

21<sup>st</sup> February 2020

## Submission to the Inquiry into Nuclear Prohibition

### Energy Policy

Australia and the world are undergoing a transition to a more efficient, low-emissions future.<sup>1</sup> This recognises the need for “concerted global action” to reduce carbon emissions to mitigate catastrophic climate change.<sup>2</sup> Australia’s energy industry, which is currently very emissions intensive, will play a large part in this transition.<sup>3</sup> There has been some interest in exploring nuclear activities in Australia, including as part of the low-emissions energy mixture.<sup>4</sup> It would be interesting to see whether there were any opportunities or benefits that could come to Victoria through nuclear activities. Unfortunately, Australia lacks a national energy plan to properly evaluate energy options.<sup>5</sup> There has been a lack of consistent and concerted action by policymakers on energy (hindered by ideologues from both the left and the right). A clear, preferably bipartisan policy would give clarity to businesses to invest in the energy market. I believe there are five main objectives that should inform energy policy and whether nuclear energy should be adopted.

### *Energy Policy Aims*

#### 1. Reliability

Reliability means consistently meeting energy demand. Energy generation should be sufficient to meet electricity needs of households and businesses. The gradual closing of coal-fired power plants in Australia will need to find alternative energy sources.

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<sup>1</sup> Finkel et al, *Independent Review into the Future Security of the National Electricity Market: A Blueprint for the Future* 2018, 18, 75.

<sup>2</sup> Standing Committee on the Environment and Energy, *Not without your approval: a way forward for nuclear technology in Australia - Report of the inquiry into the prerequisites for nuclear energy in Australia* 2019, 59.

<sup>3</sup> Cambridge University Press, *Garnaut Climate Change Review* 2008, xxxvii.

<sup>4</sup> For example, *Not without your approval* 2019.

<sup>5</sup> *Not without your approval* 2019, 91.

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## 2. Security

Security means the capacity to the system to provide continuously provide energy, even in the event of a major disruptive incident affecting a generator or transmission line. The increasing intensity and regularity of severe weather events under climate change could threaten system security. The prospect of “greater storm, wind and bushfire damage” could pose a "risk to electricity transmission and distribution networks,” including the bushfires causing power outages in 2007 in Victoria and NSW.<sup>6</sup>

## 3. Affordability

Affordability means that the price of electricity does not place undue financial pressure on households and businesses. Higher electricity costs can place pressure on the cost of living and restrict business growth. Many households may feel they need to compromise on food, healthcare or other essentials to meet their electricity bill. Businesses can also struggle with electricity costs pressuring their profit margins.

## 4. Sustainability

Sustainability means that our actions does not have detrimental impacts on the living standards of future generations. Australia should play a proportionate role (in terms of per capita emissions) in global cooperation on climate change action, including through the Paris Climate Agreement 2015. To achieve the “well below 2 degrees” Celsius temperature increase to avoid catastrophic climate change, Australia would need to radically reduce our carbon emissions (including in the energy sector). I believe we should pursue a target of “Net Zero emissions by 2050,” as advocated by independent MP Zali Stegall.<sup>7</sup>

## 5. Employment

The Paris Agreement includes provisions for a “just transition,” so people are not disadvantaged

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<sup>6</sup> The Senate Select Committee into the Resilience of Electricity Infrastructure in a Warming World, *Stability and Affordability: Forging a path to Australia’s renewable energy future* (2017), 15; *Garnaut Review* 2008, 450, 477.

<sup>7</sup> *Not without your approval* 2019, 93; Nuclear Fuel Cycle Royal Commission, *Nuclear Fuel Cycle Royal Commission Report* 2016, 2.

by the move away from emissions intensive industries. In Australia, the government should plan for employment and other economic opportunities for coal workers and coal dependent communities. The development and operation of new renewable energy technologies could provide many employment opportunities.

### **Nuclear Fuel Cycle**

Could we meet the above aims by establishing a nuclear industry in Victoria? Moreover, is it a better option than alternative energy sources?

