

# **ADAPTING TO A SUSTAINABLE ENERGY FUTURE: THE ROLE OF PLANNING AND ENVIRONMENTAL LAW**

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## **I INTRODUCTION**

Climate change demands that nation states increase their renewable energy capacity and, in so doing, become less dependent on fossil fuel energy. Nation states must also endeavour to reduce their energy footprint and improve their energy productivity. This will require the construction of substantially more small and large scale renewable energy infrastructure and the implementation of effective energy efficiency measures. These assertions are no longer seriously contested in Australia. Moreover, this necessary adaptation to a sustainable energy future will become increasingly economically imperative regardless of climate change considerations.

The future of the energy sector will be determined by the complex interplay of many social, political and economic factors. Yet, the law will also have an important influence on whether energy use becomes more sustainable. The law will either facilitate or, conversely, obstruct the adaptation to a sustainable energy future. Of the different areas of domestic law which regulate and impact upon the energy sector – including, for example, energy market legislation, consumer and competition law and contract law – planning and environmental law will be particularly important. Thus, the central inquiry of this paper is whether the New South Wales planning and environmental law regime (‘the regime’) is well equipped to effectively facilitate and manage this energy transition. This inquiry is limited to one jurisdiction to allow greater analytical depth than would be possible in either a comparative analysis of different jurisdictions or a broad overview of Australian environmental and planning law. Similarly, this paper will not attempt to comprehensively consider the entire body of relevant NSW legislation and case law.

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Rather, the inquiry undertaken here is confined to assessing whether the regime is sufficiently flexible to respond to three predicted changes to the energy sector in NSW and Australia. First, the supply of electricity generated by large scale wind farms is likely to increase in both relative and absolute terms. Second, the supply of electricity generated by small scale solar photovoltaic electricity generating systems is likely to continue to grow, and will do so especially strongly from 2020. Third, the current energy efficiency regulations for residential and commercial buildings are likely to become steadily more ambitious. As will be shown, these predictions are well supported in the relevant expert literature. Of course, this is not to say that these changes will be the only significant short term developments in Australian energy.

The first stage of this inquiry will examine how well equipped the regime is to effectively facilitate the predicted increase in large scale wind farm development. The simplistic approach of only determining whether the regime enables the efficient processing (e.g. time taken) of such development applications is criticised and avoided. Instead, the question posed for consideration is whether the regime encourages the efficient processing of wind energy development applications whilst still ensuring the adequate assessment of potential adverse social, economic and environmental impacts. This involves: identifying the key potential adverse impacts of wind energy development, assessing the efficiency of the regime and evaluating whether the regime encourages consent authorities to, in accordance with the principle of good governance, carefully balance the potential benefits and adverse impacts of such development. After setting out the various potential adverse impacts of wind farm development, it is contended that the most problematic impacts are likely to be visual impacts. It is then suggested that the regime, whilst not unusually inefficient in comparison with other jurisdictions, may inadequately promote the efficient processing of wind farm development applications. However, the regime is argued to be appropriately designed to encourage consent authorities to properly assess and balance the visual impacts of proposed wind farms.

The second stage of the inquiry adopts a similar structure to the first to determine whether the regime will effectively facilitate the predicted growth in the supply of electricity from small scale solar photovoltaic electricity generating systems. It is claimed that the unusual drafting

of the environmental planning instrument regulating such development may unnecessarily impede the efficient installation of solar photovoltaic electricity generating systems. This is followed by the consideration of whether the regime, as it is currently designed, is likely to adequately manage the potential impacts of solar photovoltaic electricity generating systems on the aesthetic values of heritage significance in heritage conservation areas. Additionally, some brief comments are made in relation to the regulation of solar access.

Finally, this paper will provide a case study examining the NSW energy efficiency scheme called the Building Sustainability Index. The question posed is whether or not this scheme – the machinery of which is implemented by the overarching environmental planning regime – is effectively achieving its objective of reducing the greenhouse gas emissions and potable water consumption of residential development. It is ultimately contended that this scheme is more likely than not to be ineffective and, therefore, may be ill equipped to facilitate the transition towards a sustainable energy future. This case study aims to elicit some of the broader challenges facing the implementation of energy efficiency programs through environmental and planning law.

In order to contextualise these three stages of inquiry, this paper will first provide a concise outline of the relevant features of Australia's energy profile and compare both Australia's renewable energy sector and energy efficiency performance with other nation states. This is followed by a brief explanation of the reasons that expert commentators and Australian governments have given in support of the abovementioned predictions, which have been relied upon to select those parts of the regime examined in this paper.

## II ENERGY AND THE PERILS OF PREDICTION

### *A Australia's Energy Profile*

Since 1973,<sup>1</sup> the energy consumed annually in Australia has increased relatively consistently (until recently).<sup>2</sup> Between 1973 and 1977, annual net energy consumption was less than 3,000

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<sup>1</sup> The year of 1973 is used because the relevant data is only comparable from this point. See Department of Industry and Science (Cth), *Australian Energy Statistics - Table C1: Total net energy consumption in Australia*,

petajoules ('PJ').<sup>3</sup> In comparison, the relevant figure for the period spanning 2008 and 2014 was more than 5,800 PJ.<sup>4</sup> In per capita terms, consumption has increased from 127 gigajoules ('GJ') per person in 1960 to 248 GJ per person in 2014.<sup>5</sup> While the proportion of energy consumption derived from renewable energy has steadily increased from less than 200 PJ annually between 1960 and 1973 to more than 300 PJ since 2012, renewable energy remains a relatively minor source of consumed energy.<sup>6</sup> Specifically, renewable energy contributed six per cent of the energy consumed in Australia between 2013 and 2014.<sup>7</sup> Of the various sources of renewable energy generation, the strongest recent "driver[s] of growth" have been wind energy, solar photovoltaic energy and biogas.<sup>8</sup> An often overlooked yet important component of energy consumption in Australia is the energy used in residential and commercial buildings. Such energy use is responsible for approximately 17 per cent of Australia's energy consumption<sup>9</sup> and "accounts for approximately 20 per cent of Australia's greenhouse gas emissions – split equally between commercial and residential buildings".<sup>10</sup> Importantly, these figures do not reflect the often substantial embodied energy used

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by fuel, energy units (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>2</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table C1: Total net energy consumption in Australia, by fuel, energy units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>3</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table C1: Total net energy consumption in Australia, by fuel, energy units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>4</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table C1: Total net energy consumption in Australia, by fuel, energy units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>5</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table B1: Australia – population, GDP and energy consumption* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>6</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table C1: Total net energy consumption in Australia, by fuel, energy units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>7</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 6.

<sup>8</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 12.

<sup>9</sup> Bureau of Resources and Energy Economics, *Australian Energy Projections to 2049-50* (Bureau of Resources and Energy Economics, 2014) 40.

<sup>10</sup> Council of Australian Governments, *National Strategy on Energy Efficiency* (Commonwealth of Australia, 2009) 23.

throughout the entire life cycle of buildings,<sup>11</sup> such as, for example, the energy used to produce roofing materials such as slate and terracotta tiles overseas, transport these tiles to Australia and lay them.

In terms of electricity generation, there has until relatively recently been a steady increase in the amount of electricity generated in Australia.<sup>12</sup> In the period from 1989 to 1991, less than 160,000 Gigawatt hours ('GWh') of electricity was generated annually.<sup>13</sup> Whereas, since 2008, total electricity generation has appeared to plateau at around 250,000 GWh.<sup>14</sup> The three sectors of the economy that consume the most electricity are the business sector, the residential sector and large industry. In the National Electricity Market ('NEM'), which is Australia's largest electricity market, the proportion of generated electricity consumed by each of these sectors was 46.4 per cent, 25.5 per cent and 28.2 per cent respectively.<sup>15</sup> Of the various sources of energy relied upon to generate electricity, the relative contribution of the main sources has remained relatively consistent since 1989. In the measurement year of 1989-1990, the four major sources of electricity were black coal (57 per cent), brown coal (22 per cent), hydro (10 per cent) and natural gas (9 per cent).<sup>16</sup> Whereas, in 2013-2014, the five major sources were: black coal (43 per cent), natural gas (22 per cent), brown coal (19 per cent), hydro (7 per cent) and wind (4 per cent).<sup>17</sup> Although still minor sources of electricity,

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<sup>11</sup> See, eg, Andre Stephan, Robert Crawford and Kristel de Myttenaere, 'A Comprehensive Assessment of the Life Cycle Energy Demand of Passive Houses' (2013) 112 *Applied Energy* 23.

<sup>12</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>13</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>14</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

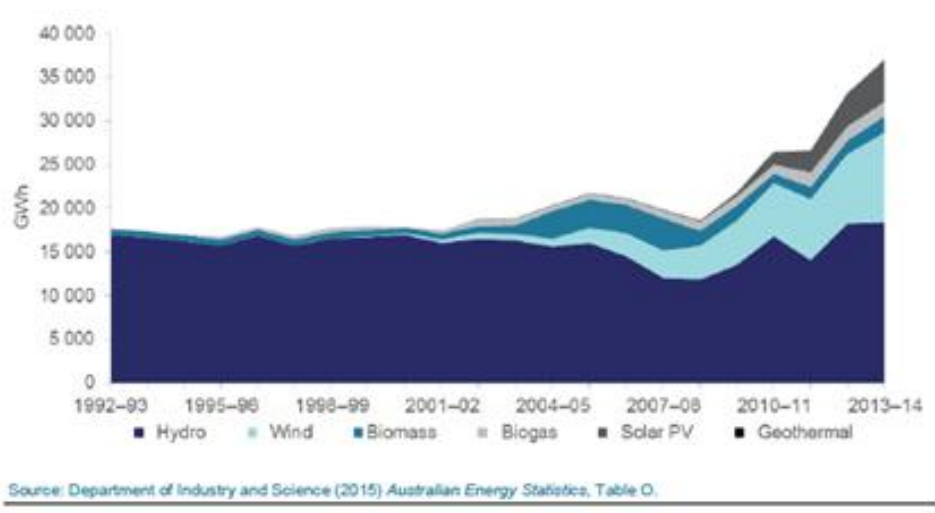
<sup>15</sup> Hugh Saddler, *Power down II: The continuing decline in Australia's electricity demand* (The Australia Institute, 2015) 3.

