

Submission on the Victorian brown coal-fired power stations licence reviews

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Healthy planet, **healthy people.**

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Doctors for the Environment Australia (DEA) is a voluntary, independent organisation of medical doctors and students who work to minimise and address the adverse health effects of environmental damage be it of the air, water or land. We therefore make the following submission in relation to the licence reviews of Victoria's power stations as brown coal-fired power stations are major polluters and greenhouse gas emitters.

DEA's recommendations:

1. That licences restrict the emission of toxic pollutants in line with International standards. These pollutants consist of **particulate matter (PM), oxides of sulphur and nitrogen and mercury** and at least 30 other toxic substances and compounds. The particles in ambient air are both primary particles released from the original source, and secondary particles produced in the atmosphere. The burning of coal is a major source of both primary particles and the gases sulphur dioxide (SO₂) and oxides of nitrogen that lead to secondary particles.

The emissions intensity of PM₁₀ of the Latrobe Valley power stations is approx. 4 times that of power stations in New South Wales (NPI data 2015-16). Inhalation of PM₁₀ contributes to bronchial and lung disease whereas the smaller PM_{2.5}, by passing through the lungs and entering the circulation, contributes to heart disease, strokes, lung disease, cancer,² and adverse birth outcomes.³ There is ample evidence that PM_{2.5} and SO₂ at any level are damaging to health. Whilst negligible levels may be impossible to achieve in the short term without the closure of coal power stations and mines, technologies exist and are used extensively elsewhere to minimise these emissions and protect health, such as SO₂ scrubbers, filters for PM, and selective catalytic reduction for oxides of nitrogen.

While SO₂ causes mainly respiratory symptoms and contributes to lung disease and asthma, a recent study reveals an association with low birth weight and pre-term infants. Research in New Jersey, USA, revealed a substantial effect on infant birth weight for mothers living downwind of a coal fired power station releasing 30,000 tonnes SO₂ per year.⁴ (To place in context, the three Latrobe Valley power stations released 106,000 tonnes of SO₂ in 2015.) In two separate analyses there were lower birthweights in downwind counties up to 70 Km away, then an increase in birthweight after

the power station closed in June 2014. After the power station closure the incidence of low birthweight babies below 2500g was reduced by 15%. In the Latrobe Valley and the downwind Wellington local government area there are 1,530 babies born each year. The incidence of low birth weight in these areas is 8.5%, which is higher than the Victorian average of 6.6%. Therefore, each year 130 are expected to be of low birthweight, and, extrapolating the New Jersey evidence, 20 of these may be due to air pollution exposure.

Low birthweight is associated with many childhood health problems, and with chronic heart and kidney disease in later life.⁵ It is, as yet unclear if the effect is from an individual pollutant, or from the common mixtures of gases and particles found in air pollution. Uncertainty about the toxicity of individual pollution components does not justify delay in protecting the health of future children.

Mercury emissions are not monitored in the Latrobe Valley. It is estimated that the three power stations release 1,110 Kg of mercury (Hg) each year.⁶ This is a substantial proportion of the estimated 18 tonnes released each year in Australia. Mercury is different to other air pollutants, in that it is persistent. Once released into the environment as an element it exists for millennia and can remain bioavailable for decades. It especially concentrates in the aquatic food chains. The pathway from release to toxicity can be long, slow, across countries, and difficult to measure. Even tiny amounts of mercury are toxic, especially to the developing foetus where it can cause neurodevelopmental delay.⁷

Given the international transport of mercury pollution in air, water and fish, it is regulated by the international Minamata Convention⁸ which Australia signed in 2013 but is yet to ratify. The convention came into force in May 2017 when it was ratified by the 50th country.

The Australian regulatory impact statement claims an environmental cost of \$4,862 per Kg released which would equate to \$5.4 million for the Latrobe generators.⁹ This figure though is an under-estimate as although there are many environmental effects, it is based only on mental retardation in Australian children.

Mercury accumulation in aquatic food chains has been observed locally; the Burrunan dolphin in the Gippsland Lakes has higher concentrations than those in other Eastern Australian regions and may be a cause of their premature death.¹⁰ Food Standards Australia and New Zealand recommend limiting fish intake during pregnancy, in women planning pregnancy, and in small children to reduce mercury exposure. US power stations are being required to implement mercury capture mechanisms under regulations introduced in 2011, and European power stations are similarly adjusting to new requirements introduced in April 2017.

DEA considers it is now appropriate for the EPA to impose strict mercury emissions limits on the LV power stations.

Regulation of the emission of PM, sulphur and nitrogen oxides and mercury is available through the Environment Protection Act, Section 71, which empowers the EPA in '(f) prescribing ambient air quality standards and specifying the maximum permissible concentrations of any matter that may be present in or discharged into the atmosphere'.

2. That the licences require more extensive and continuous monitoring of both ambient air and power station emissions. The EPA is planning to install three state-of-the-art monitors in the Latrobe Valley. However, DEA considers that the downwind community of Sale is also at risk from air pollution, and hence should also have an ambient air monitor installed. Intermittent ambient air monitors cannot give information on stack emissions which is the only way to measure what is being released and hence delivered to the environment. Both stack and ambient monitors need to record continuously, and data must be available both to the public in real time and to be archived and accessible for subsequent analysis. The current practice of power stations monitoring their own emissions and reporting results annually is subject to manipulation and is totally inadequate.

