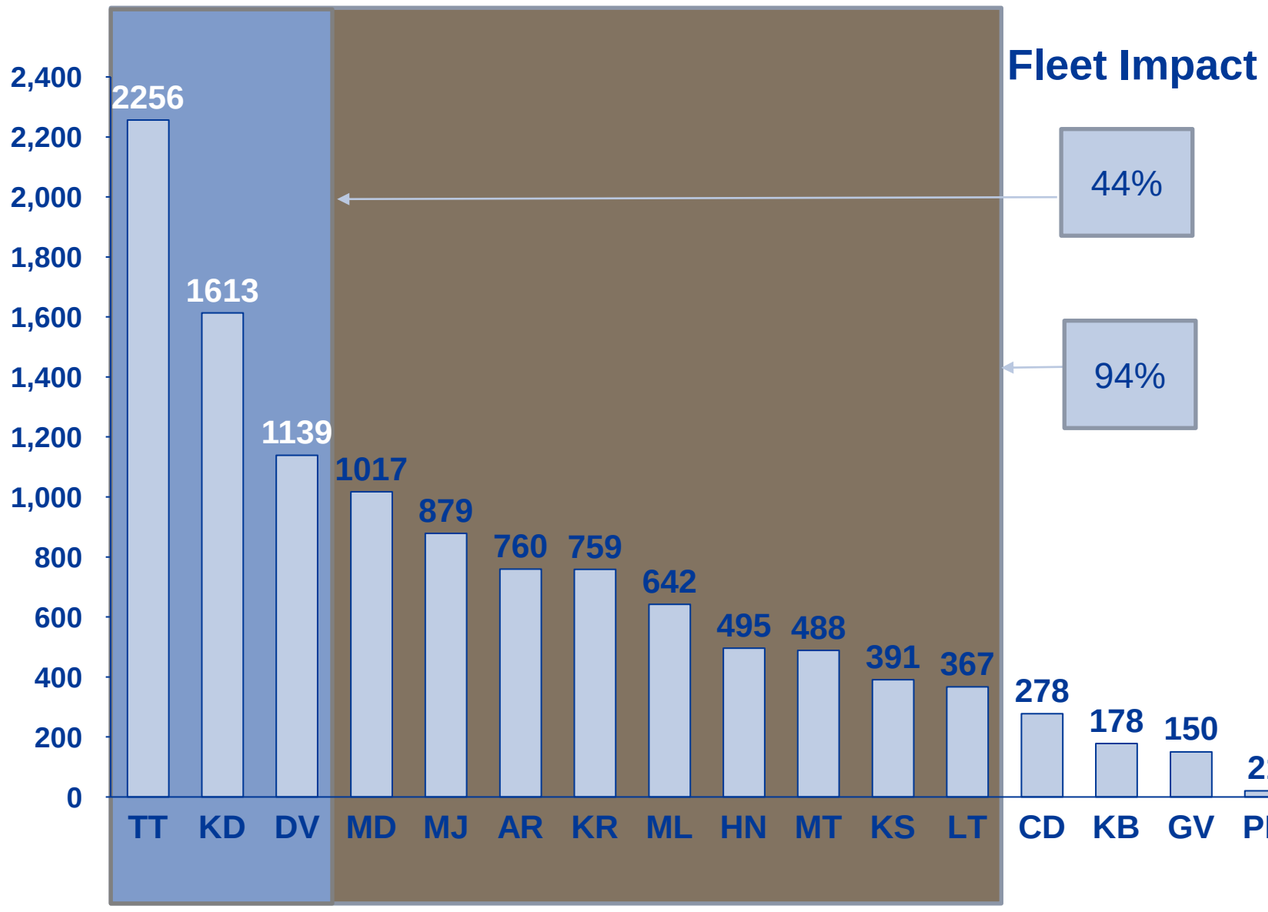
- **Plant performance is highly unpredictable** with multiple failures experienced continuously
- Current **UCLF of ~28% is unsustainable for the business resulting in loadshedding** incidents
- Partial Load Losses (PLLs) continues to be the biggest contributor to UCLF for FY2022
- **Resolving the issues sustainably requires extensive maintenance Outages and implementation of refurbishment** projects

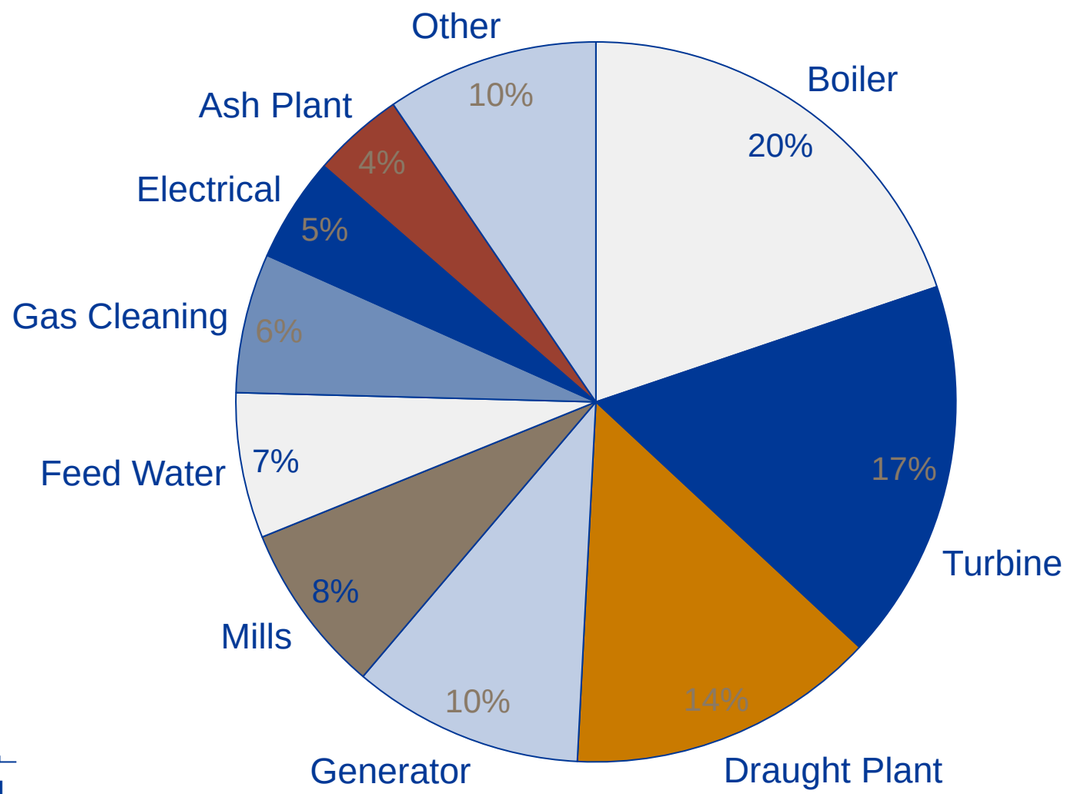
YTD Figures as at end March 2022

Station Contribution to Total UCLF

FY2022 March 22 Y-End – 25.36%

Average MW loss YE March 2022





Key Insights

- **Tutuka, Kendal and Duvha** contributed about **44%** of the total UCLF YTD.
- **Boiler, Turbine, Draught and Generator** were the main contributors (61**%** contribution) for the period of FY2022 Y-end.

The Generation Improvement Plan focus areas and initiatives

Improve Energy Availability

9-Point plan and **Power Station EAF Commitment** Plans

Address PLL's through the established recovery teams

Coal Quality improvement drive through regular mine interactions

Fill critical vacancies in Leadership, Ops, maintenance, engineering and outages

Outage preparation improvement Implement maintenance effectiveness

Reduce trips through identification of root causes and initiatives

Furthermore

Leadership and Culture

Key priorities

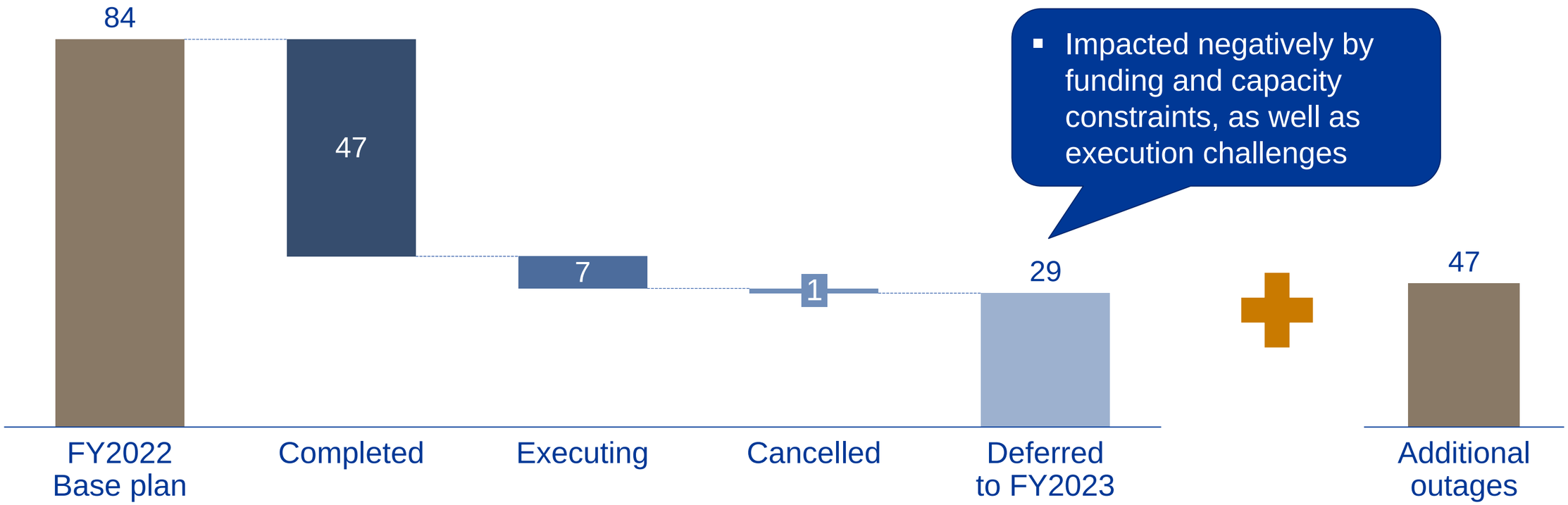
- Leadership accountability
- Drive technical focus
- Improve housekeeping
- Active risk management
- Power station assessment drive
- Change management strategies