<sup>16</sup> Calculated based on the data in Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>17</sup> Calculated based on the data in Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>; On 12 August 2016, the Commonwealth Minister for the Environment and Energy noted that

the amount of electricity generated from oil, solar energy, biogas and wood bagasse has grown significantly over this period.<sup>18</sup> For example, in 1991-1992, just 0.007 per cent of electricity was produced from solar energy.<sup>19</sup> Whereas, in 2013-2014, this reached 1.96 per cent.<sup>20</sup> Comparing the two ends of the official data set (1989-1990 to 2013-2014), the electricity generated from renewable energy sources has increased in Australia both absolutely (by 21,412 GWh) and relatively (by 5 per cent, from approximately 10 per cent to 15 per cent).<sup>21</sup>

**Figure 1: “Australian electricity generation from renewable sources”<sup>22</sup>**



the proportion of electricity generated from coal is 60%, Sky News Australia, *Speers Tonight*, 11 August 2016 (the Hon. Josh Frydenberg MP).

<sup>18</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

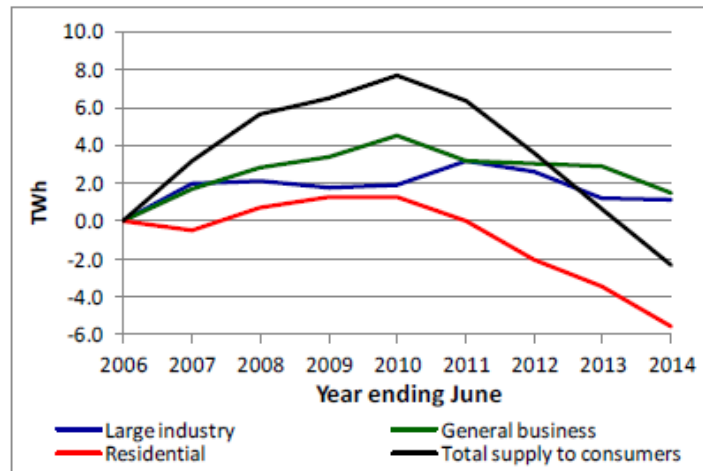
<sup>19</sup> Calculated based on the data in Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>20</sup> Calculated based on the data in Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>21</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>22</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 22.

**Figure 2: “Absolute changes in electricity demand since 2005 - 06, by consumer group”<sup>23</sup>**



Since peaking around 2010, electricity generation has declined marginally.<sup>24</sup> Specifically, the amount of generated electricity has declined from a peak of approximately 253,577 GWh in 2010-2011 to 248,297 GWh in 2013-2014.<sup>25</sup> According to the Commonwealth Office of the Chief Economist, this downward trend is attributable to three main factors. First, electricity demand has been suppressed by energy productivity advances, which are partly attributable to government energy efficiency programs and regulation.<sup>26</sup> Second, consumers have responded to high electricity prices by using less electricity.<sup>27</sup> On this point, the Grattan Institute has estimated that from 2008 to 2013, “the average household power bill rose 70 per cent: from \$970 to \$1660 a year”.<sup>28</sup> Although only tangentially relevant, the Grattan Institute contends that this increase is largely a consequence of the flawed electricity payment model

<sup>23</sup> Hugh Saddler, *Power down II: The continuing decline in Australia’s electricity demand* (The Australia Institute, 2015) 9.

<sup>24</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>25</sup> Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>26</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 15 and 19.

<sup>27</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 15 and 19.

<sup>28</sup> Tony Wood and Lucy Carter, *Fair pricing for power* (Grattan Institute, 2014) 1.

whereby the proportion of household power bills allocated to funding electricity networks (approximately 43 per cent) is determined based on a consumer's energy use, rather than their contribution to the maximum load on the electricity network.<sup>29</sup> Third, the Office of the Chief Economist notes the impact of declining demand for electricity from the industrial sector.<sup>30</sup> The Australia Institute makes a similar observation in relation to manufacturing.<sup>31</sup> It should be noted that the recent downward trend in electricity consumption is not uniform across Australia. Rather, this trend has been “largely driven” by reduced electricity consumption in the NEM.<sup>32</sup>

Finally, contrary to the recent decline in electricity consumption across the NEM, the consumption and generation of electricity “off the grid” has grown in recent years.<sup>33</sup> In 2013-2014, “[o]ff-grid electricity generation accounted for an estimated 12 per cent of total generation”.<sup>34</sup> Approximately 78 per cent of off-grid electricity is generated from natural gas with “the remainder ... mostly from diesel fuel”.<sup>35</sup> Although off-grid electricity generation is sometimes linked to renewable energy in popular discourse, “the off-grid renewable electricity market is relatively undeveloped in Australia” and faces considerable obstacles, including obtaining the requisite support from the finance sector and competing with low cost fossil fuels.<sup>36</sup>

### *B Australia's Renewable Energy Profile Compared Internationally*

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<sup>29</sup> Tony Wood and Lucy Carter, *Fair pricing for power* (Grattan Institute, 2014) 1 and 13.

<sup>30</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 19.

<sup>31</sup> Hugh Saddler, *Power down II: The continuing decline in Australia's electricity demand* (The Australia Institute, 2015) 6.

<sup>32</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 20.

<sup>33</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 20.

<sup>34</sup> Department of Industry and Science (Cth), *2015 Australian Energy Update* (Department of Industry and Science, 2015) 20.

<sup>35</sup> AECOM Australia, *Australia's Off-Grid Clean Energy Market Research Paper* (Australian Renewable Energy Agency, 2014) ii.

<sup>36</sup> AECOM Australia, *Australia's Off-Grid Clean Energy Market Research Paper* (Australian Renewable Energy Agency, 2014) iv.



As evidenced by a crystallising trend in international investment patterns, renewable energy is increasingly becoming a major global source of electricity. In its report for the Australian Renewable Energy Agency, the consultant AECOM describes this transition as a “rapid market shift”.<sup>37</sup> Others have heralded the arrival of a “global renewable energy boom”.<sup>38</sup> Interestingly, the International Energy Agency (‘IEA’) has suggested that the shift towards renewable energy indicates that “growth in the global economy and energy related emissions may be starting to decouple”.<sup>39</sup>

However, accepting the IEA’s figure that approximately 66 per cent of global electricity generation derives from fossil fuel sources of energy - which equates to 40 per cent of global energy related greenhouse gas emissions<sup>40</sup> - and that global energy demand continues to grow strongly (global energy consumption is projected to increase by 48 per cent from 2012 levels by 2040),<sup>41</sup> this decoupling is far from assured. Similarly, the significant drag on any global transition away from fossil fuel sources of electricity generation created by existing ‘locked-in’ energy infrastructure should not be ignored. As the IEA acknowledges, “every year that passes locks in further fossil-fuel generation and consequent emissions growth from the power sector”.<sup>42</sup>

Nevertheless, these observations do not gainsay the “rapid market shift” towards renewable energy sources of electricity. As evidence of this shift, the IEA has cited the fact that, since 2000, 60 per cent of international investment in large scale electricity generation has been directed towards “low-carbon technologies, in particular hydro, wind and solar PV”.<sup>43</sup> Similarly REN21<sup>44</sup> has noted that, in 2015, renewable energy “accounted for an estimated more than 60 per cent of net additions to global power generating capacity”.<sup>45</sup> Wind and solar

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<sup>37</sup> AECOM Australia, *Australia’s Off-Grid Clean Energy Market Research Paper* (Australian Renewable Energy Agency, 2014) 3.

<sup>38</sup> Climate Council of Australia, *The Global Renewable Energy Boom: How Australia is Missing Out* (Climate Council of Australia, 2015).

<sup>39</sup> IEA, *Energy and Climate Change: World Energy Outlook Special Report* (IEA, 2015) 11.

<sup>40</sup> IEA, *Energy and Climate Change: World Energy Outlook Special Report* (IEA, 2015) 83.

<sup>41</sup> US Energy Information Administration, *International Energy Outlook 2016* (USEIA, 2016) 7.

<sup>42</sup> IEA, *Energy and Climate Change: World Energy Outlook Special Report* (IEA, 2015) 83.

<sup>43</sup> IEA, *Energy and Climate Change: World Energy Outlook Special Report* (IEA, 2015) 83.

<sup>44</sup> “REN21 is the global renewable energy policy multi-stakeholder network that connects a wide range of key actors” – REN21, ‘About Us’, REN21 (2015) <<http://www.ren21.net/about-ren21/about-us/>>.

<sup>45</sup> REN21, *Renewables 2016 – Global Status Report* (REN21, 2016) 32.

energy alone comprised half of all new electricity generation capacity.<sup>46</sup> Additionally, while renewable electricity generation has been “dominated by large (e.g. megawatt-scale and up) generators”, the increasing number of so-called “prosumers” (“electricity customers who produce their own power”) has started to have an impact in bolstering the supply of renewable energy.<sup>47</sup> Although it is beyond the scope of this paper to examine the various factors underlying this “market shift”, AECOM has pithily identified the following important factors: the declining capital and operational costs of large scale renewable energy infrastructure; the dawning recognition of the energy security benefits of renewable energy; the impact of climate change policies; growing appreciation of the broader environmental benefits of renewable energy and the increasing economic viability of renewable energy for households, businesses and industry.<sup>48</sup>

Although it cannot be properly addressed here, this begs the question of whether Australia has embraced the global shift towards renewable energy. As has been identified, Australia’s renewable energy capacity has significantly increased over the recent past. To provide two examples, from 2004 and 2014 the annual amount of electricity generated from solar photovoltaic electricity generating systems increased from 77.8 GWh (0.03 per cent) to 4,857.5 GWh (1.96 per cent) and that which was generated from wind turbines increased from 885 GWh (0.39 per cent) to 10,252 GWh (4.1 per cent).<sup>49</sup> As the Commonwealth Minister for the Environment and Energy recently observed, “there is a transition taking place”.<sup>50</sup> One indicator on which Australia compares favourably with other countries is that of newly installed solar energy capacity. In 2015, Australia ranked seventh in the world in this respect and tenth in terms of total capacity.<sup>51</sup> More broadly, Australia was ranked thirteenth internationally in 2015 (down from tenth in 2014) in terms of the investment

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<sup>46</sup> Ernst & Young, *Renewable energy country attractiveness index 46* (February 2016) Ernst & Young <[http://www.ey.com/Publication/vwLUAssets/EY-RECAI-46-Feb-2016/\\$FILE/EY-RECAI-46-Feb-2016.pdf](http://www.ey.com/Publication/vwLUAssets/EY-RECAI-46-Feb-2016/$FILE/EY-RECAI-46-Feb-2016.pdf)>

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<sup>47</sup> REN21, *Renewables 2015 – Global Status Report* (REN21, 2015) 35, 135 and 267.

