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## **Submission to the Independent Review into the Future Security of the National Electricity Market**

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The Doctors Reform Society is a health organisation which aims to improve health for all people in a socially just and equitable way. We believe that human health depends fundamentally on a healthy environment. We accept the scientific consensus that anthropogenic global warming is occurring, that this is a great hazard to health, and that urgent action to combat this is required.<sup>1</sup>

It is from our health perspective that we wish to make a brief submission in response to the Preliminary Report of the Independent Review into the Future Security of the National Electricity Market.

We welcome the report's acknowledgement that the Australian electricity sector is a major contributor to greenhouse gas emissions, its recognition that the transition to a low emissions economy is imminent, and its awareness of the importance of integrating emissions reduction and energy policies.<sup>2</sup>

However, we note the absence of discussion of health in the Preliminary Report – indeed, the word “health” appears nowhere in its pages.

### **Health, climate change, air pollution and electricity**

The current and potential future health implications of climate change are profound.<sup>3,4</sup> Health impacts of climate change include both direct effects (heatwaves, storms, flooding, drought) and indirect effects (such as malnutrition due to food insecurity, displacement of populations due to rising sea levels, changing patterns of infectious diseases, mental illness, pollution-induced physical illness, and conflict).<sup>4</sup> Health effects of climate change are expected to be greatest amongst socioeconomically deprived communities. A recent report from the Intergovernmental Panel on Climate Change found confidently that without substantial mitigation efforts, there is a “high to very high risk of severe, widespread and irreversible impacts globally” of climate change.<sup>5</sup> Policies to mitigate climate change therefore need to be given great priority worldwide, including in Australia. Transitioning our electricity system as quickly as practical from fossil fuels to renewable energy sources is a vital mitigation strategy.

Climate change also has direct relevance to the security and reliability of the National Electricity Market. An example is the recent record-breaking heatwave in eastern Australia, in which blackouts were avoided only by cutting power to a large aluminium smelter (disrupting industry in the process).<sup>6</sup> This heatwave was made twice as likely by climate change;<sup>7</sup> future unmitigated climate change will make such events even more likely. Another example is the storm-induced state-wide electricity blackout in South Australia in September 2016. Future climate disruption will make such storms more likely. The South Australian experience is a potent reminder of the vulnerability of electricity infrastructure to extreme weather and the importance of mitigation of (and adaptation to) climate change.<sup>8</sup>

Apart from climate change, there are important adverse health effects from the air pollution caused by the burning of fossil fuels for electricity generation, especially of coal. The OECD estimates that outdoor air pollution kills more than 3 million people annually across the world, with deaths in Australia estimated at 1483 in 2010.<sup>9</sup> Causes of such deaths include respiratory disease (including lung cancer), heart attack

(myocardial infarction) and stroke.<sup>4,10,11</sup> Coal is a substantial contributor to air pollution, as are fuels burnt for road transportation. A health-promoting, modern Australian electricity system should minimise air pollution in two primary ways: by transitioning rapidly away from coal, and by planning for electrification of road transportation powered from renewable sources.

We recognise the importance of employment for people's health. We see great potential for employment in the renewable energy sector: the Climate Council estimates that even a 50% renewable electricity target for 2030 would lead to over 28,000 new jobs.<sup>12</sup> Indeed, modelling suggests the net effect on jobs will be positive.<sup>12</sup> However, we recognise that some workers in coal and gas industries, and in their communities, will lose their jobs as fossil fuel power stations close. We recognise the local social and economic challenges that this transition entails. Australian federal and state governments will have important roles in managing these transitions and supporting workers to retrain. Fears of local job losses should not inhibit our transition to renewably sourced electricity, though.

## **Consultation questions and answers**

Our answers to selected questions from the preliminary report are as follows:

### **Question 3.1: What role should the electricity sector play in meeting Australia's greenhouse gas reduction targets?**

Given that reductions in greenhouse gas emissions are of fundamental importance to international human health, and that electricity production in Australia is responsible for 35% of our national emissions,<sup>2</sup> we believe the electricity sector has an urgent and central role to play in greenhouse gas reduction.

### **Question 3.2: What is the role for natural gas in reducing greenhouse gas emissions in the electricity sector?**

Gas-fired electricity is less carbon intensive at the point of combustion than coal.<sup>2</sup> However, gas is still a significant source of carbon dioxide when burnt, and methane is a particularly potent greenhouse gas when leaked. There is growing concern that even modest fugitive emissions from unconventional gas extraction may more than offset the supposed environmental benefits of gas, due to the warming effect of the leaked methane.<sup>13</sup> In the United States, satellite and surface observations suggest a significant increase in methane emissions during recent years in which unconventional gas extraction has been vigorous.<sup>14</sup>

Some claim that gas may have a transitional role as we progress to a renewably-generated electricity system, to deal with intermittency of power supply from renewables. This claim is probably overstated due to the complementarity of wind and solar generation, improvements in smart grid technology including ancillary services, use of storage technologies (pumped hydro, thermal solar/molten salt, batteries), the reliability afforded by renewable energy generation which is widely geographically distributed, and opportunities for reductions in demand via efficiency improvements.<sup>15</sup> Modelling by several independent groups (including the Universities of Melbourne and NSW, the Australian National University and the Australian Energy Market Operator) has found that a transition to 100% renewable electricity production is feasible and affordable for Australia.<sup>16-19</sup>

Consequently, we see little or no role for natural gas in reducing greenhouse gas emissions in the electricity sector.

### **Question 3.5: What is the role for low emissions coal technologies, such as ultra-supercritical combustion?**

We believe there is no role for so-called "low emissions coal" technologies. As appendix D of the preliminary report shows, ultra-supercritical coal combustion provides only modest reductions in emission intensity of electricity generation compared to traditional coal, is more emission intensive than gas, and is greatly more polluting than wind, solar photovoltaic or hydroelectric power.<sup>2</sup> Modelling from the Australian National University finds that even under generous assumptions, new ultra-supercritical coal power is more expensive than new wind power. Further, due to likely future carbon limiting policies and rapidly falling solar and wind prices, both solar and wind are likely to be cheaper options over the lifetime of the coal

plant.<sup>20</sup> We believe “low emissions coal” technology is a misnomer, and that such technology makes no sense on health, environmental or economic grounds.

### **Question 7.1: Is there a need for greater whole-of-system advice and planning in Australia’s energy markets?**

We believe, as does the World Health Organisation, in “health in all policies” – that health impacts should be considered in all policy-making processes.<sup>21</sup> With regards to the planning of Australia’s electricity system, “whole-of-system” planning must include health – not just the health system, but also climate change and air pollution as serious environmental determinants of health. Ministers and energy market institutions need to consider and address these health issues in their policymaking and decision-making.

Acknowledgment of a broadly shared responsibility for minimising adverse health impacts should strengthen the will of policymakers to transition as quickly as practical to an electricity system with a minimum of air pollution and greenhouse gas emissions. To this end, we support the call by Australia’s Climate and Health Alliance (of which we are a member) for the development of a National Strategy for Climate, Health and Wellbeing.<sup>22</sup>

Further, we note that many experts believe that Australia’s current 2030 emission reduction targets are an insufficient contribution towards the global goal of constraining global warming to 2 degrees centigrade,<sup>23</sup> and that Australia seems on current trends likely to fail even these insufficient targets.<sup>24</sup> We believe that effective whole-of-system planning requires a review of these targets, much greater ambition, and a genuine and fair contribution to emission reduction befitting our status as a relatively affluent and therefore adaptable country.

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