7 Strategic Initiatives

1. People
2. Training and competence development
3. Technical excellence
4. Station Rhythm
5. Supply Chain Management
6. Focus on the Future
7. Supplier Management

The biggest opportunity to fix the plant is during Outages – hence the importance of the RMR Programme

Reliability Maintenance Recovery (RMR) Programme Status at 31 March 2022



Key insights

- Status of Reliability Maintenance FY2022:
  - As at 31 March 2022, of the 84 outages 47 have been completed, 7 are in execution, 1 was cancelled and 29 were deferred to the next financial year. An additional 47 short term outages have been executed
  - The main work impacting plant reliability and predictability is carried out during Mini-Overhauls (70 days) and General Overhauls(86 days). There are on average 20 MGO's and GO's per annum for coal fired power stations
- There will be a 3-year lag period to have completed MGO's or GO's on the coal fleet units
- The RMR programme requires adequate capital funding, expeditious procurement process to be in place to ensure the successful implementation, as well as the support of a motivated and resourced workforce. The latter has become a key focus area driven through Generation's Human Resources to improve employee morale on site

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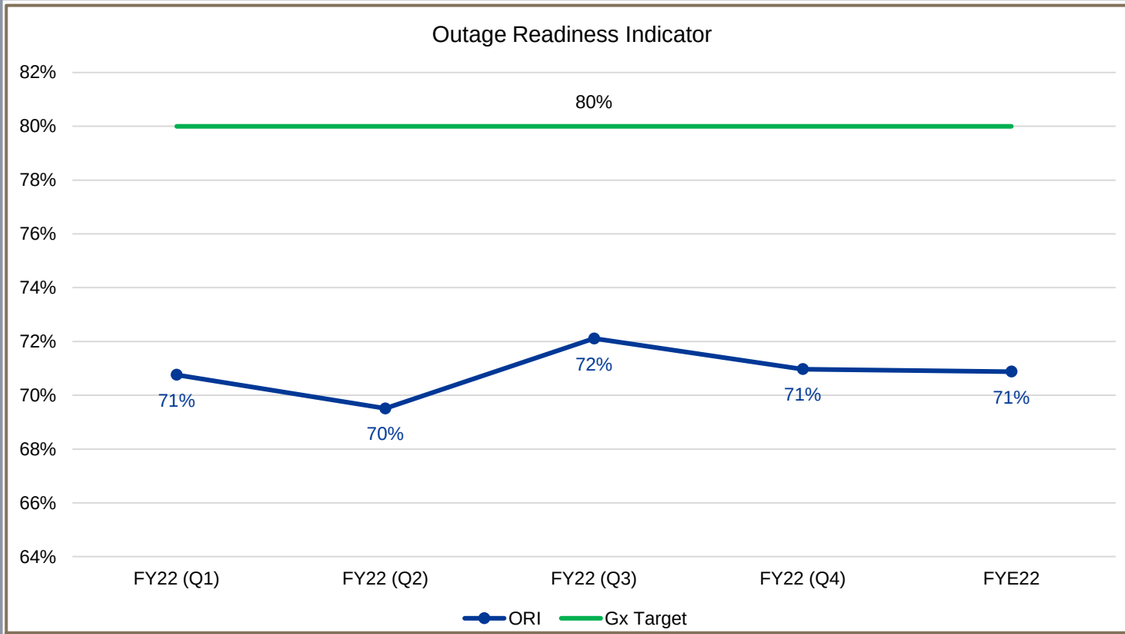
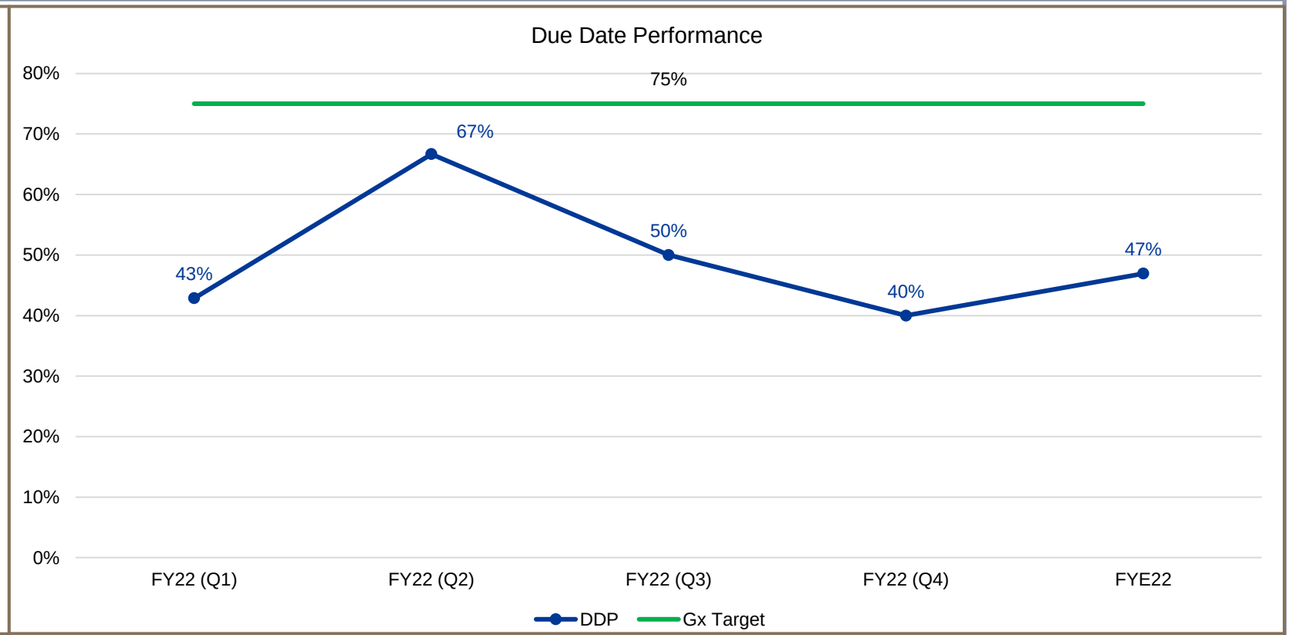
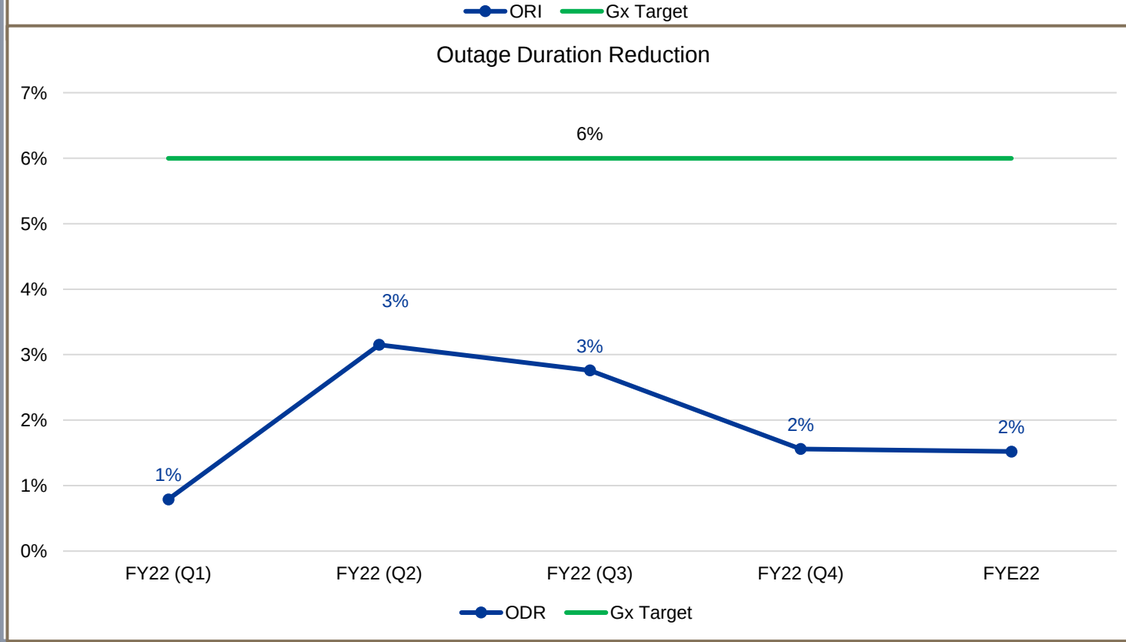
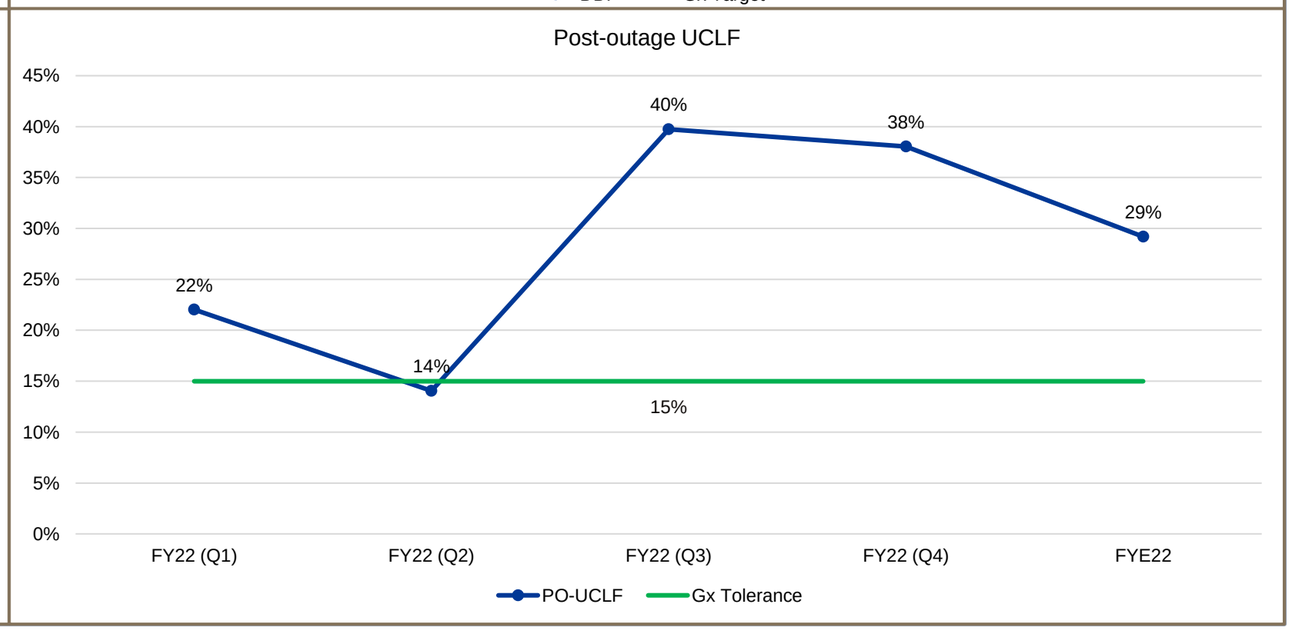
Critical Outage Performance Indicators