Various nuclear activities are currently prohibited under state and Commonwealth law. This includes the Victorian *Nuclear Activities (Prohibitions) Act 1983* and sections 22A and 140A of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Any action on nuclear activities would need cooperation from both state and federal governments to amend the law or granting exemptions. The moratorium provides a “constraint on decision making” which may not be appropriate for today.<sup>8</sup> Removing the moratorium could allow nuclear technologies to have “an opportunity to be fairly considered alongside other possible energy sources.”<sup>9</sup> Some suggest that removing the prohibition is a necessary before having community dialogue and obtaining social licence for nuclear.<sup>10</sup> Though others believe social license should be a prerequisite for removing the moratorium.<sup>11</sup> Moreover, there would need to be bipartisan support for nuclear to be viable, though such support does not exist.<sup>12</sup> The greatest barrier for nuclear energy is getting public support, particularly on the local level.<sup>13</sup> Some people might support nuclear energy in principle, but “not in my backyard.”

There are many concerns about nuclear power, which would hinder public acceptance of any nuclear power plan. Environmentalists believe nuclear power is costly, lacking community

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<sup>8</sup> *Not without your approval* 2019, 45.

<sup>9</sup> *Not without your approval* 2019, 43.

<sup>10</sup> *Not without your approval* 2019, 23-24.

<sup>11</sup> *Not without your approval* 2019, 76.

<sup>12</sup> *Not without your approval* 2019, 24, 92.

<sup>13</sup> *Not without your approval* 2019, 22-3.

support and distracts from pursuing other energy sources (such as renewable energy sources).<sup>14</sup> Dealing with nuclear waste is a serious issue.<sup>15</sup> Nuclear accidents such as Three Mile Island 1979, Chernobyl 1986 and Fukushima 2011 are prominent in the public mind. Nuclear energy is safe in terms of 16,000 years of cumulative operation time with few major incidents, but convincing the public would prove difficult.<sup>16</sup> Nuclear power plants are also very water intensive. Given the precious nature of water in Australia's arid conditions, with concerns about drought and dwindling urban water supplies, we should be wary of any projects that require large amounts of water. Given these issues, it is not realistic to expect that there would be public agreement or bipartisan support. Garnaut even called it "imprudent" even "romantic" to rely on a "change in community attitudes" to suddenly accept nuclear energy or related activities.<sup>17</sup>

Moreover, with the energy system and economy constantly changing, we need energy sources that are "quick to be delivered," "flexible," "cost competitive" and with "low capital costs."<sup>18</sup> Nuclear power simply does not seem meet these requirements. Once operational, nuclear power could deliver reliable and low-emissions energy. However, nuclear energy is not considered market competitive or cost effective.<sup>19</sup> The prohibitive cost of constructing nuclear power plants in other countries means the industry relies on large government subsidies to remain viable.<sup>20</sup> Subsidies would also likely be needed to make nuclear viable in Australia, which raises questions about whether nuclear can deliver affordable and cost-effective energy. Nuclear energy involves a large, upfront establishment cost and a long development time.<sup>21</sup> Compared to 6-18 months for renewable energy projects, getting an operational nuclear power plant could take 10-15 years (2030-35 onwards).<sup>22</sup> That does not include the time needed for debate and getting political and social consensus on nuclear energy, which could be considerable. Moreover, by the

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<sup>14</sup> *Not without your approval* 2019, 46.

<sup>15</sup> *Not without your approval* 2019, 65-66.

<sup>16</sup> *Not without your approval* 2019, 36-37; *Nuclear Fuel Cycle Royal Commission Report* 2016, 45.

<sup>17</sup> *Garnaut Review* 2008, 476.

<sup>18</sup> *Not without your approval* 2019, 61.

<sup>19</sup> *Not without your approval* 2019, 81.

<sup>20</sup> *Not without your approval* 2019, 60-61.

<sup>21</sup> *Garnaut Review* 2008, 475-6.

<sup>22</sup> *Not without your approval* 2019, 31.

time that nuclear power would be established, the market could have significantly shifted. New renewable energy and battery storage technologies (which are already becoming more cost-effective) could have become even cheaper and reliable. Therefore, nuclear power would not help with Australia's energy problems (whether meeting emissions reduction targets or reducing power prices). Some even call nuclear energy a "pointless and dangerous distraction."<sup>23</sup>