<sup>48</sup> AECOM Australia, *Australia’s Off-Grid Clean Energy Market Research Paper* (Australian Renewable Energy Agency, 2014) 3.

<sup>49</sup> Calculated based on the data in Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>50</sup> Sky News Australia, *Speers Tonight*, 11 August 2016 (the Hon. Josh Frydenberg MP).

<sup>51</sup> REN21, *Renewables 2015 – Global Status Report* (REN21 2015) 63; AECOM Australia, *Australia’s Off-Grid Clean Energy Market Research Paper* (Australian Renewable Energy Agency, 2014) 145.

attractiveness of its “renewable energy markets, energy infrastructure and ... suitability for individual technologies”.<sup>52</sup>

Nevertheless, Australia is not a world leader in generating electricity from renewable energy sources. In comparison to the approximately 15 per cent of electricity derived from renewable sources of energy in Australia in 2014, the corresponding 2015 figures for Uruguay, Austria, Sweden, Canada, Portugal, Denmark, Spain, Slovenia, Italy and the European Union were 94.4 per cent, 70 per cent, 63.3 per cent, 59 per cent, 52.1 per cent, 48.5 per cent, 37.8 per cent, 33.9 per cent, 33.4 per cent and 27.5 per cent respectively.<sup>53</sup>

In tandem with the global shift towards renewable electricity generation, nation states across the world are undertaking substantial energy efficiency reform so as to reduce their fossil fuel energy consumption. This may reflect the recognition of governments that approximately half of the reductions in greenhouse gas emissions required to mitigate climate change, as calculated by the IEA, may need to come from energy efficiency improvements.<sup>54</sup> One focus of this process of global reform has been to improve the energy efficiency of residential, commercial and industrial buildings. According to the Council of Australian Governments and expert commentators, Australia’s performance in this respect does not compare favourably with other countries. In 2015, the Council of Australian Governments asserted that Australia is “lagging behind many countries, such as Japan, Germany, and the United Kingdom”.<sup>55</sup> This is perhaps because, historically speaking, “buildings have not been built with energy efficiency as a key concern”.<sup>56</sup> Regardless, “many stakeholders” claim that “Australia’s building energy performance falls a long way short of best practice”.<sup>57</sup> For example, two expert organisations have observed that, as of this year, “energy intensity has

<sup>52</sup> Ernst & Young, *Renewable energy country attractiveness index 46* (February 2016) Ernst & Young <[http://www.ey.com/Publication/vwLUAssets/EY-RECAI-46-Feb-2016/\\$FILE/EY-RECAI-46-Feb-2016.pdf](http://www.ey.com/Publication/vwLUAssets/EY-RECAI-46-Feb-2016/$FILE/EY-RECAI-46-Feb-2016.pdf)>

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<sup>53</sup> REN21, *Renewables 2016 – Global Status Report* (REN21, 2016) 165-168.

<sup>54</sup> United Nations Foundation, *Improving Energy Efficiency*, United Nations Foundation <<http://www.unfoundation.org/what-we-do/issues/energy-and-climate/improving-energy-efficiency.html>>, citing the IEA.

<sup>55</sup> Commonwealth Government and the COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>> 10.

<sup>56</sup> Council of Australian Governments, *National Strategy on Energy Efficiency* (Commonwealth of Australia, 2009) 23.

<sup>57</sup> pitt&sherry and Swinburne University of Technology, *National Energy Efficient Building Project: Final Report* (State of South Australia, 2014) viii.

improved only 2 per cent across the commercial sector and 5 per cent” across residential buildings.<sup>58</sup>

### *C Predicting Australia’s Energy Future*

While the previous section is based on the firmer footing of surveying the past, it must be kept in mind that any predictions as to the future of energy are, at best, evidence-based speculation. For example, it would have been difficult to predict in 1990 that South Australia would generate substantially more electricity from renewable energy infrastructure than New South Wales, Victoria and Queensland by 2014 (38 per cent compared to 10 per cent, 10 per cent and 7 per cent respectively).<sup>59</sup> This is especially the case considering how fundamentally the production and consumption of energy is shaped by government policies, as implemented through legislation and executive decision making. To take just one example, there is a significant policy difference between Australia’s two major political parties as to what is the appropriate minimum 2030 target for the proportion of electricity derived from renewable sources. Moreover, the difficulty in accurately predicting Australia’s energy future is compounded by the fact that, as identified in the National Energy Productivity Plan, the consumption and production of energy in Australia is likely to undergo “rapid disruptive changes, with new technologies, new customer expectations, rising prices, falling demand and pressures from climate change”.<sup>60</sup>

Nevertheless, there is significant utility in relying upon expert forecasts and analyses to guide the assessment of whether planning and environmental law is well equipped to facilitate the likely adaptation to a sustainable energy future. In fact, such reliance is important to avoid

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<sup>58</sup> Australian Sustainable Built Environment Council and ClimateWorks Australia, *Low Carbon, High Performance: How buildings can make a major contribution to Australia’s emissions and productivity goals* (ASBEC, 2016) 2.

<sup>59</sup> Calculated based on the data in Department of Industry and Science (Cth), *Australian Energy Statistics - Table O1: Australian electricity generation, by fuel type, physical units* (2015) Office of the Chief Economist <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>>.

<sup>60</sup> Commonwealth Government and COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>> 10.

misguided analysis of the likely effectiveness and adaptability of the law. For example, one could write a persuasive thesis considering the role of the law in facilitating the proliferation of small scale wind turbines in residential area. Yet, if there is no reliable evidence that this is likely to occur in the foreseeable future, such a thesis would probably not make a useful contribution however persuasively reasoned.

As has been foreshadowed, the legal focus of this paper has been predicated upon three predictions derived from the relevant expert literature and government materials. First, the supply of electricity derived from large scale renewable energy sources in Australia is likely to increase in both relative and absolute terms over the next two decades. This is partly due to the federal bipartisan (albeit different) commitment to do so. There is no dispute between the major political parties that at least 33,000 GWh of electricity from new large scale renewable energy sources should and will be delivered by 2020 (approximately 17,000 GWh of this target has already been delivered since 2001).<sup>61</sup> This would mean that approximately 23.5 per cent of electricity will be generated by renewable energy generators in 2020,<sup>62</sup> compared to the approximately 15 per cent currently generated.

Moreover, in order for Australia to meet its international intended nationally determined contribution ('INDC') of reducing greenhouse gas emissions by 26 to 28 per cent compared to 2005 levels by 2030,<sup>63</sup> the supply of renewable energy in Australia will need to increase. Additionally, *ceteris paribus*, the supply of large scale renewable energy is likely to increase because solar energy and, especially, wind energy production are predicted to become increasingly economically competitive with black coal, brown coal and natural gas.<sup>64</sup> In the last decade, according to the Commonwealth Minister for the Environment and Energy, the

<sup>61</sup> Australian Commonwealth Government, *The Renewable Energy Target (RET) scheme*, Department of the Environment and Energy <<https://www.environment.gov.au/climate-change/renewable-energy-target-scheme>>; Clean Energy Council, *A bipartisan renewable energy target: The huge opportunities for Australia* (Clean Energy Council, 2015) 2.

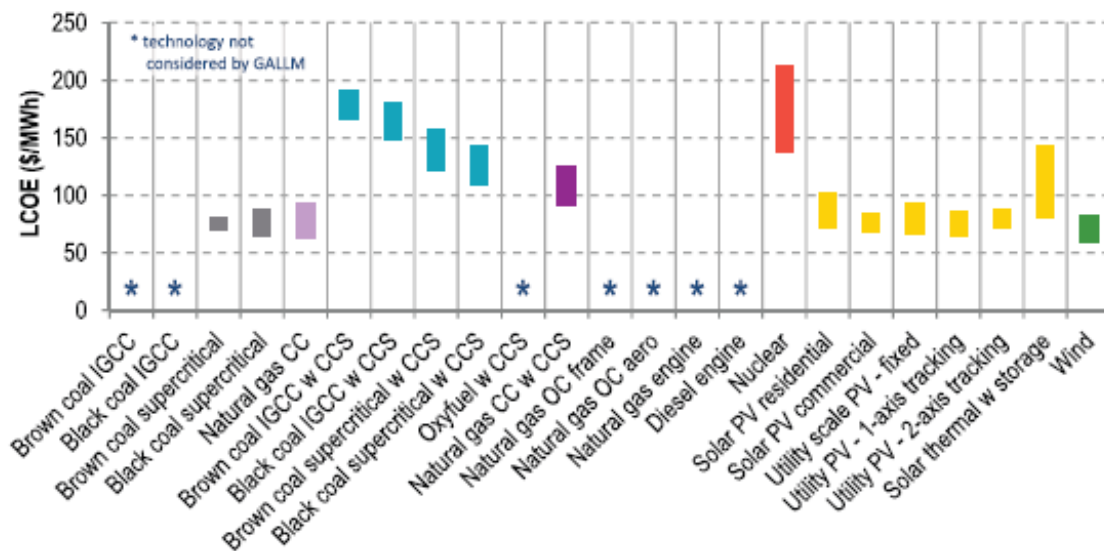
<sup>62</sup> Australian Commonwealth Government, *The Renewable Energy Target (RET) scheme*, Department of the Environment and Energy <<https://www.environment.gov.au/climate-change/renewable-energy-target-scheme>>.

<sup>63</sup> Australian Commonwealth Government, *Australia's Intended Nationally Determined Contribution to a new Climate Change Agreement* (August 2015) UNFCCC <<http://www4.unfccc.int/submissions/INDC/Published%20Documents/Australia/1/Australias%20Intended%20Nationally%20Determined%20Contribution%20to%20a%20new%20Climate%20Change%20Agreement%20-%20August%202015.pdf>>.