Generation Outage Performance









- **Proper outage planning remains a high focus** with the Outage Readiness Reviews directing sites to meet the minimum 80% target.
- **Outage Readiness Indicator Performance has remained steady** quarter on quarter **but remained below target** in all quarters.
- **Post Outage UCLF showed better performance in quarter 2**, but the gains have since been erased by quarters 3 & 4 performance.

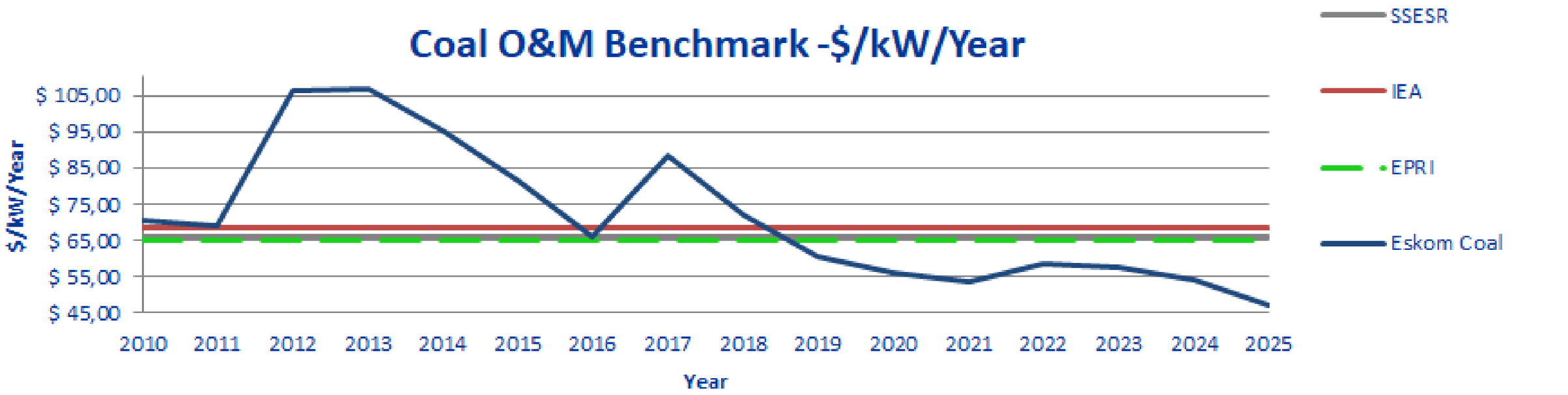
Progress regarding Medupi U4 Recovery

- All Assurance and Forensic investigation technical recommendations have been closed.
- Management expects to conclude consequence management actions by the end of May 2022.
- Continued planning and execution of activities for property damage assessment to generate bill of quantities and quantification thereof is planned for completion by 31st of May 2022.
- The commercial process and award of the first contract for the refurbishment of the generator stator is expected no later than 15th of June 2022. The high level scope of work of the first contract entails:
- The decommissioning, dismantling and stripping, loading and offloading, transport, technical assessment, engineering and technical solution.
- Based on preliminary results from the property damage assessment and long-lead items, the commercial operation of Medupi Unit 4 is expected by August 2024.
- The Insurer (ESCAP) has accepted the admissibility of the claim report issued by the Loss Adjuster, Sedgwick South Africa (Pty) Ltd.
- Preservation of 23 plant systems (non-damaged property) is ongoing.

Overall Non-fuel O&M Benchmark

Generation's coal fleet O&M compared to benchmarks

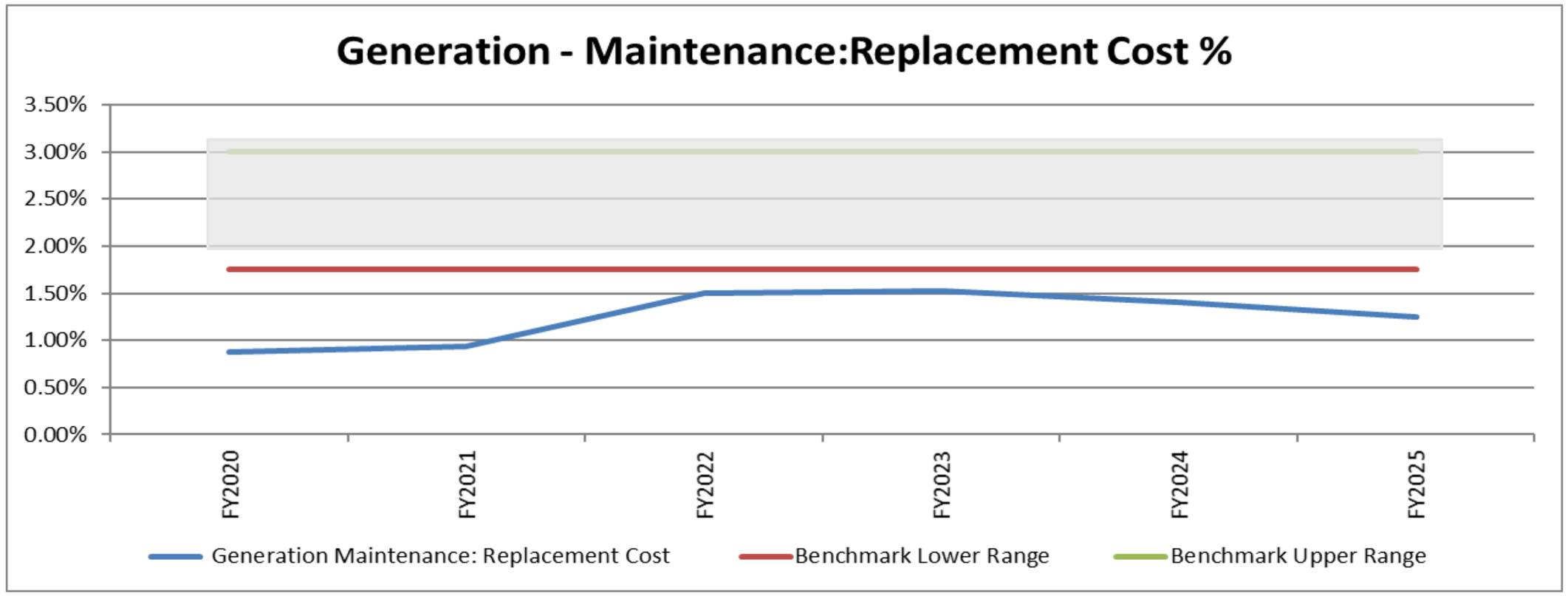
($/kW/year, constant currency, base 2020)



- Gx coal fleet's non-fuel O&M costs could be expected to exceed benchmark due to:
  - mid-life-cycle for most of fleet
  - catch-up of maintenance backlog
- However, since 2016 (except for one year) costs have been < international benchmarks
- Higher costs were incurred for a period from 2012 following onset of unreliability due to 10 years of high load factors (since ~2003) and deferral of maintenance (since ~2008), however this programme could not be sustained due mainly to:
  - insufficient system capacity to allow required PCLF;
  - lack of funding due to sub-cost-reflective regulated tariffs

Maintenance Cost Benchmark

How does Generation compare to benchmark?