3. That cost of retrofitting emission reduction technologies be borne by the power generators. Cost is not a valid argument for deferring toxic emission reduction as the burden of health costs in the community arising from the omission of these technologies is carried by the public purse.¹¹ Technologies including flue gas desulphurisation (scrubbers) to reduce SO₂ emissions, selective catalytic reduction for oxides of nitrogen and filters or other technologies to reduce PM are available but have not been installed in the Latrobe Valley power stations.¹²

4. That the licences include limits on CO₂ emissions. Latrobe Valley power stations emit 48% of Victoria's carbon emissions. Currently at "business-as-usual" Victoria has just over 4 years remaining of its carbon budget for a 66% chance of keeping mean temperature increase to less than 1.5°C.¹³

Principles of equity dictate that all states and nations must be guided by the carbon budget since the total carbon emissions from the world's small emitting nations constitutes about 45% of the world's emissions. Significant impacts of global warming from greenhouse gas emissions are already leading to health risks throughout the world. Ocean warming contributes to climate change and an increase in number and severity of extreme weather events.¹⁴

Associated rising sea levels will displace large numbers of coastal dwellers. In Victoria; we will experience higher day and night temperatures which cause increased morbidity and mortality of the vulnerable;¹⁵ we will be at higher risk of bush fires;¹⁶ agricultural production will be threatened; and diminished biodiversity will have profound effects on our future health¹⁷.

In Victoria, the Climate Change Act 2017 (No 5 of 2017; Part 3, section 17¹⁸) states that '*decision makers must have regard to climate change*'. Several sections of the Act clearly refer to the State being required to consider direct and indirect greenhouse gas emissions in both the short and long-term and the potential cumulative impacts. Early ambitious commitments to reduce emissions will set Victoria on a gradual path towards its long-term target and will avoid the need for steeper reductions at later dates, which will be more costly. Australia's emissions have not fallen in the last 9 years¹⁹ and with no substantial federal policies in place, it is beholden on Victoria and other states to take active carbon reduction measures.

The EPA has the authority to act as regulator of power station emissions and so has a major role in helping Victoria achieve specific targets that may be set.

Section 71 page 406 of the Environment Protection Act states that

'the Governor in Council on the recommendation of the Authority may make regulations for or with respect to:

(fab) prohibiting or regulating the emission or discharge of greenhouse gas substances into the environment';

and additional statutes (fac, fad, and ga (1) and (2)) all relating to the regulation of greenhouse gases to reduce harm to the environment and enable long-term and interim emission reduction targets contained in the Climate Change Act 2017 to be achieved.

In January 2017, the Government released Victoria's Climate Change Framework²⁰. The Framework included a target to reduce Victoria's emissions by 15-20% below 2005 levels by 2020 and further targets from 2021-2025 and 2026-2030 are currently being negotiated. Limits on CO₂ emissions from power generation will be an important mechanism to achieve these targets. In the longer term, reduced emissions from power generation and the expansion of renewables will allow increased electric vehicle use to be uncoupled from greenhouse gas emissions, in turn leading to a huge reduction in carbon emissions overall.

5. That the EPA utilise its powers to prosecute for licence contraventions to protect public health and the integrity of surrounding environments.²¹ The Environment Protection Act 1970 with its amendments as at 1st January 2018 gives the EPA (Division 5- Offences and Powers of the

Authority; page 134) powers to prosecute when the holder of a licence contravenes any condition to which the licence is subject.

6. That licence fees are based on what the power stations emit, not on what they are licenced to emit, in order to provide incentive to reduce emissions. In the Latrobe Valley, there is a range of emissions intensity of SO₂. NPI 2015-16 data shows Yallourn emits 1,812 Kg/GWh of SO₂ while Loy Yang A emits 3,879 kg/GWh and Loy Yang B 2,814 kg/GWh. There is currently no reward for the lower SO₂ production. If pollutants cannot be controlled at the source, polluters should be liable for a fee that reflects the environmental and health damage per tonne of pollution emitted. The Australia-wide cost is estimated at \$2.6 billion just for SO₂, NO_x and particulate pollution from power stations alone, with a health damage cost of around \$13.20/MWh.¹¹

These costs are not factored into wholesale electricity prices or licence fees, and are therefore borne by the community rather than the power station owners. New South Wales currently has a system of pollution license fees based on the load emitted, but the fees are set much lower than the value of the environmental damage. DEA has calculated that to properly reflect the health costs caused by power stations, Load-based Licencing fees would have to be nearly 50 times their current levels.²² Establishing a load-based licensing system with equal fees across states would remove cross-border effects and allow the fees to be set at realistic limits.

7. That the licences include controls on dust emissions from the adjacent coal mines. Dust from mines is clearly related to local weather conditions and little is known about the atmospheric levels of dust particles and PM on days of high winds. The EPA needs to monitor these and require the licences to include measures to prevent exposing local communities to bursts of toxic levels.²³

8. That the licences include controls on practices which might lead to ground-water contamination at the ash pond landfill sites.²⁴ Assessment and management of ground-water contamination has not received due attention and needs to be managed now and curtailment measures taken. Contamination with a host of heavy metals and rare elements provides potential for serious disease.²⁵

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