<sup>64</sup> Electric Power Research Institute, *Australian Power Generation Technology Study Report* (EPRI, 2015) iii and v; Thomas Brinsmead, Jenny Hayward and Paul Graham, *Australian electricity market analysis report to 2020 and 2030* (CSIRO, 2014) 39 and 40.

cost of producing electricity from wind and solar energy sources has decreased by 50 per cent and 80 per cent respectively.<sup>65</sup> In fact, it has been projected that, between 2020 and 2030, large scale wind energy infrastructure may have the lowest “levelised cost of generating electricity” (which measures capital costs, operational and maintenance costs, fuel costs etcetera) of all fuel sources, including conventional gas, brown coal and black coal.<sup>66</sup> Yet, due to modelling limitations, CSIRO – who has made this prediction - did not measure the “[c]osts of managing the intermittency of wind and solar” in its projections.<sup>67</sup>

**Figure 3: “2030 Levelised cost of electricity”<sup>68</sup>**



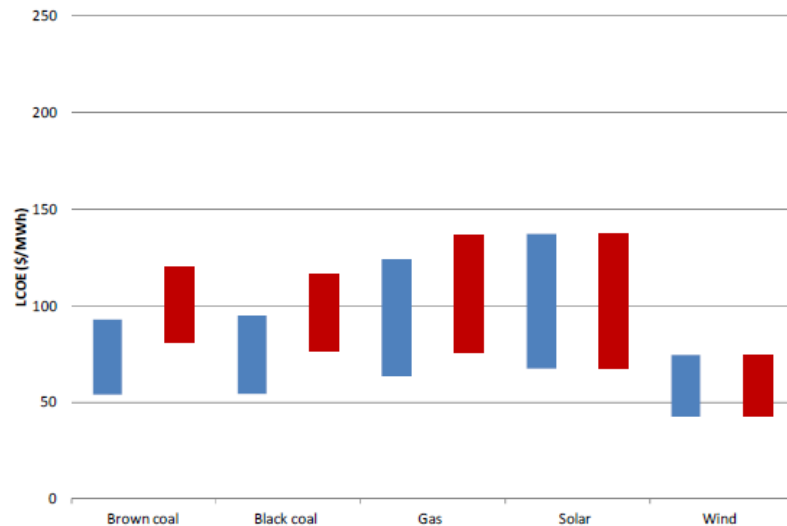
<sup>65</sup> Sky News Australia, *Speers Tonight*, 11 August 2016 (the Hon. Josh Frydenberg MP).

<sup>66</sup> Thomas Brinsmead, Jenny Hayward and Paul Graham, *Australian electricity market analysis report to 2020 and 2030* (CSIRO, 2014) 10; Electric Power Research Institute, *Australian Power Generation Technology Study Report* (EPRI, 2015) v; Chiara Bryan, ‘Co-opting the precautionary principle: The Victoria Planning Provisions’ ‘one kilometre consent requirement’ for wind energy facilities’ (2016) 33 *EPLJ* 203, 205.

<sup>67</sup> Thomas Brinsmead, Jenny Hayward and Paul Graham, *Australian electricity market analysis report to 2020 and 2030* (CSIRO, 2014) 34.

<sup>68</sup> Electric Power Research Institute, *Australian Power Generation Technology Study Report* (EPRI, 2015) v.

**Figure 4: “Projected 2020 LCOE with (red bars) and without (blue bars) a carbon price”<sup>69</sup>**



Second, the supply of electricity generated from small scale solar photovoltaic electricity generating systems (‘solar pv systems’) is likely to grow especially strongly from 2020, the year after which installing this technology is predicted to become economically beneficial for many households and businesses regardless of government support.<sup>70</sup> This is primarily due to the combination of projected increases in retail electricity prices<sup>71</sup> and the falling cost of producing solar pv systems.<sup>72</sup> Already, 16 per cent of residential homes in Australia are calculated to have operational rooftop solar pv systems<sup>73</sup> (14 per cent in NSW).<sup>74</sup> For a number of practical reasons explained below, the expansion of solar energy is likely to be a key ‘driver’ of growth in small scale renewable energy capacity over the foreseeable future.

<sup>69</sup> Thomas Brinsmead, Jenny Hayward and Paul Graham, *Australian electricity market analysis report to 2020 and 2030* (CSIRO, 2014) 39.

<sup>70</sup> Tony Wood and David Blowers, *Sundown, sunrise: How Australia can finally get solar power right* (Grattan Institute, 2015) 27.

<sup>71</sup> Frontier Economics, *Electricity market forecasts: 2015* (Australian Energy Market Operator, 2015) vi.

<sup>72</sup> Tony Wood and David Blowers, *Sundown, sunrise: How Australia can finally get solar power right* (Grattan Institute, 2015) 27; REN21, *Renewables 2016 – Global Status Report* (REN21, 2016) 64.

<sup>73</sup> REN21, *Renewables 2016 – Global Status Report* (REN21, 2016) 64.

<sup>74</sup> See S L Wade, C M Barry and M D Nelson (compilers), *Renewable energy map of New South Wales* (Geological Survey of New South Wales, 2016) available at <http://www.resourcesandenergy.nsw.gov.au/energy-supply-industry/renewable-energy/renewable-resources-map>.

Third, given the consensus amongst Australian governments regarding the need to improve Australia's energy productivity through energy efficiency reforms,<sup>75</sup> it is highly likely that the current energy efficiency regulatory measures relating to residential and commercial development will become steadily more ambitious.

### III THE LAW AND LARGE SCALE RENEWABLE ENERGY

#### *A The Role of Legal Regimes in Regulating Large Scale Renewable Energy Development*

In New South Wales, approximately 11 per cent of electricity is generated from renewable energy sources.<sup>76</sup> Aside from the electricity generated by the Snowy Hydro, the primary large scale generators of renewable electricity in NSW are wind farms, solar farms and bioenergy power plants.<sup>77</sup> Consistently with most other Australian states and territories, the amount of electricity derived from renewable energy has steadily increased.<sup>78</sup> For instance, the capacity of wind energy infrastructure in NSW grew from 187 megawatts (MW) in 2010 to 660 MW in 2015.<sup>79</sup> Seven large scale wind farms (327 turbines in total) currently operate in NSW.<sup>80</sup>

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<sup>75</sup> See, eg, *National Partnership Agreement on Energy Efficiency* (Council of Australian Governments Intergovernmental Agreement, 2 July 2009) <[http://www.federalfinancialrelations.gov.au/content/npa/environment/energy\\_efficiency/national\\_partnership.pdf](http://www.federalfinancialrelations.gov.au/content/npa/environment/energy_efficiency/national_partnership.pdf)>; Council of Australian Governments, *National Strategy on Energy Efficiency* (Commonwealth of Australia, July 2009) <[http://www.federalfinancialrelations.gov.au/content/npa/environment/energy\\_efficiency/national\\_partnership.pdf](http://www.federalfinancialrelations.gov.au/content/npa/environment/energy_efficiency/national_partnership.pdf)>; Commonwealth Government and COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>>; NSW Government, *NSW Energy Efficiency Action Plan* (Office of Environment and Heritage, 2013) <<http://www.environment.nsw.gov.au/resources/energyefficiencyindustry/130588-energy-efficiency-action-plan.pdf>>.

<sup>76</sup> Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 6.

<sup>77</sup> Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 6.

<sup>78</sup> Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 6.

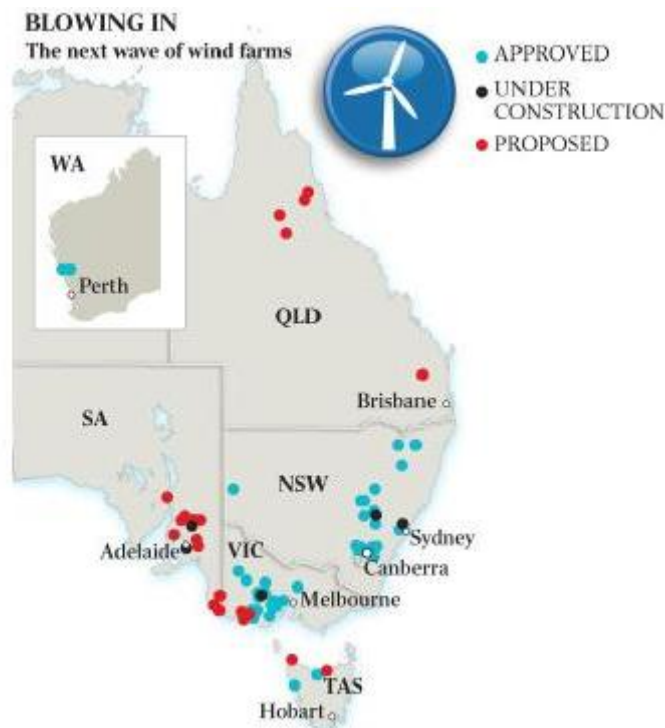
<sup>79</sup> Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 7.

<sup>80</sup> See S L Wade, C M Barry and M D Nelson (compilers), *Renewable energy map of New South Wales* (Geological Survey of New South Wales, 2016) available at



As for those renewable energy projects that are “in the pipeline”, the most recent NSW Government annual report on renewable energy indicates that those which are currently being built will contribute an additional 650 MW of renewable energy capacity, while those which have either been approved or are being considered for approval are predicted to contribute 2,400 MW and 4,800 MW of additional capacity respectively.<sup>81</sup> A significant bulk of this projected additional renewable energy capacity will come from new wind farm development. In fact, it has recently been reported that there is a 6000 MW “pile of wind farms” in Australia which have all been granted development consent but are not yet operational.<sup>82</sup> In NSW, there are at least 15 approved wind farms that are yet to become operational.<sup>83</sup>

**Figure 5: “Blowing in: The next wave of wind farms”<sup>84</sup>**



<http://www.resourcesandenergy.nsw.gov.au/energy-supply-industry/renewable-energy/renewable-resources-map>; Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 7.

<sup>81</sup> Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 6.

<sup>82</sup> Lucy Cormack, ‘Wind farms stalled by continuing uncertainty’ *Sydney Morning Herald*, 4 February 2016.

<sup>83</sup> Rebecca Puddy and Casey Treloar, ‘Policy wobbles putting the wind up investors’, *The Australian*, 20-21 August 2016, 4.