Generation's recent and planned maintenance spend is consistently <u>< benchmark lower range</u>

Extracts from reports**:**

- ***"****…. common knowledge that spending too little is to operate a wasting asset; spending too much is hurting profitability; … you can bet if it is either 1% or 6% you are in the process of putting yourself out of business";*
- *"… a few brand new facilities running in countries with cheap labor that claim to be operating as low as 1.75% of RAV per year, but ..*[we]*.. have* [n]*ever seen it sustained without serious problems"*

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The maintenance backlog remains a substantial risk to performance

Maintenance issues cutting across multiple stations (deep dive on next slides)
A. Vacuum issues at various power stations
B. Late Control and Instrumentation Refurbishment projects
C. Maintenance backlog in preventing Boiler Tube Leaks
D. Overdue environmental projects
E. Water Treatment Plants refurbishment projects

The maintenance backlog recovery plan update (1/2)

Maintenance issues cutting across multiple stations	Description	Recovery plan
Vacuum issues at various power stations	• Scaling/fouling affect Condensers and Cooling Tower performance	• Clean condenser tubes during every outage • Replace cooling tower fill at Tutuka, Matla 4-6, Kriel and Duvha
Late Control and Instrumentation Refurbishment projects	• Increasing failure rate of obsolete systems, lack of OEM support and spares and loss of skilled resources to maintain the DCS leading to higher risk of unit trips, load losses and extended outages.	• Expedite procurement and funding allocations for high priority C&I refurbishment projects. • Contracting skilled resources • Procurement of Critical Spares
Overdue environmental projects	• Particulate Reduction is progressing at a slower rate than expected largely due to tenders coming in higher than approved budget and longer execution durations. • SOx and NOx reduction projects are on hold primarily due to funding constraints	• Funding is revised to reflect latest market costs and schedules. units to be completed by 2025 with the remaining by 2027. • Risk remains at Tutuka and Kriel feasibility considering the shut-down by 2030. • Contracts placed for High Frequency Power Supplies (HFPS) on precipitators at several stations (KD, KR, ML, LT, TT 4-6) • Awaiting review of the appeal process of the Oct 21 MES Application Record of Decision.

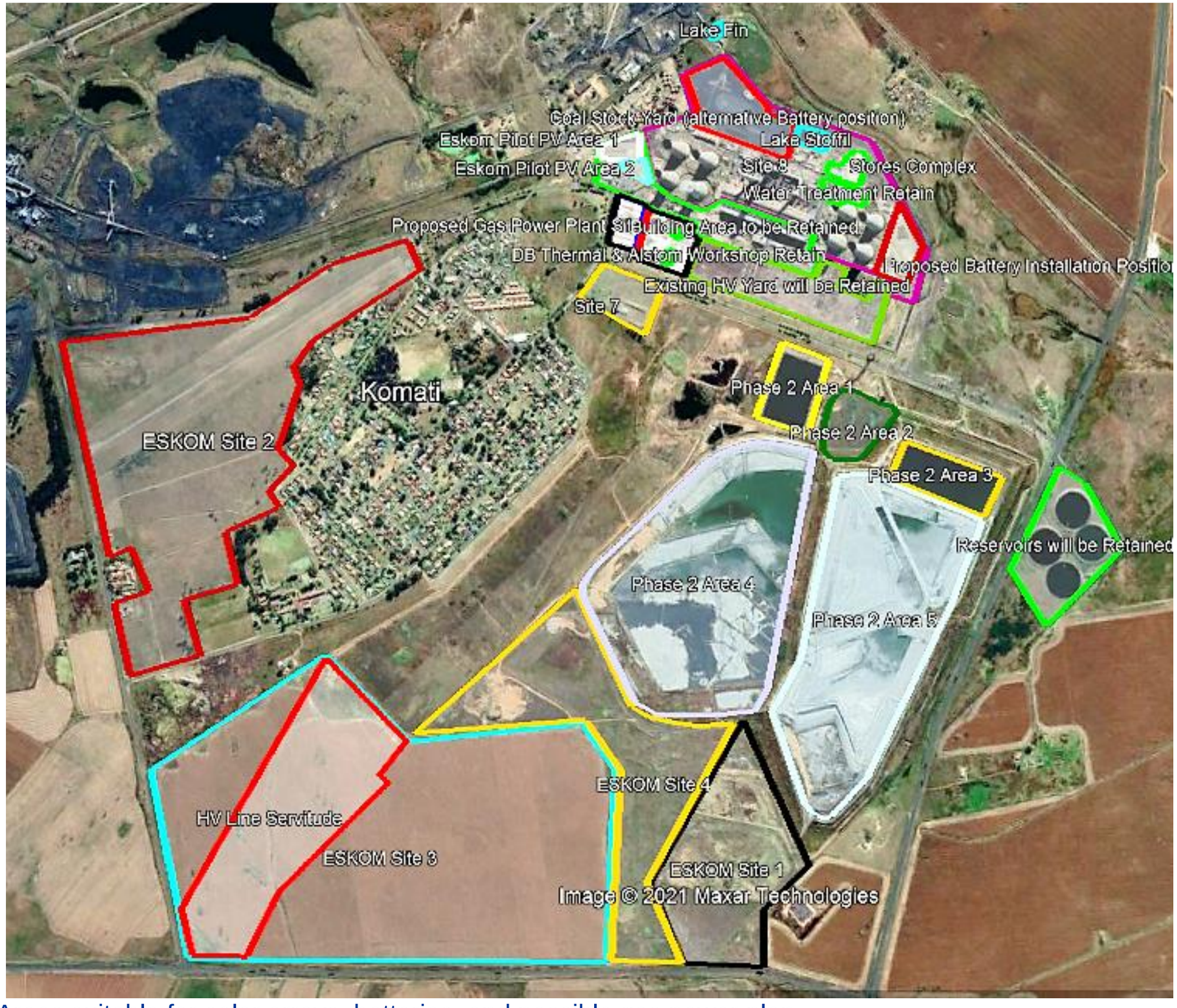
The maintenance backlog recovery plan update (2/2)

Maintenance issues cutting across multiple stations	Description	Recovery plan
Maintenance backlog in preventing Boiler Tube Leaks	• A tube failure is considered to have occurred when a boiler tube's pressure boundary is broken and cause a leak or rupture.	• Preventative maintenance by executing full repair scope of work during planned outages.
Water Treatment Plants refurbishment projects	• Most of the Demin Water Production Plants are in much need of refurbishment.	• Refurbishment of the demineralised-water production plants at the highest priority stations is in progress. • Remaining stations will be expedited according to the refurbishment plan.

Enablers required for improved Generation performance

Enabler	Description	Current Situation	Support Required
Contracting of OEM and Capable contractors	Majority of Generation's maintenance is performed by contractors. Poor performance by the contractors has a direct impact on Eskom's overall performance	A review of Generations Outage indicators shows below target performance due to project overruns and quality issues	Engagements with major contracts to address performance issues and strict adherence to release of outage with ORI>80%
Timeous and adequate outage funding	Full funding required for all outages at T-7. Late release of funding poses a risk on outage readiness Budget required R10, 532bn (to be challenged and optimised internally) Released to date R6,171bn	All outage fully funded T-0 to T-3 . All outages funded 85% for outages between T-4 to T-6. Outages from > T-7 only Long Lead spares released .	To secure at least an additional R2bn in in the short term
Space for planned maintenance	Deferral of critical planned reliability maintenance leads to delay in recovering plant performance and predictability	Current shortfall of at least 4000MW	Market Operator contracting 4000 MW new capacity shortfall (DMRE engagement as needed)
Managing change in energy environment	A balancing act is required between managing current supply and shutting down stations in line with the JET Strategy	Drive JET investments and roll out of projects to off-set the Generation capacity going off-line	DMRE to ensure adequate IPP build. Eskom allowed to build clean energy new capacity Pricing Policy to be considered to ensure: • A level playing field for Generation fleet and new build vs IPPs • Cost reflective / value related process for ancillary services (unbundled tariffs)
Reach mutual agreement on environmental statutory compliance requirements	Eskom submitted a postponement application demonstrating key sustainability issues.	DFFE rejected the postponement and Eskom has appealed	Request a formal conciliation process to resolve, environment, socio-economic, supply and tariff increase required

Komati: Eskom's flagship site to demonstrate our R&R[1] ambitions for a Just Energy Transition



Areas suitable for solar arrays, batteries, and possible gas power plan

Independent Assessments of Repowering & Repurposing Potential @ Komati P/S

1. Repowering Initiatives:

- Solar (~100MWp) + 50MWp Ash Dam
- Battery Storage (150 MW = 600MWh)
- Gas (possible 500MW, not cost competitive at this stage)
- Wind (50MW)
- SCO

2. Repurposing Initiatives:

- Microgrid Assembly
- AgriVoltaics (500kWp)
- Ash Geopolymer Manufacturing

3. SEIM Initiatives to support 1 & 2:

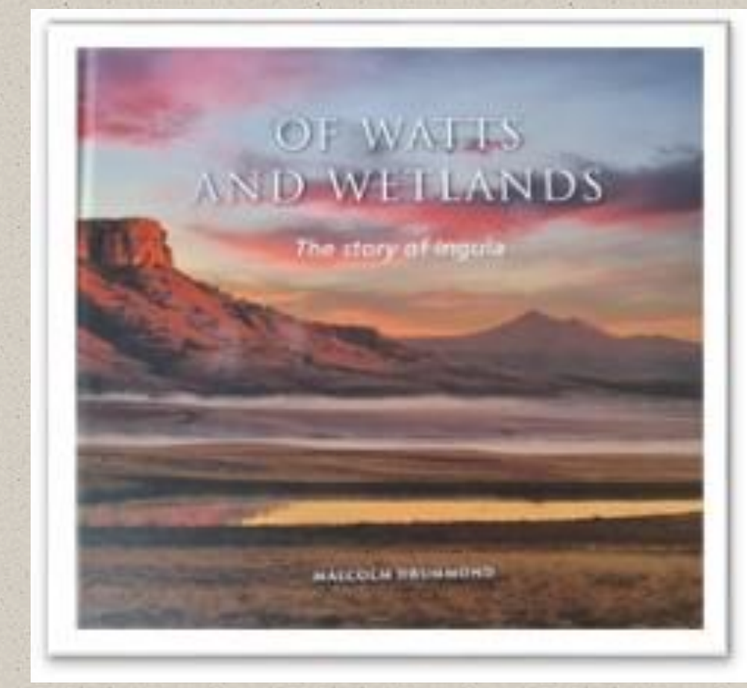
Enabling, Empowering, Reskilling, Upskilling

- Microgrid Assembly
- Farming (Aquaponics, Raised beds)
- Enterprise Development
- SMME Incubator
- Digital Hubs

Eskom celebrated two noteworthy environmental achievements at Ingula in February 2022

1. **The proclamation of the 8 000+ ha surrounding the station as the Ingula Nature Reserve**

2. **The international recognition of the wetlands on site as the 27th Ramsar certified site in SA**

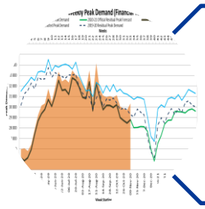


- These achievements are the product of close collaboration between the Ingula Partnership (BirdLife SA & Middelpunt Wetland Trust), local and national government and key environmental stakeholders.

