# Electricity generation adequacy outlook

NERSA has issued the first electricity generation adequacy outlook report, in accordance with regulatory requirements, to establish and manage monitoring and information systems. The report will be issued on a monthly basis.

There are two tables which are of interest. Table 1 gives a snapshot of system performance in 2012 and 2013 to date.

The table features planned capacity loss factor (PCLF) and unplanned capacity loss factor (UCLF), and shows a drop in unplanned capacity loss from 2012 to 2013, but an increase in planned capacity loss over the same period. The table is titled "Average plant performance" but the averaging interval (e.g. month, week, quarter, etc.) is not given. The use of averages is considered to be misleading as no indication is given of maximum values or worst case conditions and the report would be more meaningful if these were included.

PCLF is a result of on going maintenance and although this figure may vary it is a constant feature and should therefore be regarded as a reduction in generating capacity or "unusable capacity" when considering the future capacity outlook. With unplanned outages running at an almost predictable level, UCLF should also be considered as "unusable capacity" when estimating future performance. The figures given for the total loss factor are in the region of 20% of available capacity.

Table 2 shows the forecasted gross and net reserve margins expected for the years 2013 to 2017. The nett reserve margin excludes RE and other purchases. The figures used for the gross reserve margin include 20% of the installed RE capacity. It is assumed that this is an average figure, and must be discounted when considering the worst case gross margin as RE generation can fall well below this on individual days. The contribution of RE for 2017 would be approximately 470 MW or 0,8% of the total generating capacity.

No estimate of the PCLF or UCLF is given in the table, but of the existing average levels continue in future, the available generating capacity comes dangerously close to forecasted demand. If worst case conditions and maximum values for TCLF are taken into account, available generating capacity could well fall below demand in the medium term. Other factors over which Eskom has no control are imports, purchases and other non-Eskom capacity.

| Average plant performance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant performance 2012 | | | | | | Plant performance YTD 2013 | | | | | |
| PCLF | UCLF | Total capacity unavailable | PCLF | UCLF | Total capacity unavailable | PCLF | UCLF | Total capacity unavailable | PCLF | UCLF | Total capacity unavailable |
| MW | MW | MW | % | % | % | MW | MW | MW | % | % | % |
| 4076 | 4536 | 8611 | 9,48% | 10,55% | 19,61% | 3960 | 6360 | 10 320 | 9,16% | 14,72% | 23,88% |

*Table 1: Snapshot of system performance.*

| Eskom medium term demand forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Capacity (MW) and capacity margins (%) at annual peak | | | | | | | | | | | | |
| Year | Annual peak demand Eskom | Eskom installed capacity | Import capacity firm MW | Total Eskom installed capacity plus imports | Eskom purchases excluding RE | Renewable (RE) incl sere | Other non-Eskom capacity | Total Eskom capacity incl. imports and other and 20% RE | Demand market (DMP) MYPD3 | EE and DSM (MYPD3) | Eskom reserve margin (exce RE and other purchases) | Eskom reserve margin incl imports, RE and other purchases |
| | MW | MW | % | MW | MW | MW | MW | MW | MW | MW | % | % |
| 2013 | 38 885 | 41 930 | 1500 | 43 430 | 1375 | | 628,8 | 45 434 | 3108 | 379 | 21,47% | 23,18% |
| 2014 | 38 588 | 42 652 | 1500 | 44 152 | 1149 | 810 | 628,8 | 46 092 | 1737 | 294 | 17,40% | 19,45% |
| 2015 | 39 536 | 45 429 | 1500 | 46 929 | 1972 | 1929 | 628,8 | 49 916 | 0 | 187 | 23,89% | 26,26% |
| 2016 | 40 087 | 48 319 | 1500 | 49 819 | 1792 | 1938 | 628,8 | 52 627 | 0 | 196 | 28,75% | 31,28% |
| 2017 | 41 108 | 49 764 | 1500 | 51 264 | 1792 | 2338 | 628,8 | 54 152 | 0 | 415 | 29,06% | 31,73% |
| Note: Max demand 2013 reduced from 38 349 to 36 885 in week 14 of 2013. | | | | | | | | | | | | |

*Table 2: The medium term capacity outlook.*

| TCLF | 10% | | 15% | | 20% | |
|---|---|---|---|---|---|---|
| Margin (%) | Nett | Gross | Nett | Gross | Nett | Gross |
| 2013 | 10,104 | 11,81 | 4,420 | 6,13 | -1,263 | 0,44 |
| 2014 | 6,343 | 8,39 | 0,817 | 2,87 | -4,710 | -2,66 |
| 2015 | 12,197 | 14,76 | 6,451 | 9,02 | 0,706 | 3,27 |
| 2016 | 16,694 | 19,23 | 10,667 | 13,20 | 4,640 | 7,18 |
| 2017 | 16,959 | 19,63 | 10,906 | 13,57 | 4,854 | 7,52 |

*Table 3: Effect of TCLF on reserve margin.*

Affect of PCLF and UCLF planned capacity loss factor PCLF and unplanned capacity loss factor on reserve margin.

Table 3 shows the effect of factoring total capacity loss (TCLF = UCLF + PCLF), ranging from 10% to 20% in to the net and gross reserve margin calculation for the years 2013 to 2017.

Reserve margin not only caters for outage of generation plant but also for upward variations in demand and worst case loss of generation outside Eskom's control (imports and purchases). If the historical percentage figure remains the same, taking UCLF and PCLF into account, very little margin is left to cater for variations in demand and other factors.

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