<sup>84</sup> Rebecca Puddy and Casey Treloar, ‘Policy wobbles putting the wind up investors’, *The Australian*, 20-21 August 2016, 4.

As has been identified above, there is likely to be a substantial and steady increase in the number of, and therefore electricity produced by, operational large scale wind farms, solar photovoltaic farms and biogas energy power plants in NSW over the next two decades. This is certainly the expectation of the NSW Government.<sup>85</sup> In particular, given that wind turbines may become “the lowest cost technology”<sup>86</sup> for generating electricity over the coming decade, it is likely that the expansion in large scale wind energy will be an important feature of the shift of NSW towards greater reliance on renewable energy. As the NSW Government has noted “[t]here is strong interest in the development of wind energy projects in NSW, with wind energy projected to remain the most economical form of large-scale renewable energy over the next decade”.<sup>87</sup> Importantly, the geographical and infrastructure profile of NSW favours the growth of wind energy<sup>88</sup> because “[l]arge areas within NSW have excellent wind resources by international standards and many of the best sites are located near existing electricity grid infrastructure”.<sup>89</sup> Therefore, it is possible that, as asserted by Newman in 2012, the “majority of the renewable energy rollout ... will be through wind technology with some augmentation by solar power and biomass”.<sup>90</sup>

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<sup>85</sup> See, eg, Department of Planning and Environment (NSW), *Wind Energy: Assessment Policy (Draft for Consultation)* (August 2016) Department of Planning and Environment (NSW)

<<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 2; NSW Government, *NSW Renewable Energy Action Plan* (State of NSW, 2013); Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015).

<sup>86</sup> Thomas Brinsmead, Jenny Hayward and Paul Graham, *Australian electricity market analysis report to 2020 and 2030* (CSIRO, 2014) 39.

<sup>87</sup> Department of Industry, Skills and Regional Development (NSW), *Wind energy in NSW*, DISRD <<http://www.resourcesandenergy.nsw.gov.au/energy-supply-industry/renewable-energy/wind>>.

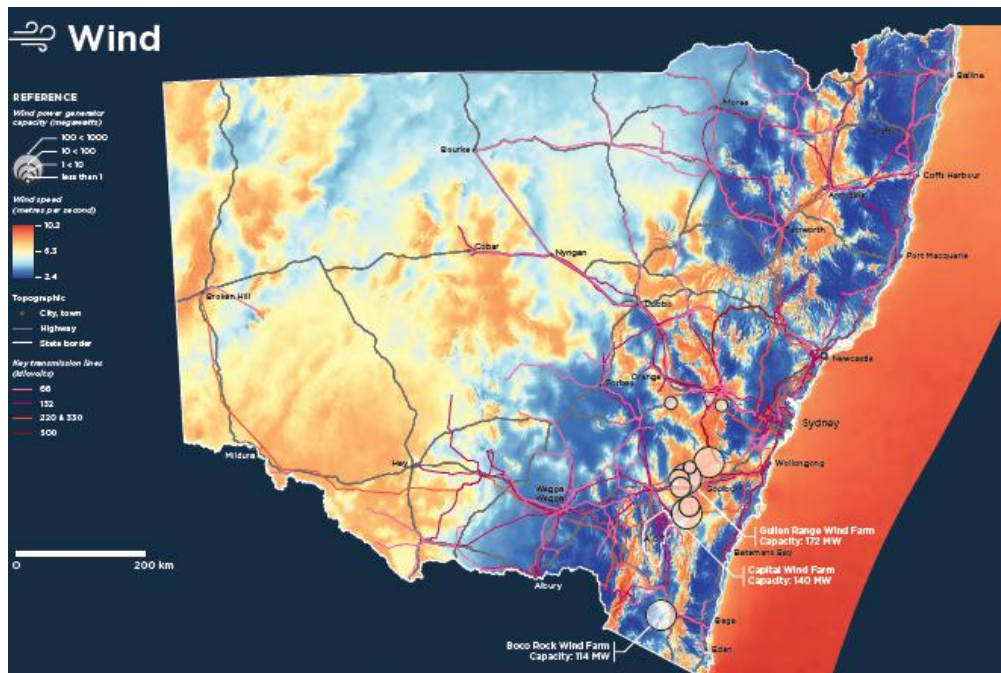
<sup>88</sup> See S L Wade, C M Barry and M D Nelson (compilers), *Renewable energy map of New South Wales* (Geological Survey of New South Wales, 2016) available at

<<http://www.resourcesandenergy.nsw.gov.au/energy-supply-industry/renewable-energy/renewable-resources-map>>; Department of Industry, Resources and Energy (NSW), *New South Wales Wind Atlas*, DIRE

<[http://www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/wind/sustain\\_renew\\_wind\\_atlas\\_poster.pdf](http://www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/wind/sustain_renew_wind_atlas_poster.pdf)>; Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, December 2015).

<sup>89</sup> Department of Industry, Skills and Regional Development (NSW), *Wind energy in NSW*, DISRD <<http://www.resourcesandenergy.nsw.gov.au/energy-supply-industry/renewable-energy/wind>>.

<sup>90</sup> Andrew Newman, ‘Creating the power for renewal: Evaluation of New South Wales’ renewable energy planning law changes and suggestions for further reform’ (2012) 29 *EPLJ* 498, 499; See Lucy Cormack, ‘Wind farms stalled by continuing uncertainty’ *Sydney Morning Herald*, 4 February 2016.

**Figure 6: “Renewable Energy Resources of NSW: Wind”<sup>91</sup>**

Although it is likely that the electricity supplied in NSW by large scale renewable energy infrastructure will increase over the coming decades, the extent and nature of the resulting shift towards renewable energy is uncertain. One factor that will be important in this respect is whether the regime effectively facilitates such development. As both Bryan<sup>92</sup> and Prest<sup>93</sup> observe, quoting the Intergovernmental Panel on Climate Change, “cumbersome and slow planning, siting and permitting procedures” obstruct and can even preclude the development of wind energy.<sup>94</sup> Conversely, effective planning regimes can, according to Newman, function as a “valuable tool that can adapt elements as diverse as environmental protection, public participation, development guidelines and even urban layouts to remove barriers preventing renewable energy”.<sup>95</sup>

<sup>91</sup> See S L Wade, C M Barry and M D Nelson (compilers), *Renewable energy map of New South Wales* (Geological Survey of New South Wales, 2016) available at <http://www.resourcesandenergy.nsw.gov.au/energy-supply-industry/renewable-energy/renewable-resources-map>.

<sup>92</sup> Chiara Bryan, ‘Co-opting the precautionary principle: The Victoria Planning Provisions’ ‘one kilometre consent requirement’ for wind energy facilities’ (2016) 33 *EPLJ* 203, 215 citing the IPCC, *Renewable Energy Sources and Climate Change Mitigation: Special Report* (CUP, 2012) 559.

<sup>93</sup> James Prest, Submission No. 462 to Senate Select Committee on Wind Turbines, *Inquiry into Wind Turbines*, May 2015, 1.

<sup>94</sup> IPCC, *Renewable Energy Sources and Climate Change Mitigation: Special Report* (CUP, 2012) 559.

<sup>95</sup> Andrew Newman, ‘Creating the power for renewal: Evaluation of New South Wales’ renewable energy planning law changes and suggestions for further reform’ (2012) 29 *EPLJ* 498, 498.

In assessing the likely effectiveness of the regime in facilitating the shift towards large scale renewable electricity generation, it would be specious to only assess how amenable the regime is from the perspective of the renewable energy industry. Any planning regime will be ineffective if it does no more than efficiently ‘rubber stamping’ large renewable energy projects. As Pettersson et al correctly observe, the purpose of planning law regimes “is not to support the rapid diffusion of wind power per se”.<sup>96</sup> Similarly, Bates has claimed that “proposals for development of sources of renewable energy should not automatically demand approval, no matter where they are sited; they still need to be judged on their own merits, and in appropriate cases development consent may be refused”.<sup>97</sup> Thus, planning regimes should be designed to, as articulated recently by the NSW Government in support of its proposed “Wind Energy Framework” planning reforms, strike “the appropriate balance between giving clear guidance to industry whilst ensuring that the true impacts on the community [and the environment] are properly assessed”.<sup>98, 99</sup>

Planning law regimes should not discourage or prevent a consent authority from refusing development consent to a proposed renewable energy project that has adverse social, economic or environmental impacts which outweigh the project’s benefits.<sup>100</sup> In fact, it would be a pyrrhic victory for the environment if the integrity of a planning law regime was undermined to facilitate renewable energy projects because, for instance, “[i]nternational experience has demonstrated that renewable energy projects depend on robust and comprehensive planning regimes for success”.<sup>101</sup> Thus, the proper inquiry is to assess whether the regime will efficiently facilitate the approval of large scale renewable energy

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<sup>96</sup> Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3117.

<sup>97</sup> Gerry Bates, *Environmental Law in Australia* (LexisNexis, 9<sup>th</sup> ed, 2016) 754 citing *The Sisters Wind Farm Pty Ltd v Moyne Shire Council* [2010] VCAT 719; *Paltridge v District Council of Grant* [2011] SAERDC 23.

<sup>98</sup> Department of Planning and Environment (NSW), *Wind Energy Framework: Frequently Asked Questions* (August 2016), DPE

<https://majorprojects.affinitylive.com/public/d475489aedd4724d76e030c458d69f22/Wind%20Farm%20Guide%20lines%20Frequently%20Asked%20Questions.pdf> > 1.

<sup>99</sup> See also Louise Smith, ‘Planning for onshore wind’ (Briefing Paper Number 04370, UK Parliament, 29 June 2015) 4.

<sup>100</sup> See, by analogy, *Hub Action Group Incorporated v Minister for Planning and Orange City Council* [2008] NSWLEC 116; (2008) 161 LGERA 136.

<sup>101</sup> Andrew Newman, ‘Creating the power for renewal: Evaluation of New South Wales’ renewable energy planning law changes and suggestions for further reform’ (2012) 29 *EPLJ* 498, 501.

infrastructure projects whilst adequately balancing, managing and mitigating the potential adverse impacts of such development.