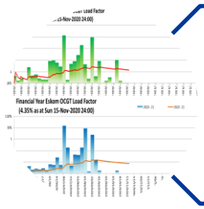
- The coffee table book “Of Watts and Wetlands’ was launched which tells the story of how Eskom successfully built the largest pumped storage scheme in Africa and finely balanced construction, and now operations, with solid nature conservation efforts that will leave a lasting legacy for our country.

Contents

Summary of system status for FY21/22



Financial year-to-date energy sent out from dispatchable plant is 1.6% **lower** than for the same period last year. (0.2% **lower** for dispatchable and renewable)



IPP OCGT load factor is 10.8%, Eskom OCGT load factor is 15.6% (Financial year to date)

There were two wind generation curtailment events in the financial year.

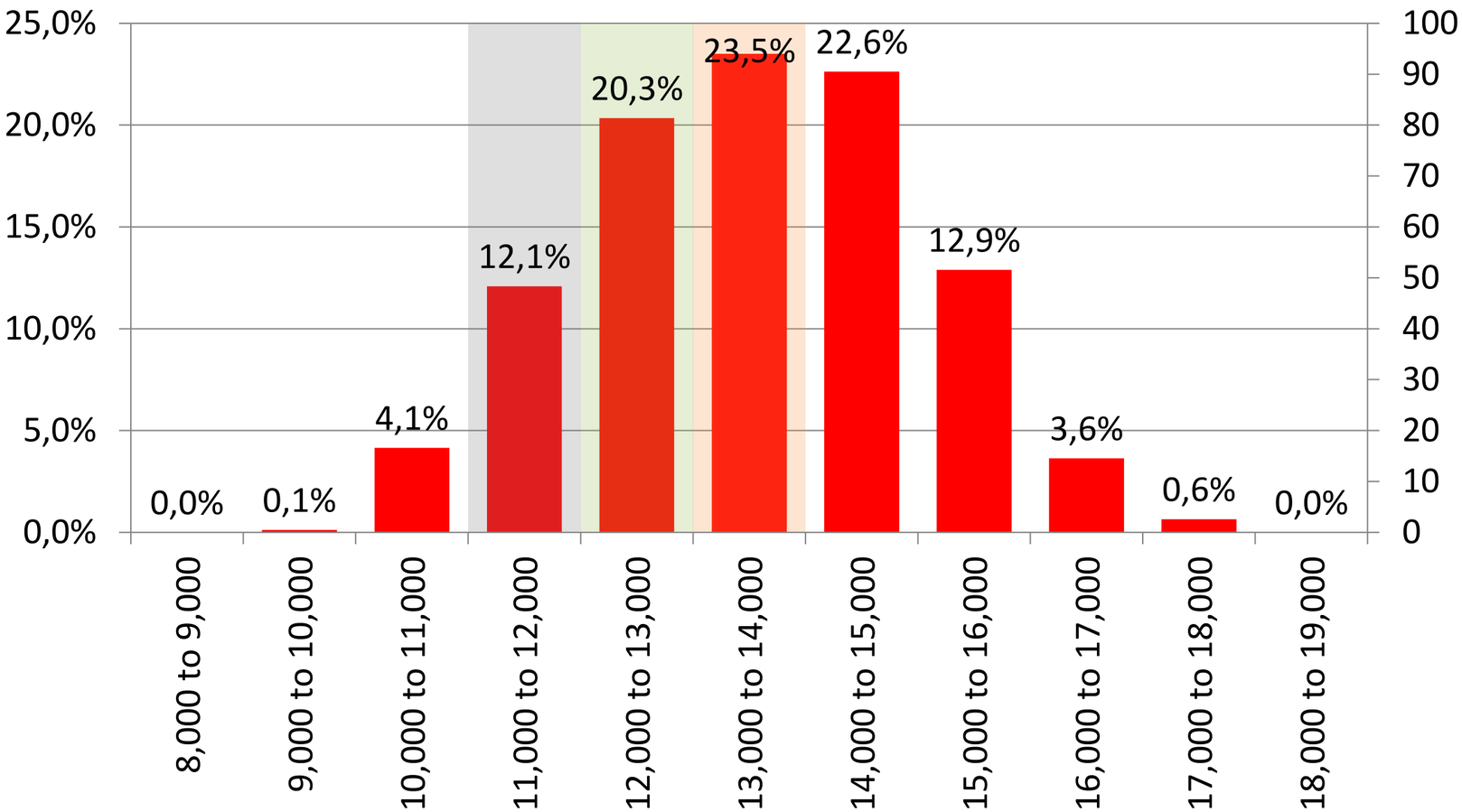
There has been **31 days of loadshedding so far** since January 2022.

The **highest *residual demand*** (demand supplied by dispatchable generation) for Calendar 2022 so far was **30 838MW** on 25 April 2022

The **highest *contracted peak demand*** (demand supplied by dispatchable and renewable generation contracted to SBO) for 2022 so far was **31 930MW** on 25 April 2022

Unplanned Outage Performance: Summer 2021-22

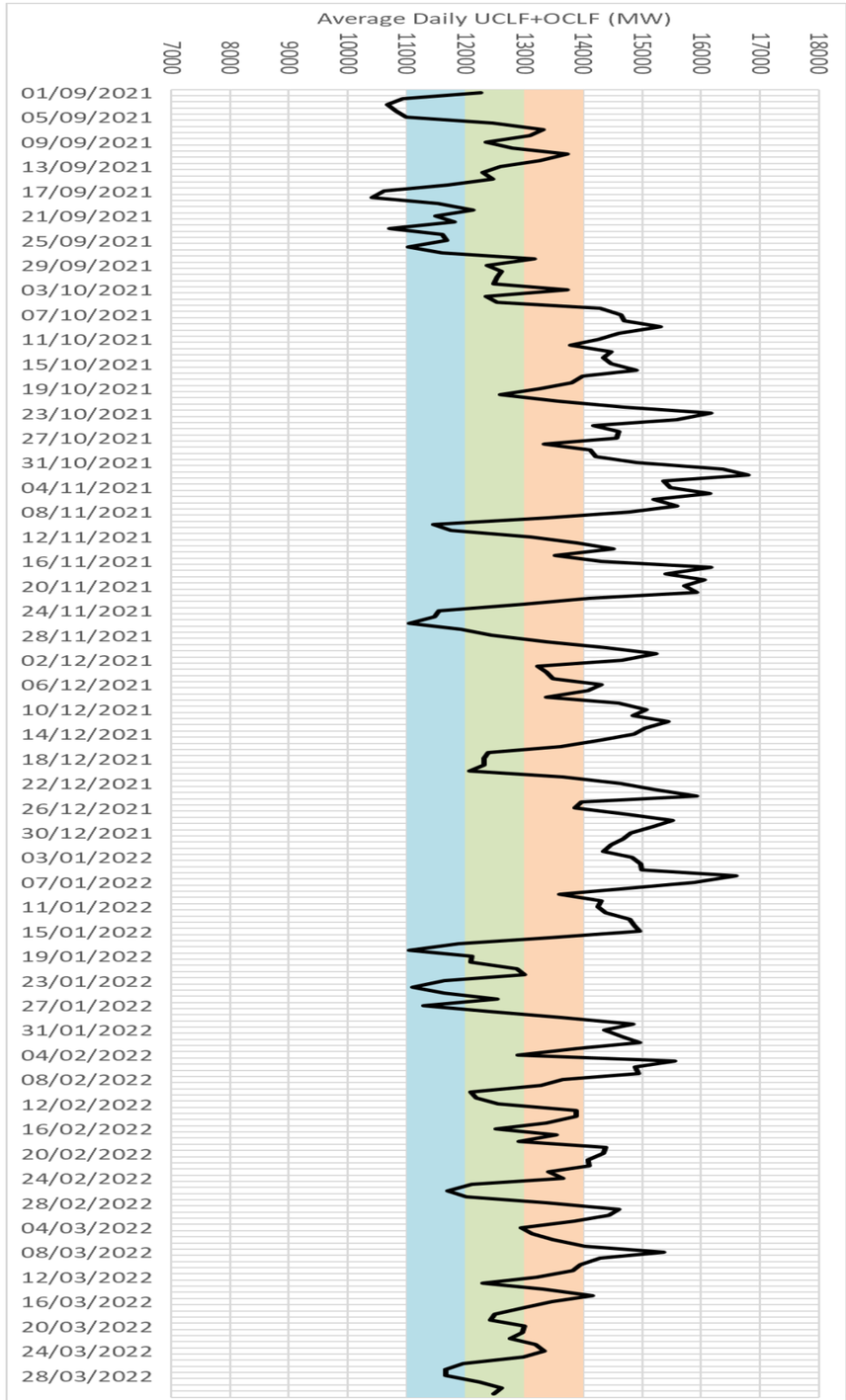
Summer UCLF+OCLF Frequency (01-Sep-2021 to 31-Mar-2022)



