

**ESKOM'S ANNUAL PROGRESS REPORT IN RESPECT OF THE PPP**

**Templates for preparation of the plan and the annual progress reports.**

**The following declaration and Table 1, 2 and 3 must form part of the annual progress report.**

Name of Company: \_Eskom Holdings SOC Ltd\_(Registration number 2002/015527/30)\_

Declaration of accuracy of information provided:

I, [REDACTED] declare that the information provided in this report is in all respects factually true and correct to the best of my knowledge and as at the date of signature.

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Signed at \_Sunninghill\_ on this 23<sup>rd</sup> day of April 2019 \_\_\_\_\_

[REDACTED]

Signature

[REDACTED]

Climate Change and Sustainable Development Department

Capacity of Signatory

Table 1.

Activity/production processes	GHGs	2016 (actuals, tonnes)	2017 (actuals, tonnes)	2018 (actuals, tonnes)	2019 (budget <sup>4</sup> , tonnes)	2020 (budget <sup>4</sup> , tonnes)	Total GHG emissions (2018-2020)	Methodology <sup>2</sup>
1A1a <sup>1</sup>	CO <sub>2</sub>	215 889 375	208 608 459	214 296 023				Tier 3
	CH <sub>4</sub>	2 281	1 489 <sup>3</sup>	1 547				Tier 3
	N <sub>2</sub> O	2 828	2 689	2 779				Tier 3
1A3a <sup>1,5</sup>	CO <sub>2</sub>	-	0.003408	-				Tier 1
	CH <sub>4</sub>	-	0.00000002383	-				Tier 1
	N <sub>2</sub> O	-	0.00000009534	-				Tier 1
Totals in tonnes CO <sub>2</sub> eq <sup>6</sup>		216 779 034	209 438 627	215 154 188			689 872 454	

1. Intergovernmental Panel on Climate Change (IPCC) category 1A1a refers to "main activity electricity and heat production" and is the same category as that reflected in Annexure 1 of the National Greenhouse Gas Emission Reporting Regulations (notice 275 of 2017) and would correspond to the production process listed in the Pollution Prevention Plan Regulations (notice 712 of 2017) Annexure A, item "o" which includes "electricity production from fossil fuels, excluding the use of back-up generators". IPCC category 1A3a refers to "civil aviation".
2. The calculations of the emissions from these two sectors are dealt with in sections 12, 13 and 18 of the Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas Emissions by Industry Version No: TG-2016.1 April 2017 which in turn refer to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. The Tier 3 methodology for 1A1a uses a carbon mass balance approach.
3. For methane (CH<sub>4</sub>), the Tier 1 method was used prior to 2017, including in the budget forecast undertaken in 2015.
4. The budget values quoted in years 2019 and 2020 are those provided to Department of Environmental Affairs ahead of the pilot carbon budget allocation from Department of Environmental Affairs (letter reference 149970, dated 21 December 2015). The assumptions underpinning the budget allocation were based on the Eskom Holdings Corporate Plan (2015/16 to 2019/20) including the prevailing electricity demand forecast, projected power station energy availability factors, existing independent power producer purchase agreements and expected new build commissioning dates.
5. Activity levels associated with 1A3a have only been reported subsequent to the National GHG Reporting Regulations coming into force from 3 April 2017.
6. The Global Warming Potentials for N<sub>2</sub>O and CH<sub>4</sub> of 296 and 23 were used respectively to calculate the CO<sub>2</sub>eq. These are the GWP's required as per the South African GHG Reporting Technical Guidelines Version No: TG-2016.1 April 2017.

Table 2. Planned mitigation measure

Mitigation measure	Description of mitigation measure	Anticipated implementation period (years)	Assumptions used to estimate anticipated GHG emission reduction	GHG to be abated	Actual/Anticipated emission reduction (tonnes)					
					2017	2018 (actual)	2019	2020	Total GHG emission reduction (2018–2020)	
More efficient production	Preferentially load higher efficiency, lower emitting coal-fired power stations and reduce the load on lower efficiency, higher emitting coal-fired power stations	July 2018 – December 2020	For the current electricity demand and coal-generated volumes forecast as per the Eskom Holdings Corporate Plan (2018/2019 to 2022/23), there will be sufficient generation capacity for the system to preferentially load those coal-fired power stations that have higher efficiencies and lower emissions, especially Medupi and Kusile	CO <sub>2</sub>	0	0	[REDACTED]	[REDACTED]	[REDACTED]	8 832 000
<b>Total (tonnes CO<sub>2</sub>eq)</b>					0	0	[REDACTED]	[REDACTED]	[REDACTED]	8 832 000

1. These assumptions include, amongst others, the current electricity demand forecast, power station energy availability factors (excluding coal supply or labour-related disruptions), expected independent power producer purchases and other non-coal electricity contributions and completion of the new build programme according to current P80 commissioning dates.

Table 3. Deviations from approved Pollution Prevention Plan

Mitigation measure implemented	Deviations from approved PPPs (if any) and remedial actions taken	Risk and limitations (if any)
<p>More efficient production</p>	<p>From 1 July 2018 to 31 December 2018, it was projected that 1 079 000 tonnes CO<sub>2</sub> could be avoided by preferentially loading higher efficiency, lower emitting coal-fired power stations. This was based on the assumption in Table 2 above that "there would be sufficient generation capacity for the system to preferentially load those coal-fired power stations that have higher efficiencies and lower emissions, especially Medupi and Kusile". Unfortunately due to operational challenges, there was higher than forecast unplanned capacity load factors at the majority of Eskom's coal-fired power stations. This was severe enough for the system to incur load shedding towards the end of 2018. Given the need to run all available generation capacity, only a marginal shift in the share produced by lower emitting stations was realised (from 57% in the baseline to 58% based on actuals) and this was not sufficient to produce any emissions savings, particularly given the upset operating conditions. However, it is notable that across three of Eskom's older power stations which have amongst the highest relative CO<sub>2</sub> emissions, 10 units have been placed in reserve storage and a further 12 units will reach dead stop dates within the next four years.</p> <p>Limiting capacity from the higher-emitting older stations alone will not be sufficient to achieve the emissions' reduction forecast for 2019 and 2020. The electricity system needs to be stabilised and operational difficulties experienced at lower emitting stations is also being addressed viz.</p> <ul style="list-style-type: none"> <li>a) Duvha – recovery from a generator stator failure which caused one unit to be removed from service;</li> <li>b) Medupi – lower availability due to high superheater temperatures and issues with the ash removal conveyor belt;</li> <li>c) Kendal – multiple boiler tube leak repairs and issues with conveyor belt;</li> <li>d) Matla – recovery from an extended outage and poor coal qualities; and</li> <li>e) Leithabo – recovery from the steam line break on unit 5.</li> </ul> <p>Eskom has a 9-point recovery plan aimed at addressing technical and operational challenges.</p>	<p>The likelihood of the operational difficulties continuing in 2019 remains high. This translates to a high risk of deviations from the predicted performance.</p>