This assessment requires three questions to be addressed. First, what are some of the key potential adverse impacts of large scale wind energy developments with which planning law regimes must grapple? Second, how efficient is the NSW regime in assessing and determining development applications for wind farms? Third, does the NSW regime provide an appropriate framework to enable consent authorities to effectively balance the benefits of wind energy development against the potential adverse impacts? That is to say, does the regime promote the principle of good governance by providing sufficient guidance to consent authorities on how to consider and balance such impacts, without unduly restricting their discretionary decision-making power? The specific example of wind farms has been selected to avoid addressing these questions in an unhelpfully general and abstract manner and because there is a significant body of relevant literature. Yet the necessary preliminary step to this assessment is to briefly set out the legislative skeleton which regulates the determination of large scale renewable energy development applications.

### *B The Operative Legislative Provisions*

NSW has a “tiered approvals regime for renewable energy systems” which aims to “ensure [that] the level of assessment is appropriately tailored to the scale and type of system”.<sup>102</sup> This tiered regime falls within the overarching environmental planning framework governed by the *Environmental Planning and Assessment Act 1979* (NSW) (“EPA Act”). Under s 89C of the EPA Act - by dint of cl 8 of, and cl 20 of Sch 1 to, the State Environmental Planning Policy (State and Regional Development) 2011 (NSW) - “[d]evelopment for the purpose of electricity generating works or heat or their co-generation (using any energy source, including ... biofuel, distillate, waste, hydro, wave, solar or wind power)” will be assessed as “state significant development” if, by the operation of an environmental planning instrument, it is not permissible without development consent under Part 4 of the EPA Act<sup>103</sup> and “has a

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<sup>102</sup> Department of Planning and Environment (NSW), *Renewable energy* (3 August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>>.

<sup>103</sup> State Environmental Planning Policy (State and Regional Development) 2011 (NSW), cl 8.

capital investment value of more than \$30 million” (or \$10 million if it “is located in an environmentally sensitive area of State significance”).<sup>104</sup> If the proposed renewable energy development has both an investment value of more than \$30 million and is capable of supplying more than 30 MW of electrical power, the project will still be assessed as state significant development, yet there will be “some designated development legal consequences”<sup>105</sup> due to the operation of cl 4 of, and cl 18 of Schedule 3 to, the *Environmental and Planning Assessment Regulation 2000* (NSW) (‘EPA Regulation’).

Regardless, renewable energy projects that constitute state significant development will be assessed under the provisions of Div 4.1 of Pt 4 of the EPA Act.<sup>106</sup> As such, the consent authority (usually the NSW Planning Assessment Commission (‘PAC’) acting as the delegate of the Minister for Planning)<sup>107</sup> must, in determining a development application for such a project, consider the well-known s 79C relevant matters for consideration under the EPA Act including, the likely impacts of that development, the suitability of the site for the development, any public submissions made in accordance with the EPA Act or EPA Regulation, and the public interest (including the principles of ecologically sustainable development).<sup>108</sup> Section 89F of the EPA Act mandates that the development application and any accompanying information (including an environmental impact statement) be placed on public exhibition, that notification of the application is given in accordance with the EPA Regulation (c11 82-85B) and that any person may make written submissions thereon.

### *C The Potential Adverse Impacts of Large Scale Wind Farm Development*

<sup>104</sup> State Environmental Planning Policy (State and Regional Development) 2011 (NSW), cl 8 and cl 20 of Sch 1.

<sup>105</sup> Department of Planning and Environment (NSW), *Wind Energy: Assessment Policy (Draft for Consultation)*, (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 4.

<sup>106</sup> EPA Act; See Department of Planning and Environment (NSW), *Wind Energy: Assessment Policy (Draft for Consultation)*, (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 4.

<sup>107</sup> EPA Act, ss 89D and 23; See Department of Planning and Environment (NSW), *Wind Energy: Assessment Policy (Draft for Consultation)*, (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 4.

<sup>108</sup> *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 268 [121]–[124]; *Minister for Planning v Walker* [2008] NSWCA 224; (2008) 161 LGERA 423, 451 [42], [43]; *Warkworth Mining Ltd v Bulga Milbrodale Progress Association Inc* [2014] NSWCA 105; (2014) 86 NSWLR 527, 587–588 [295]–[296].

In identifying the principal potential adverse impacts of large scale wind energy development, it should be kept in mind that planning law regimes are designed to guide consent authorities to identify and consider potential adverse impacts dispassionately. That is to say, planning law regimes are not structured so that the subjective judgment of the participants in the development application process dictates how the consent authority identifies and considers potential adverse impacts. For example, although perhaps unlikely, a consent authority may reasonably conclude on good evidence that a proposed wind farm will have adverse visual impacts on a particular important landscape even though no such concern is expressed by an objector or any other person. Similarly, a consent authority may conclude that a wind farm does not have a potential adverse impact that many objectors claim will occur. Nevertheless, there is a strong and obvious correlation between the recurring potential adverse impacts that consent authorities will regularly address and the adverse impacts typically identified by the public.

Although the prevalence and nature of community opposition to proposed wind farms varies in different countries, it is not unusual for proposed wind farm developments across the world to face opposition. Such opposition may be articulated on a number of grounds including, “aesthetic, visual and landscape amenity impacts, alleged reductions in local property values, noise impacts, as well as claimed or possible impact on birdlife”.<sup>109</sup> Most recently, the potential health impacts of wind farms has emerged as a prominent political issue. As Bryan has noted, the primary health concerns that have arisen relate to “sound waves produced by rotating turbine blades, as well as shadow flicker and the emission of low-frequency electromagnetic radiation”.<sup>110</sup> Indeed, these public health concerns have been the articulated catalyst (albeit not exclusively) for two senate inquiries into wind energy development,<sup>111</sup> the

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<sup>109</sup> James Prest, ‘The Bald Hills Wind Farm Debacle’ in T Bonyhady and P Christoff (eds) *Climate Law in Australia* (The Federation Press, 2007) 232.

<sup>110</sup> Chiara Bryan, ‘Co-opting the precautionary principle: The Victoria Planning Provisions’ ‘one kilometre consent requirement’ for wind energy facilities’ (2016) 33 *EPLJ* 203, 205.

<sup>111</sup> Senate Standing Committee on Community Affairs, Parliament of Australia, *The Social and Economic Impact of Rural Wind Farms* (2011); Senate Select Committee on Wind Turbines, Parliament of Australia, *Final Report* (2015).

creation of the National Independent Scientific Committee on Wind Turbines<sup>112</sup> and the appointment of a National Wind Farm Commissioner.<sup>113</sup>

It is beyond the scope of this paper, nor consistent with its purpose, to substantively consider the myriad issues relating to these potential adverse impacts. The sociological and political issues of why these perceived or actual adverse impacts have become important and any debate as to the legitimacy of wind farm related health concerns,<sup>114</sup> or the *bona fides* of those who raise visual amenity concerns, are irrelevant here.<sup>115</sup> Yet, what is relevant is the evidence that while opposition to wind farms can arise from, and be articulated in terms of, any of the grounds of objection mentioned above, “studies ... show that visual impact and landscape intrusion are by far the most important factor”.<sup>116</sup> In NSW, two of the key potential adverse impacts of wind farm development that are likely to generate community concern and provoke objections are visual and noise impacts. This is recognised in the new proposed NSW “Wind Energy Framework” reforms, which “provide a merits-based approach that focuses assessment of issues unique to wind energy proposals, in particular noise and visual impacts”.<sup>117</sup> However, the more significant proof for this claim is to be found in the results of a 2010 survey conducted by an independent consultant for the NSW Government.<sup>118</sup>

In this survey, representative samples of people from six NSW “precincts” identified as suitable for wind energy were asked whether more wind farms should be established in their local area. More than 70 per cent of those surveyed in the precincts of Cooma-Monaro, the South Coast, the NSW/ACT border region and the Central Tablelands agreed with this

<sup>112</sup> See Department of the Environment and Energy (Cth), *Independent Scientific Committee on Wind Turbines*, DEE <<http://www.environment.gov.au/climate-change/renewable-energy/independent-scientific-committee-on-wind-turbines>>.

<sup>113</sup> See National Wind Farm Commissioner, *National Wind Farm Commissioner*, NWFC <<https://www.nwfc.gov.au/>>.

<sup>114</sup> See *Cherry Tree Wind Farm Pty Ltd v Mitchell Shire Council (Red dot)* [2013] VCAT 193 and *Tru Energy Renewable Developments Pty Ltd v Regional Council of Goyder* [2014] SAERDC 48: Both cited in Gerry Bates, *Environmental Law in Australia* (LexisNexis, 9<sup>th</sup> ed, 2016) 753.

<sup>115</sup> See, eg, Chiara Bryan, ‘Co-opting the precautionary principle: The Victoria Planning Provisions’ ‘one kilometre consent requirement’ for wind energy facilities’ (2016) 33 *EPLJ* 203, 207-209.

<sup>116</sup> David Toke, Sylvia Breukers and Martin Wolsink, ‘Wind Power Deployment Outcomes: How can we account for the differences?’ (2008) 12 *Renewable and Sustainable Energy Reviews* 1129, 1136.

<sup>117</sup> Department of Planning and Environment (NSW), *Wind Energy Framework: Frequently Asked Questions* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 1.

<sup>118</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010).



proposition and more than 60 per cent agreed in the New England Tablelands and the Upper Hunter.<sup>119</sup> The overall average level of agreement amongst those surveyed was 71 per cent (which was marginally higher than the corresponding figure of 70 per cent in the “regional control area”).<sup>120</sup> Similarly, an average of 81 per cent of those surveyed across the precincts considered wind energy to be an acceptable power source (compared, for instance, with the 33 per cent of people who expressed the same view for conventional coal).<sup>121</sup> Across all of the surveyed precincts, there was also strong majority agreement with the position that wind farms would benefit their local community and economy.<sup>122</sup> Importantly, there was also strong agreement that wind farms do not give rise to health concerns and do not have negative impacts on the local environment.<sup>123</sup>

However, when those surveyed were asked for their view on “what impact would wind farms have on the visual appeal of the surrounding area”, the answer that received the most support in each precinct (and the control area) was that wind farms would have a negative visual impact (supported by an average of 41 per cent of people across all precincts and 45 per cent of people in the control area).<sup>124</sup> Whereas, those agreeing with the view that wind farms have positive visual impacts numbered less than 29 per cent in all precincts (with an average of 25 per cent across all precincts and 22 per cent in the control area).<sup>125</sup> When unprompted, 29 per cent of those who opposed (and 9 per cent of those who supported) wind farms being located within 1-2 kilometres of residents, identified the visual impacts of wind farms on landscapes as a concern.<sup>126</sup> Only three per cent of those opposed to wind farm development identified

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<sup>119</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 36.