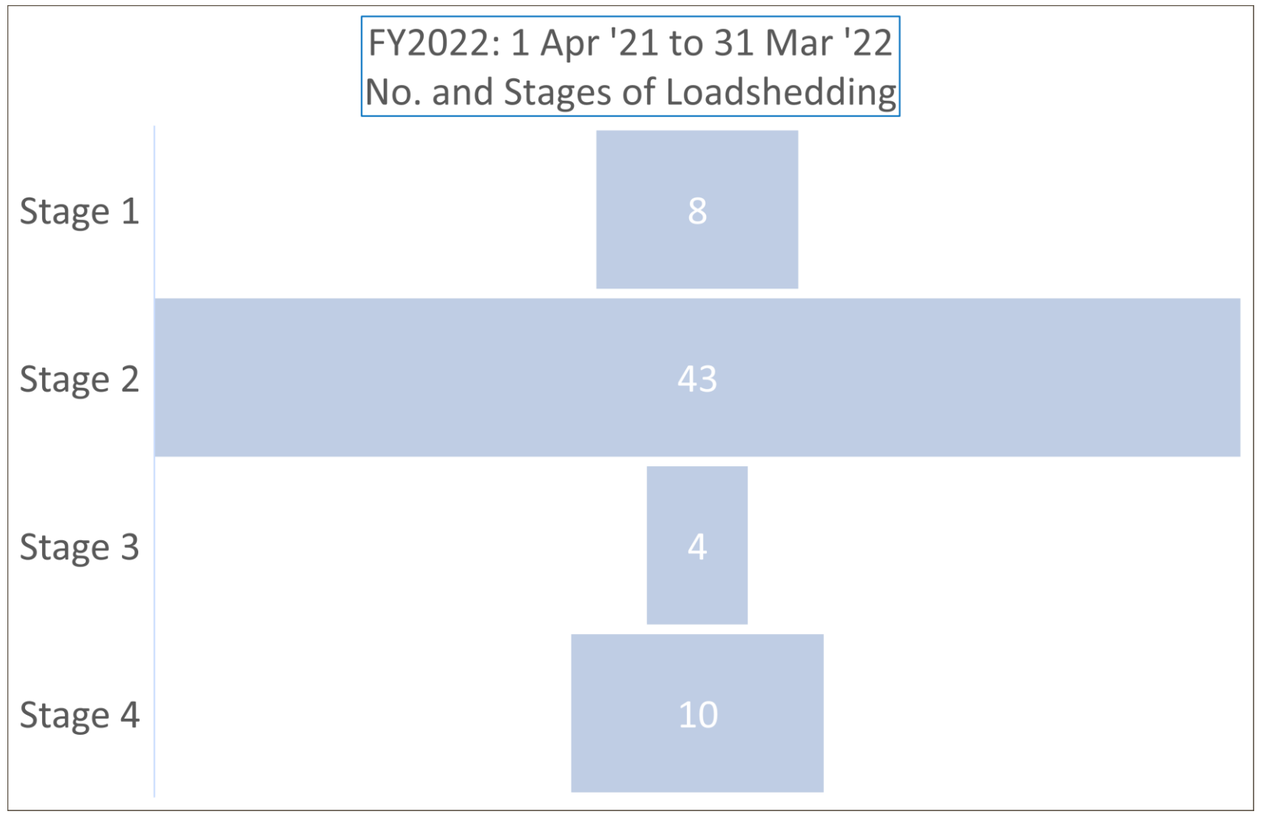
39.7% of the time we operated above the maximum assumption for the Summer Plan

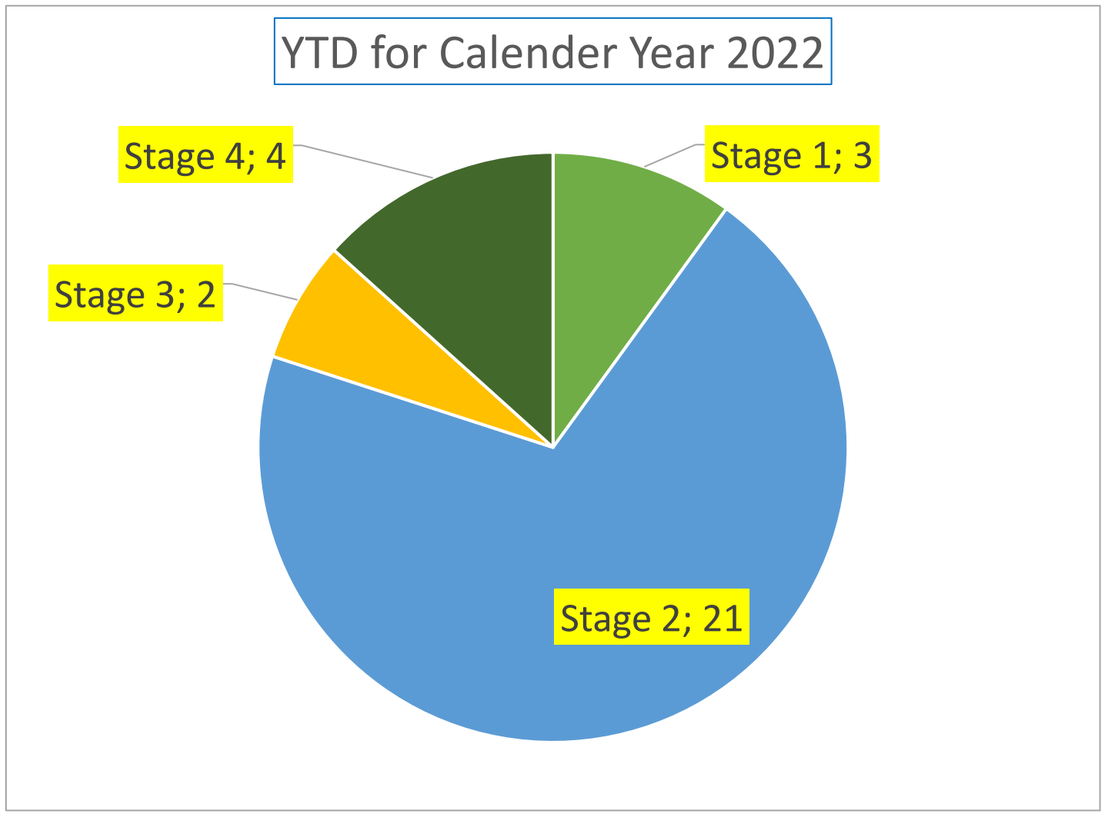
The **average** UCLF+OCLF over evening peaks was 14 318 MW over the summer period

Total view unplanned outages: Summer



Loadshedding and load curtailment summary





- For FY2022, there have been a total of 65 days of loadshedding, with 22 days of load curtailment at Stage 1&2
- Since 1 January 2022, there have been 30* days of loadshedding, with 13 days of load curtailment at Stage 1&2

In general, some of the following conditions led to the above load reductions:

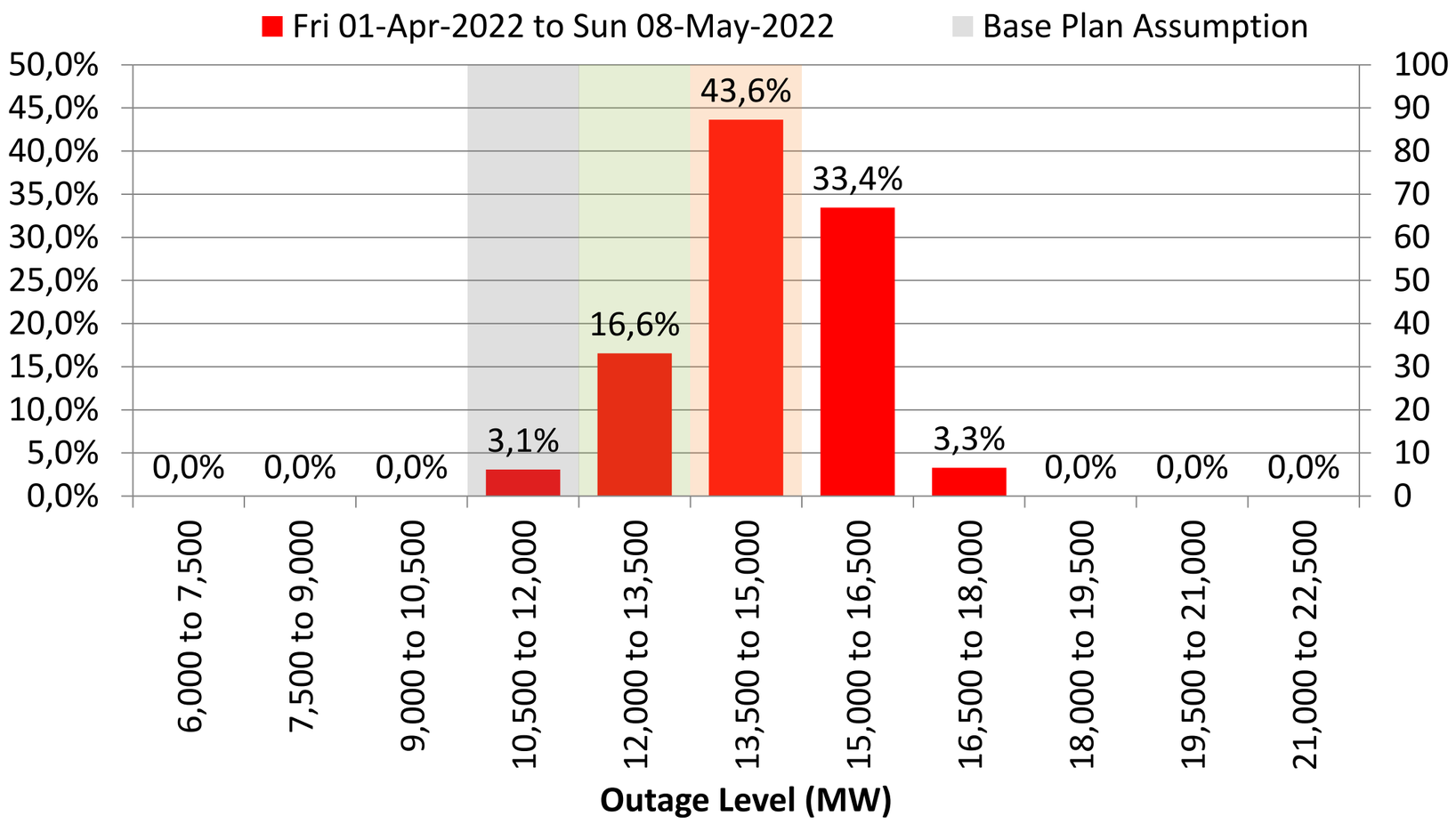
- Shortage of generation;
- Increased unplanned unavailability;
- Limited fuel availability at peaking stations;
- The need to conserve and replenish depleted emergency resources;
- Poor coal and compromised emissions performance.

