

REPORT ON ESKOM'S ENERGY UTILIZATION FACTOR (EUF)

WHAT'S THE RESPONSE TO THE ALLEGATION THAT PAST ESKOM LEADERS RAN POWER PLANTS TOO HARD AND NEGLECTED MAINTENANCE OF THE COAL FLEET?

ALLEGATION

- The current underperformance of the existing coal fleet was or is caused by over running the power plants without correct maintenance interventions in the period 2016 – 2018 when the load shedding was brought under control.

APPROACH

In addressing the above allegation, the structured methodology was to do the following:-

- Present the approved statistics from the Eskom's Audited Financial Statements.
- Interpret the results in line with basic engineering principles.

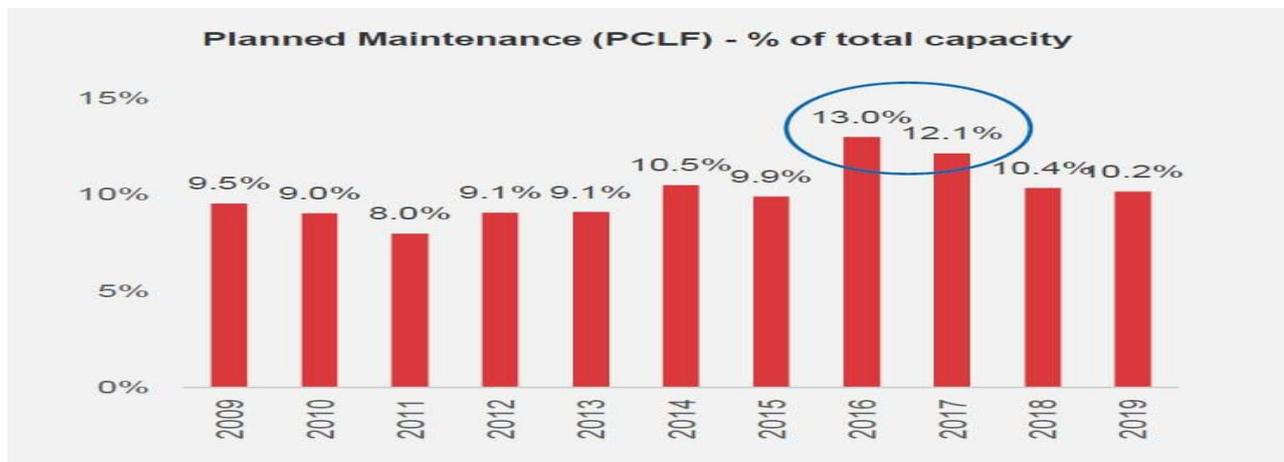


FIGURE-1: SHOWING PCLF GRAPH OF THE PERIOD CONCERNED

INTERPRETATION FIGURE-1

1. It is always ideal to sweat your assets to get the return on investment from the financial point of view.
2. However, there is a balance to be struck between sweating the assets and compromising the plant long term life expectancy.
3. The engineering plant integrity is key, if not kept in check, there will be no plant left.
4. The ability of doing maintenance from short term to long term and minor interventions gets measured by the term PCLF (Planned Capability Loss Factor).
5. The indicator measures the percentage of how long the plant has been kept offline on maintenance over a period of 100%, thus if one unit is off for all the time in a period of 1 year that unit will score 100%.
6. Therefore, the higher the PCLF the more units are offline for planned maintenance intervention. The quality of workmanship and other associated factors in terms of project management such as time, costs, etc are crucial for a successful maintenance effort.
7. Figure-1 above clearly shows that during the period 2016 -2018, the average PCLF was at approximately 12% which was above the 10% benchmark Eskom adopted around 2008/2009 of 80% (EAF) : 10% (PCLF) : 10% (UCLF) as indicated on the graph.

8. This therefore contradicts the narrative that the power plants were over-run because maintenance interventions were done accordingly, in fact, above the 10% benchmark.
9. It is impossible to have over-run the plants because on average they were on outage for planned maintenance intervention for the average time as stated for 2016,2017, 2018 at 13%,12.1% and 10.4% respectively.

INTERPRETATION TABLE-1

The only measure of how hard power stations are run is the Energy Utilization Factor which is recorded in the Audited Financial Statements of Eskom as EUF. Below is the table derived from Eskom’s 2021 financial statement on page 131 under Plant Performance. With reference to the **Integrated Eskom System Load Factor** over the 10-year period to have a fair comparison. **(Integrated result Eskom report 2021)**

| YEAR | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 |
|-----------------|------|-------|------|------|------|------|------|------|------|------|
| EUF (%) | 76.3 | 79.0 | 77.8 | 71.6 | 75.0 | 82.7 | 83.4 | 83.6 | 81.9 | 79.4 |
| EAF (%) | 64.2 | 66.6 | 70.0 | 78.0 | 77.3 | 71.1 | 73.7 | 75.1 | 77.7 | 82.0 |
| UCLF % | 20.0 | 22.90 | 18.3 | 10.2 | 9.9 | 14.9 | 15.2 | 12.6 | 12.1 | 8.0 |
| PCLF (%) | 12.3 | 8.9 | 10.2 | 10.4 | 12.1 | 13.0 | 9.9 | 10.5 | 9.1 | 9.1 |

TABLE-1 ENERGY UTILIZATION FACTOR (EUF)

10. The Energy Utilisation Factor is the ratio of actual energy produced during a specific time over the total energy availability capacity, which takes into consideration all unavailable capacity due to planned maintenance and breakdowns.
11. From the table above it is very clear that the period that the machines were ran harder (above 80% benchmark) was between the period 2013 to 2016. By the way, there is nothing wrong with running machines harder if the PCLF threshold of 10% is met. In fact, it must be applauded because it means breakdowns are below 10%. The 2015 PCLF variance of 0.1% below 10% is negligible. Hence, the only problem was in 2013 where the PCLF was ~1% below the 10% benchmark whilst the EUF was above 80%. The fact that in 2021 the PCLF was 12.3% without translation into improved performance is concerning. It probably means that the quality of workmanship and the scope of work during outages are not up to required standard.

CONCLUSION

12. Given the above explanation, the allegation that the good performance derived in 2016 to 2018 financial years which brought load shedding under control was achieved at the expense of planned maintenance is baseless and must be rejected. The serious deterioration of the coal fleet performance started from 2019 and it has nothing to do with the technical performance of the previous leadership of Eskom.

FOOT NOTE:

There is a difference between Energy Availability Factor (EAF) & Energy Utilization Factor (EUF). These two terms must not be used interchangeably as if they mean the same thing. EUF measures the degree to which the available energy capacity of an electricity supply network is utilised (sweating the asset). EAF is a measure of the net energy capacity available to the electricity grid after planned and unplanned energy losses are considered.