<sup>120</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 36.

<sup>121</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 25.

<sup>122</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 36.

<sup>123</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 36.

<sup>124</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 37.

<sup>125</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 46.

<sup>126</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 46.

health concerns.<sup>127</sup> These findings were arguably reinforced by the relatively high level of disagreement with the proposition that wind farms would have no effect on heritage values (an average of 34 per cent across all precincts).<sup>128</sup> It should also be noted that the study found a significant level of agreement of those surveyed (an average of 44 per cent across all precincts) with the statement that noise from wind farms would cause at least some concern if located 1-2 kilometres away from their house.<sup>129</sup> In fact, unprompted, noise issues were identified by 40 per cent of those who opposed (17 per cent of those supporting) wind farms being sited within 1-2 kilometres of residents as being of concern.<sup>130</sup>

Interestingly, Toke et al speculate that the (often substantial) variability of opposition to wind farms between different countries may be correlated to the varying presence and strength of landscape protection organisations.<sup>131</sup> For instance, in England, Wales, New Zealand and Australia, a number of groups and organisations oppose (or have opposed) wind farm development. As Newman notes:

... England and Wales have encountered considerable difficulties compared to their European counterparts. A nationwide planning war has been waged. On one side, industry associations seek more streamlined procedures, while on the other a coalition of “guardian” groups stoke local discontent and cause consent authorities to exercise extreme caution in considering projects.<sup>132</sup>

Yet, in other countries, visual impact issues have proven to be insignificant. In Spain for example, there is apparently very “little activity to protect Spanish landscapes” from the

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<sup>127</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 37.

<sup>128</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 36.

<sup>129</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 37.

<sup>130</sup> AMR Interactive, *Community Attitudes to Wind Farms in NSW* (Department of Environment, Climate Change and Water (NSW), 2010) 46.

<sup>131</sup> David Toke, Sylvia Breukers and Martin Wolsink, ‘Wind Power Deployment Outcomes: How can we account for the differences?’ (2008) 12 *Renewable and Sustainable Energy Reviews* 1129, 1136-1137.

<sup>132</sup> Andrew Newman, ‘Creating the power for renewal: Evaluation of New South Wales’ renewable energy planning law changes and suggestions for further reform’ (2012) 29 *EPLJ* 498, 501.

visual impacts of wind farms.<sup>133</sup> Similarly, in Denmark, Germany and Portugal there does not appear to be significant visual amenity related opposition to large scale wind farm development.<sup>134</sup>

#### D *The Efficiency of Planning Law Regimes*

As has been foreshadowed, the fortunes of the large scale renewable energy sector in any jurisdiction is likely to be importantly shaped by whether or not the applicable planning law regime is efficient. In addition to the IPCC's classification of inefficient planning regimes as one of five "critical challenges" for the wind energy sector,<sup>135</sup> both the International Institute for Applied Systems Analysis and the European (Union) Commission have warned of the stultifying impact of inefficient planning regimes on renewable energy.<sup>136</sup> The latter has "stressed the need to make existing national systems for enabling investment in renewable electricity more efficient, not the least by improving policy stability and speeding up permitting processes".<sup>137</sup> Indeed, the NSW Government appears to be cognisant of the importance of designing and administering an efficient planning regime to facilitate renewable energy development. The proposed NSW Wind Energy Framework reforms are explicitly geared towards "address[ing] delays in the assessment process" and thereby "restor[ing] certainty ... in the assessment of wind energy projects".<sup>138</sup> Similarly, "Action 2" of the latest update to the NSW Renewable Energy Action Plan expresses the Government's commitment to deliver the efficient assessment and determination of large scale renewable energy proposals.<sup>139</sup> In particular, the Government has expressed its intention to improve the

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<sup>133</sup> David Toke, Sylvia Breukers and Martin Wolsink, 'Wind Power Deployment Outcomes: How can we account for the differences?' (2008) 12 *Renewable and Sustainable Energy Reviews* 1129, 1137.

<sup>134</sup> Andrew Newman, 'Creating the power for renewal: Evaluation of New South Wales' renewable energy planning law changes and suggestions for further reform' (2012) 29 *EPLJ* 498, 501.

<sup>135</sup> James Prest, *Submission to Senate Select Committee Inquiry into Wind Turbines* (May 2015) 1.

<sup>136</sup> James Prest, *Submission to Senate Select Committee Inquiry into Wind Turbines* (May 2015) 2.

<sup>137</sup> Maria Pettersson et al, 'Wind power planning and permitting: Comparative perspectives from the Nordic countries' (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3117.

<sup>138</sup> Department of Planning and Environment (NSW), *Wind Energy Framework: Frequently Asked Questions* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 1.

<sup>139</sup> Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 12.

efficiency of the planning regime by assigning a Department of Premier and Cabinet case manager to all large scale renewable energy project applications.<sup>140</sup>

The principal reason why wind energy development is particularly affected by an inefficient planning law regime is encapsulated by the following observation:

... the problem for wind power projects is often not so much that projects in the end are denied the necessary permits; instead the problem is related to the fact that long lead times imply increased uncertainty about the project revenues and costs that will emerge as the process extends over time (not the least since the revenues largely are policy-determined).<sup>141</sup>

An example of an analysis which provides support for the claim that the shift towards renewable energy will depend on the efficiency of planning law regimes is that which was conducted by Pettersson et al. These authors compared the development and regulation of wind energy development in “the fairly politically homogenous Nordic countries” of Denmark, Norway and Sweden.<sup>142</sup> It was found that the “subtle” but significant differences between the respective planning law regimes relating to the assessment of proposed wind farms, and their comparative efficiency in “enabling” such development, “matter[s] a lot for wind power outcomes”.<sup>143</sup> In particular, it was observed that “the average lead times for wind power project developers are overall higher in Sweden compared to both Norway and Denmark” and that the principal cause of this discrepancy was “delay ... typically linked to the territorial planning provisions”.<sup>144</sup>

However, whilst the nexus between the growth in renewable energy and efficient planning law regimes is established, it should be stressed that the efficiency of a given planning law

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<sup>140</sup> Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 12.

<sup>141</sup> Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3112.

<sup>142</sup> Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3117.

<sup>143</sup> Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3117.

<sup>144</sup> Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3121.

regime is certainly not the only (or necessarily the decisive or dominant) factor which will determine whether or not the renewable energy sector grows in that jurisdiction. This is shown by the fact that there are currently a significant number of wind farm projects in Australia that have received development approval but have “stalled” for other reasons, such as encountering difficulty “obtaining finance and power purchase agreements, contracts with energy companies to sell electricity and large scale generation certificates”.<sup>145</sup> As was recently observed by the principal national adviser of Australian Industry Group, “[t]here’s a lot of wind farm projects with planning approval and all the pieces in place except for finance”.<sup>146</sup> Similarly, the level and consistency of direct and indirect economic support for large scale renewable energy through feed-in tariffs, emissions trading schemes and so on can be decisive as to the short term success or failure of the renewable energy sector.<sup>147</sup> A collection of studies have identified differences in economic policy as one of the primary reasons for the abovementioned divergence in the growth of wind energy capacity in Denmark (which created a fixed feed-in tariff) as compared to Norway and Sweden (weaker and less consistent economic support).<sup>148</sup> The importance of this factor has also been recognised by the Australian Renewable Energy Agency:

... the current and prospective policy environments within which a wind farm is operating are central to the effectiveness and competitiveness with which it operates. Direct support through subsidisation or favourable tax policies (as in some countries), or indirect support for renewables from costs imposed on greenhouse gas emissions will enhance the competitiveness of wind energy and other renewables sources of energy.<sup>149</sup>

<sup>145</sup> Lucy Cormack, ‘Wind farms stalled by continuing uncertainty’ *Sydney Morning Herald*, 4 February 2016.

<sup>146</sup> Rebecca Puddy and Casey Treloar, ‘Policy wobbles putting the wind up investors’, *The Australian*, 20-21 August 2016, 4.

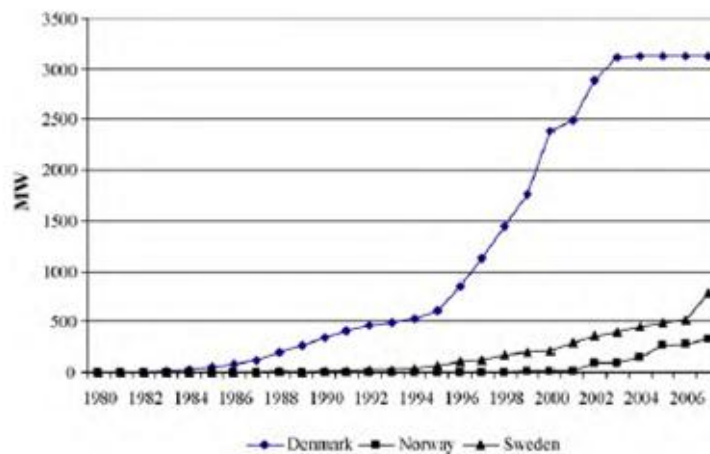
<sup>147</sup> RenewableUK, *Wind energy in the UK - 2014/15 Onshore Wind Update* (October 2015) RenewableUK <<http://ruk.pixl8-hosting.co.uk/en/publications/index.cfm/onshore-wind-factsheet>> 2.

<sup>148</sup> D Toke, S Breukers and M Wolsink, ‘Wind power deployment outcomes: How can we account for the differences?’ (2008) 12 *Renewable and Sustainable Energy Reviews* 1129; Neij Astrand, ‘An assessment of governmental wind power programmes in Sweden—using a systems approach’ (2006) 34 *Energy Policy* 277; J Buen, ‘Danish and Norwegian wind industry: the relationship between policy instruments, innovation and diffusion’ (2006) 34 *Energy Policy* 3887; P Soderholm and E Pettersson, ‘Wind power development in Sweden: global policies and local obstacles’ (2007) 11(3) *Renewable and Sustainable Energy Reviews* 365; all cited in Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3117.