Load curtailment is the load reduction obtained from customers who are able to reduce demand on instruction and satisfy the requirements of NRS048-9 for load curtailment

* *As at 9 May 2022*

Unplanned Outage Performance: Winter 2022

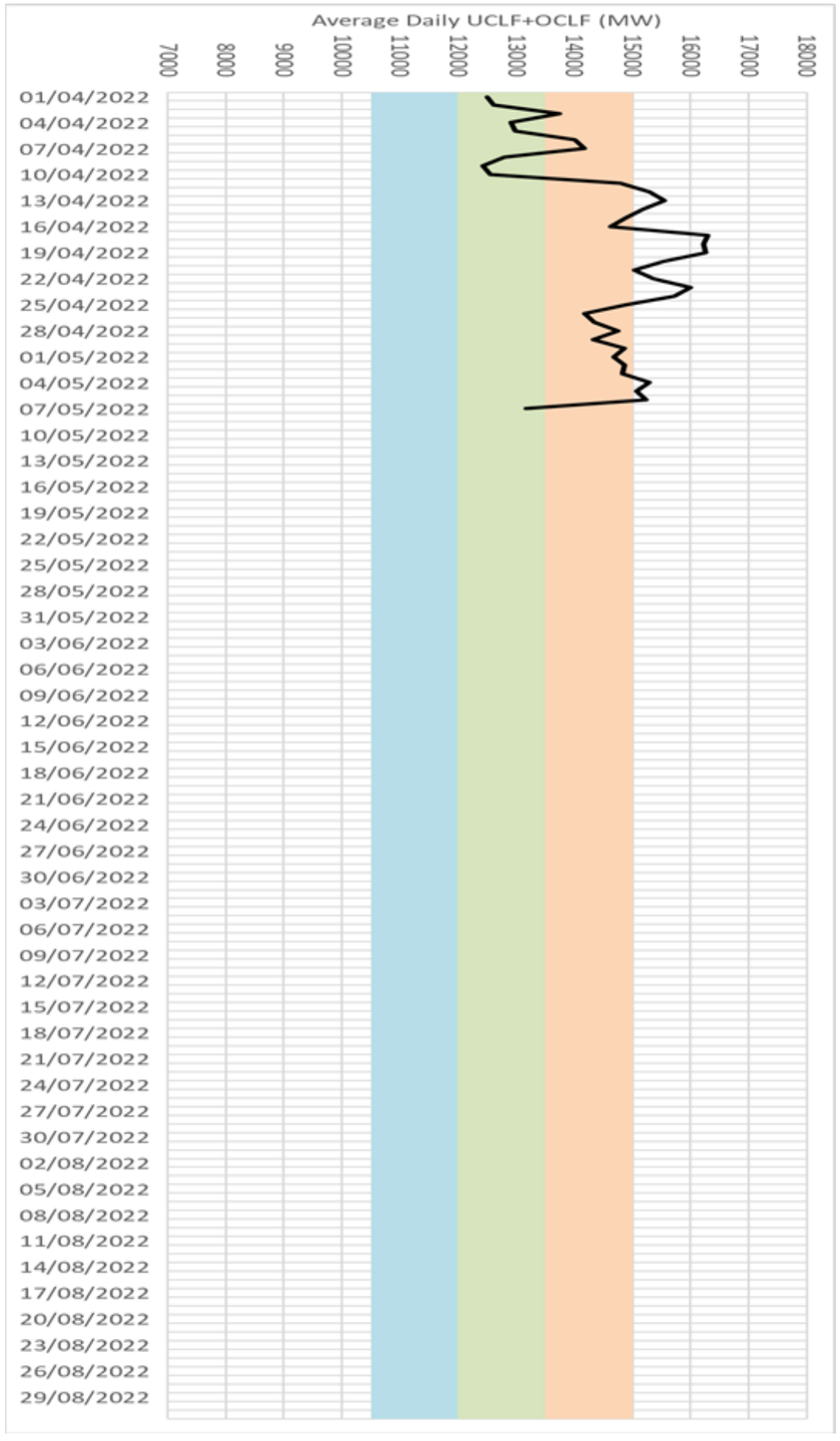
Winter UCLF+OCLF Frequency (01-Apr-2022 to 31-Aug-2022)



36.7% of the time we operated above the maximum <u>assumption</u> for the Winter Plan

The **average** UCLF+OCLF over evening peaks was 14 588 MW over the winter period

Total view unplanned outages during Winter



Power System Outlook

(Winter Plan 2022)

Planning process

Capacity plan uses 10 000MW UCLF

18-month residual demand forecast

UCLF + OCLF forecast

Winter Plan uses 12 000 MW UCLF

Eskom Generation maintenance requirements for 18 months ahead (Capacity Plan)

- Power stations determine their maintenance requirements
- Environmental outage requirements are included

Schedule maintenance and optimise available capacity excluding OCGTs

- Gx Production and System Ops in consultation with other stakeholders iteratively optimise the plan

Optimised Capacity Plan with UCLF assumption

Include IPP dispatchable generation and emergency reserves

- IPP dispatchable generation included by System Operator
- Emergency reserves such as ILS, VPS included by System Operator

Optimised Plan with stress tested UCLF scenarios

- Estimated diesel requirement
- Estimated stage and frequency of load shedding

All reliability maintenance outages are catered for in the 12-month planning period

The maintenance outage optimization is done in the **Capacity Plan** using an unplanned unavailability provision of 10 000 MW. Anything higher than this does not make sense because there would be no room to schedule maintenance. The difference between the **Capacity Plan** and the **System Outlook (Winter Plan)** is that the Capacity Plan contains risks in the assumptions while the System Outlook Plan shows the consequences should those risks materialize.

Components of the Plan

Four critical components make up the Plan and determine the need for OCGT generation usage and load shedding:

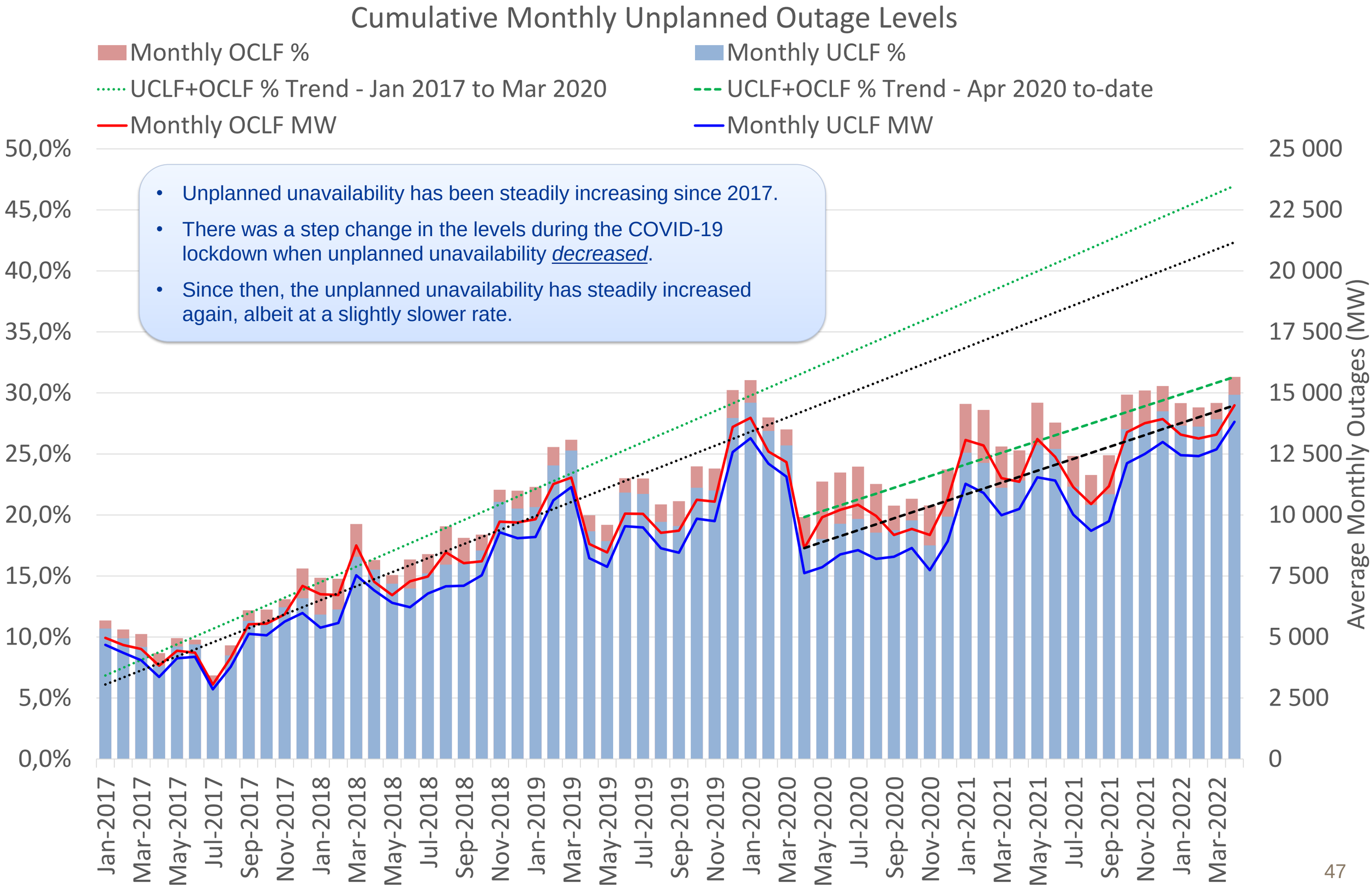
Installed generation capacity: This includes new build non-commercial generators and dispatchable IPP OCGTs but excludes self-dispatch renewable generation.