The nuclear fuel cycle includes uranium mining, processing, electricity generation and waste management.<sup>24</sup> Australia could play a greater role in uranium mining.<sup>25</sup> Uranium mining contributes to nuclear energy generation in other countries, which can help reduce global emissions. It can also lead to economic and employment opportunities in Australia. It would be interesting to examine whether there are any viable uranium sites in Victoria. Though, there would be problems getting community consent and bipartisan support for uranium mining in Victoria. Even then, there would need to be consideration of the environmental impact of any local mines. Australia could also be involved in nuclear waste management and storage. This would provide a major economic opportunity for Australia, considering the lack of any current long-term nuclear waste storage options worldwide.<sup>26</sup> There were proposals to establish these in South Australia, though they failed because of strong social and legal opposition.<sup>27</sup> The Victorian public is not likely to be any more open than South Australia. Apart from these, there could be broad applications for nuclear technology relating to "health ... environment ... water ... food ... industry ... electronics ... [and] production of hydrogen."<sup>28</sup> It would be interesting to examine whether these programs were economically or scientifically promising, and acceptable to the community. Australia already has some medical research using nuclear power.<sup>29</sup>

## Renewable Energy

Overall, we do not need nuclear energy. Renewable energy has the power to meet our energy

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<sup>23</sup> *Not without your approval* 2019, 68.

<sup>24</sup> *Not without your approval* 2019, 16.

<sup>25</sup> *Not without your approval* 2019, 16-17.

<sup>26</sup> *Not without your approval* 2019, 17-18, 65.

Finland may be coming close to the first such facility.

<sup>27</sup> *Not without your approval* 2019, 18.

<sup>28</sup> *Not without your approval* 2019, 20.

<sup>29</sup> *Not without your approval* 2019, 18-19.

needs while decarbonising the electricity sector.<sup>30</sup> Renewable energy sources are cheaper and poised to assume an increasingly large role in the Australian energy market.<sup>31</sup> There are challenges to the new technologies, including "far from the grid" and/or "intermittent supply."<sup>32</sup> Hydroelectric power such as the Snowy Mountain is also an important low-emissions energy source, which could complement the "intermittent supply from wind and solar power."<sup>33</sup> Renewable energy could supply 50-100% of Australia's energy needs through technologies such as "energy storage, demand management, and ... interconnection over large areas using ... transmission lines."<sup>34</sup> Battery storage technology is particularly important. This allows energy to be stored at times of surplus generation and used later, giving greater system reliability. Conversely, nuclear is declining as a share of global energy.<sup>35</sup> While the demand for nuclear was expected to dramatically increase in China and India, this has been outpaced by solar and wind technologies.<sup>36</sup> Australia should continue to export uranium, but explore other options to meet domestic energy supply (such as gas or renewable options).<sup>37</sup> Moreover, Australia should pursue economic opportunities relating to renewable energy. Australia has a competitive advantage in pursuing low emissions sources of energy, such as solar and wind.<sup>38</sup> Australia has the resources and expertise in low emissions technologies to benefit from the "transition of the global economy to a low-emissions growth model."<sup>39</sup> We have the potential to "boost exports of climate services and technologies," with great advantage to our economy and employment.<sup>40</sup>

## Conclusion

I would be open to being convinced on nuclear energy if there was a viable economic case, and new technologies to deal with nuclear waste and other issues. However, nuclear energy does not seem to meet market conditions considering its large cost and long establishment time,

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<sup>30</sup> *Not without your approval* 2019, 64.

<sup>31</sup> *Not without your approval* 2019, 62.

<sup>32</sup> *Garnaut Review* 2008, 448.

<sup>33</sup> *Garnaut Review* 2008, 477.

<sup>34</sup> *Not without your approval* 2019, 63, 84.

<sup>35</sup> *Not without your approval* 2019, 58, 85.

<sup>36</sup> *Garnaut Review* 2008, 475-6; *Not without your approval* 2019, 58, 85.

<sup>37</sup> *Garnaut Review* 2008, 476.

<sup>38</sup> *Garnaut Review* 2008, 431-2.

<sup>39</sup> *Garnaut Review* 2008, 33, 49.

<sup>40</sup> *Garnaut Review* 2008, 87.

particularly when compared to renewable energy sources. Moreover, there does not seem any likelihood that any stage of the nuclear fuel cycle would be acceptable in Victoria. Whatever the virtues of nuclear power, there is not much value in pursuing an energy source that is not commercially or socially viable. We need to come together to create a realistic and effective energy policy to deliver reliable, affordable and sustainable energy. There is an urgent need to reduce emissions (including in the energy sector) to meet the challenge of climate change. To do so, I believe we should prioritise renewable energy and encourage the technologies and infrastructure (such as transmission lines) to integrate renewable energy in the market.

Thank you for considering my submission.

Kind Regards,

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