Demand forecast: The residual demand forecast (total demand less demand supplied by renewable generation) is used.

PCLF: Planned generation outages for maintenance.

UCLF + OCLF (Unplanned unavailability): Unplanned generation outages.

Cumulative Monthly Unplanned Outage Levels



- Unplanned unavailability has been steadily increasing since 2017.
- There was a step change in the levels during the COVID-19 lockdown when unplanned unavailability *decreased*.
- Since then, the unplanned unavailability has steadily increased again, albeit at a slightly slower rate.

Critical success factors

All resources and funding must be made available as needed to execute this plan. Any changes to this will have a knock-on effect that will influence the plan from that point forward.

The success of the plan relies on sufficient diesel to support the power system during periods of high UCLF. Without sufficient diesel to power the 3 000 MW of OCGT, 3 additional stages of load shedding *could* be added to the scenarios shown below.

Prolonged diesel usage may result in delays in getting fuel to the OCGT stations (approval of funds, procurement of product & logistics to move fuel). Failure to supply sufficient diesel will lead to further load shedding.

Summary of the Plan

All reliability maintenance required in the 12-month planning period has been accommodated in the plan. This has resulted in a “full” plan with little room to move, extend or add outages.

This outage plan was stress-tested with 3 scenarios by the System Operator to estimate the OCGT usage and level of load shedding. For winter 2022, 12 000MW, 13 500MW & 15 000MW of UCLF + OCLF provision was used.

For the most part the System Operator will need to source operating reserves from Demand Response (DR) products as well as from emergency reserve sources such as Interruptible Load Shedding (ILS) and OCGTs.

The Plan requires OCGT usage over weekdays, and low diesel usage on some weekends. The failure of Medupi 4 has increased the dependency on diesel generation to manage the power system.

Risks & uncertainty

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

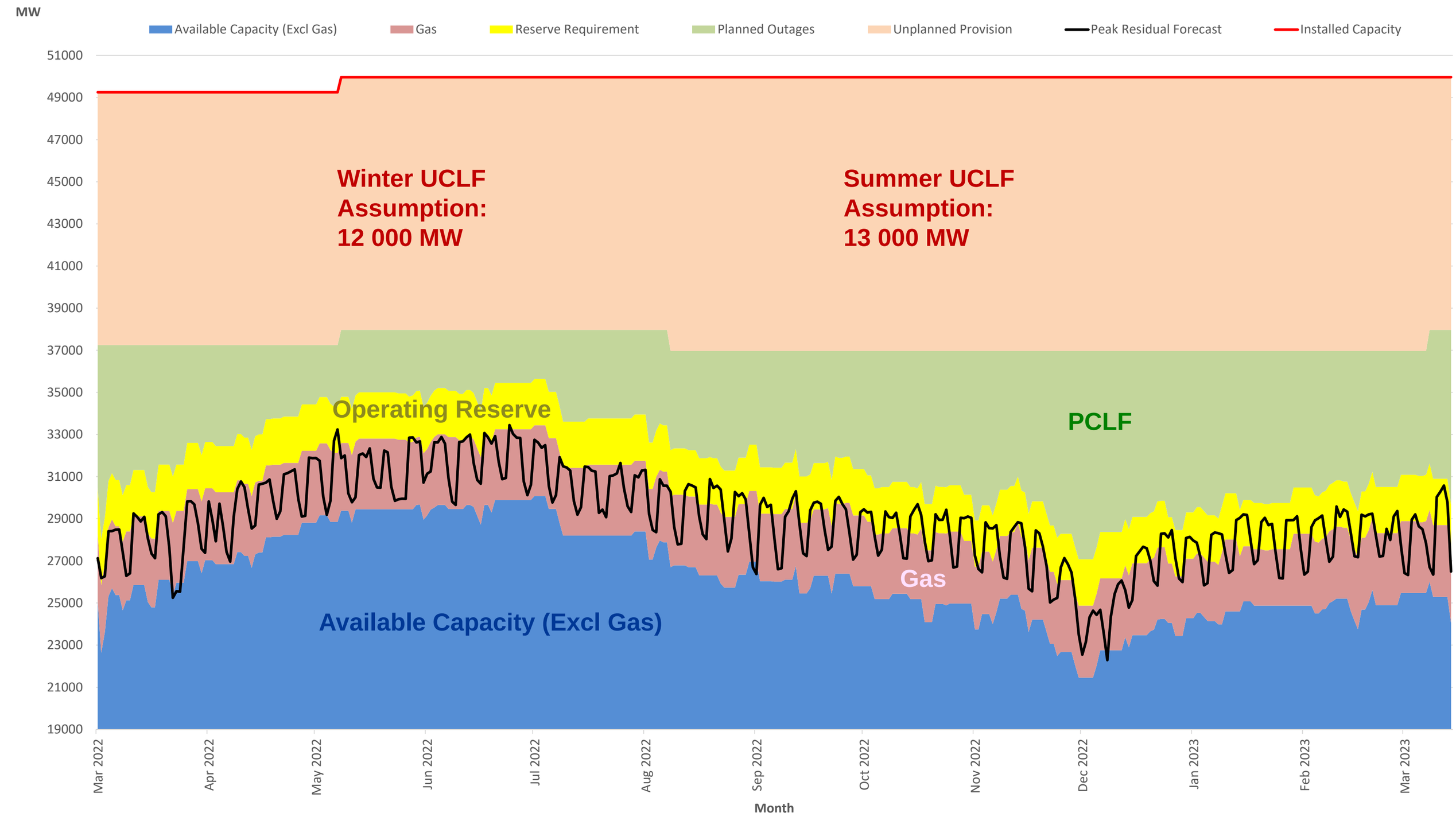
The plan does not cater for difficulties that could arise at power stations due to industrial action or other employee protests.

This is equivalent to four stages of load shedding. In practical term it mostly means we operate in the range of having 2 000 MW of reserve to needing Stage 2 load shedding to create sufficient reserves.

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.

The uncertainty of the Plan must be clearly understood by all stakeholders including government and the public.

System Operator Capacity Outlook for next 12 Months - Base Case



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Monthly System Status Outlook to April 2023

System Status Including 2200MW Operating Reserves			Base Case				Base Case + 1500 MW Risk				Base Case + 3000 MW Risk			
Month	Peak Residual Forecast	Unplanned Provision	Load Reduction Days	Max Load Reduction Stage	Estimated Monthly Gas Generation	Estimated Gas Generation Cost (Rm)	Load Reduction Days	Max Load Reduction Stage	Estimated Monthly Gas Generation	Estimated Gas Generation Cost (Rm)	Load Reduction Days	Max Load Reduction Stage	Estimated Monthly Gas Generation	Estimated Gas Generation Cost (Rm)
April 2022	29,837	12,000	0		49,517	R174.30	8	1	194,421	R684.36	21	2	520,160	R1,830.96
May 2022	33,236	12,000	0		54,499	R191.83	6	2	161,670	R569.08	22	3	368,069	R1,295.60
June 2022	32,884	12,000	0		47,680	R167.83	6	1	150,715	R530.52	19	3	340,568	R1,198.80
July 2022	33,450	12,000	0		53,921	R189.80	9	1	161,480	R568.41	20	3	358,753	R1,262.81
August 2022	31,924	12,000	0		68,466	R241.00	8	1	198,832	R699.89	22	2	437,741	R1,540.85
September 2022	30,883	13,000	0		132,080	R464.92	18	2	348,968	R1,228.37	25	3	781,229	R2,749.92
October 2022	30,308	13,000	0		109,614	R385.84	17	2	370,663	R1,304.73	26	3	895,611	R3,152.55
November 2022	29,689	13,000	3	1	225,752	R794.65	23	2	721,950	R2,541.27	30	3	1,269,518	R4,468.70
December 2022	28,837	13,000	0		212,083	R746.53	15	2	712,471	R2,507.90	26	3	1,359,114	R4,784.08
January 2023	28,461	13,000	4	1	321,692	R1,132.36	21	2	871,049	R3,066.09	28	3	1,370,501	R4,824.16
February 2023	29,208	13,000	9	1	256,238	R901.96	18	3	744,524	R2,620.72	27	4	1,163,166	R4,094.34
March 2023	29,585	13,000	0		222,222	R782.22	20	2	733,360	R2,581.43	29	3	1,338,642	R4,712.02

Note: *The base-case* unplanned unavailability provision (UCLF+OCLF) has been increased to 12 000 MW for winter and 13 000 MW for next summer based on the performance over the past year. The scenarios stress tested are at 1 500 MW intervals above the base-case.

Summary of the plan

	Base case	Base case + 1 500MW	Base case + 3 000MW
Winter 2022			
Number of LS days	0 Days	37 Days	**104 Days**
Highest stage of LS	N/A	Stage 2	Stage 3+
OCGT costs	R 1.0bn	R 3.1bn	R 7.1bn
Summer 2022/23			
Number of LS days	16 days	**132 days**	**191 days**
Highest stage of LS	Stage 1	Stage 3+	Stage 4+
OCGT costs	R 5.2bn	R 15.9bn	R 28.8bn

Significant increase in load shedding days and OCGT cost for only 1 500MW change in UCLF

History has shown that it is not possible to use more than about R 1.2bn of diesel in a month due to the physical limitations of moving the diesel to the OCGT stations. Where the Plan shows a diesel usage greater than this, additional stages of load shedding should be expected

Winter: 1 April 2022 – 31 August 2022. UCLF+OCLF: 12 000 MW – 15 000 MW

Summer: 1 September 2022 – 31 March 2023. UCLF+OCLF: 13 000 MW – 16 000 MW

Thank You