<sup>149</sup> ARENA, *Wind Energy* (2013) Australian Energy Resource Assessment <<http://arena.gov.au/files/2013/08/Chapter-9-Wind-Energy.pdf>> 252.

Similarly, in the 2014 Renewable Energy Country Attractiveness Index, Ernst & Young emphasised that climate change and renewable energy policy uncertainty in Australia had adversely affected Australia’s attractiveness for renewable energy investment.<sup>150</sup>

**Figure 7: “Installed wind power capacity in the Nordic countries, 1980-2007 (MW)”<sup>151</sup>**



Turning to consider the efficiency of the NSW regime in particular, the NSW Government has confirmed that the average time taken to determine a development application for a wind farm project in NSW over the past five years has been “more than 1000 days”.<sup>152</sup> Over this period, the determination of one proposed wind farm, presumably an outlier, took “more than 2500 days”.<sup>153</sup> The NSW Government appears to concede that an average determination time of approximately two years and nine months (1000 days) constitutes undue delay and that this view is shared by the wind energy industry.<sup>154</sup> That is to say, the Government appears to be

<sup>150</sup> Ernst & Young, *Renewable energy country attractiveness index 46* (February 2014) Ernst & Young <[http://www.ey.com/Publication/vwLUAssets/RECAI\\_40\\_-\\_February\\_2014/\\$FILE/EY\\_RECAI%2040\\_Feb%202014.pdf](http://www.ey.com/Publication/vwLUAssets/RECAI_40_-_February_2014/$FILE/EY_RECAI%2040_Feb%202014.pdf)> 17.

<sup>151</sup> Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3118.

<sup>152</sup> Department of Planning and Environment (NSW), *Wind Energy Framework: Frequently Asked Questions* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 1.

<sup>153</sup> Department of Planning and Environment (NSW), *Wind Energy Framework: Frequently Asked Questions* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 1.

<sup>154</sup> Department of Planning and Environment (NSW), *Wind Energy Framework: Frequently Asked Questions* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 1;

of the view that the current NSW planning regime is not sufficiently efficient and that this is delaying the desired transition towards renewable energy.

There is some evidence to support the implicit claim of the NSW Government and industry that the planning regime is unduly inefficient. For instance, in a submission to Victorian Parliament in 2010, Pacific Hydro expressed its concern that the average three year approval timeframe for obtaining a determination under the Victorian planning law regime was inefficient and uncompetitive in comparison to the corresponding 18 month period for South Australia and one year timeframe for Western Australia.<sup>155</sup> Although on dated figures, the average duration for a determination of a large scale wind farm project in NSW would sit comfortably within the overall European range of between 1.5 and 4.5 years.<sup>156</sup> In the European Union, the average time to obtain development consent for onshore wind projects was estimated, in 2010, to be 42 months (with a normal range of approximately 1.5 and 4 years).<sup>157</sup> The average planning determination timeframe for Belgium, Denmark, Finland, France, Sweden and the UK was 28 months.<sup>158</sup> On more recent 2015 figures, “planning procedures” for wind energy projects in Germany have been noted to take between three to five years (which is considered to be “long” by the industry group known as the Global Wind Energy Council)<sup>159</sup> and, in the UK, the average time taken for an onshore planning decision is 16 months.<sup>160</sup>

Ultimately, it is very difficult to precisely evaluate how (in)efficient the NSW Planning regime is in comparison to other countries. How does one, for example, disentangle the

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Department of Industry, Skills and Regional Development (NSW), *NSW Renewable Energy Action Plan Annual Report 2015* (State of NSW, 2015) 12.

<sup>155</sup> Victorian Parliament Environment and Natural Resources Commission, *Inquiry into the Approvals Process for Renewable Energy Projects in Victoria* (February 2010) 75.

<sup>156</sup> K Skytte et al, *Challenges for Investment in Renewable Electricity in the European Union* (ADMIRE REBUS project, 2003) 21; Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3122.

<sup>157</sup> K Skytte et al, *Challenges for Investment in Renewable Electricity in the European Union* (ADMIRE REBUS project, 2003) 21; Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3122.

<sup>158</sup> European Wind Energy Association, *WindBarriers: Administrative and grid access barriers to wind power* (EWEA, 2010) 145.

<sup>159</sup> Global Wind Energy Council, *Global Wind Report: Annual Market Update* (GWEC, 2015) 45.

<sup>160</sup> RenewableUK, *Wind Energy in the UK: State of the Industry Report Summary 2015* (October 2015) RenewableUK

<[http://c.ymcdn.com/sites/www.renewableuk.com/resource/resmgr/Publications/Reports/State\\_of\\_the\\_Industry\\_Report.pdf](http://c.ymcdn.com/sites/www.renewableuk.com/resource/resmgr/Publications/Reports/State_of_the_Industry_Report.pdf)> i.

structural effects of the overarching planning law regime on overall efficiency from the efficiency of the bureaucrats charged with administering this regime? Mostly, however, this evaluation is mired by the lack of recent and detailed international statistics, which would enable the fair comparison of the performance of different regimes. For instance, the NSW average planning determination timeframe of two years and nine months ostensibly compares unfavourably with the one year average for wind energy projects across the UK achieved in 2014 (now 16 months).<sup>161</sup> Yet, if one looks more closely at this 2014 average, the approval timeframe for planning decisions at the Ministerial level was 46 months – well in excess of that in NSW – and the overall average appears to account for the assessment of small scale, medium scale and large scale wind farms.<sup>162</sup> Nonetheless, it appears safe to conclude that, whilst the current legal regime does not appear to be unusually inefficient, it is probably not currently equipped to facilitate the desired energy shift towards renewable energy as efficiently as possible. Whether or not the proposed wind energy framework reforms in NSW will, if implemented, adequately remedy this current deficiency is a question for others to comment upon.

### *E The Principle of Good Governance*

The decision confronted by consent authorities as to whether to approve a proposed large scale renewable energy project will normally constitute a polycentric problem.<sup>163</sup> The ultimate decision will affect a range of interests and involve complex interdependent issues.<sup>164</sup> Indeed, the consideration of the visual impacts of a wind farm is complex in and of itself. The inherent polycentric nature of such development approval decisions is arguably reflected in the regime through the standard delegation of such decisions to the PAC, whose

<sup>161</sup> RenewableUK, *Wind energy in the UK - 2014/15 Onshore Wind Update* (October 2015) RenewableUK <<http://ruk.pix18-hosting.co.uk/en/publications/index.cfm/onshore-wind-factsheet>> 1.

<sup>162</sup> RenewableUK, *Wind Energy in the UK: State of the Industry Report 2014* (October 2014) RenewableUK <[http://www.maritimeindustries.org/write/Uploads/UKMIA%20Uploads%20-%20DO%20NOT%20DELETE/State\\_of\\_the\\_Industry\\_-\\_Wind\\_Energy\\_Report\\_2014.pdf](http://www.maritimeindustries.org/write/Uploads/UKMIA%20Uploads%20-%20DO%20NOT%20DELETE/State_of_the_Industry_-_Wind_Energy_Report_2014.pdf)> 27.

<sup>163</sup> *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48; (2013) 194 LGERA 347, 360 [31].

<sup>164</sup> *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48; (2013) 194 LGERA 347, 360 [31].



members ought to “have a range of expertise” in relevant fields.<sup>165</sup> When faced with this polycentric problem, good governance arguably demands that the consent authority be afforded sufficient decision making scope to, through a process of intuitive synthesis, prudently weigh and balance the various (competing) relevant matters for consideration, so as to arrive at a final “managerial decision”.<sup>166</sup> For this to occur, the regime will have to encourage (or at least enable) consent authorities to rigorously examine the relevant matters for consideration. If this is frustrated by poor legislative design, the regime cannot credibly be said to be well equipped to encourage the proper balancing of the benefits and costs of large scale renewable energy development and, therefore, will be ineffective.

It is not feasible here to conduct a comprehensive examination of whether the regime facilitates the rigorous examination and consideration of each matter relevant to the determination of large scale renewable energy developments. Rather, this paper will examine the particular matter of the visual impacts of large scale wind farms as a useful indicator of whether the existing regime is well equipped to effectively regulate large scale renewable energy development. This particular issue has been selected for the following reasons. First, the evidence outlined above demonstrates that visual impact issues are likely to be a recurring and uniquely prominent ground of public objection to proposed wind energy development. Indeed, as Jones predicts, visual impacts are likely to become even more problematic over time “given that initially strategic developers are likely to propose wind farms in less iconic locations, eventually demand will move towards some harder decisions where local values pose more of a challenge to the broader global objective”.<sup>167</sup> In comparison to potential noise impacts, which are likely to be the other serious source of objection, visual impact issues are arguably a less localised problem and more complex to address. Second, as recognised by the NSW Government in its proposed Wind Energy Framework reforms,<sup>168</sup> the nature of the potential visual impacts of wind energy development are relatively unique. The analysis of

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<sup>165</sup> EPA Act, cl 2(4) of Schedule 3.

<sup>166</sup> *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48; (2013) 194 LGERA 347, 361 [36].

<sup>167</sup> Judith Jones, ‘Global or Local Interests? The Significance of the Taralga Wind Farm Case’ ch 15 in T Bonyhady and P Christoff (Eds), *Climate Law in Australia* (The Federation Press, 2007) 274.

<sup>168</sup> See, Department of Planning and Environment (NSW), *Wind Energy: Noise Assessment Bulletin (Draft for Consultation)* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>>; Department of Planning and Environment (NSW), *Wind Energy: Visual Impact Assessment Bulletin (Draft for Consultation)* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>>.

the other issues and impacts of large scale wind farm projects is similar to that for other state significant developments.<sup>169</sup> Third, as will be outlined, the current process of assessing the visual impacts of such development has been both explicitly and implicitly criticised.

### *1 The Consideration of Visual Impacts under NSW Law*

In considering whether to grant development consent to a state significant development proposal, the consent authority is required to consider “the likely impacts of that development”.<sup>170</sup> In determining a large scale wind energy development application, the visual impacts of the project will often be a “likely impact” that must be considered. The regime currently affords the consent authority with considerable discretion as to how it frames and considers the likely visual impacts of such development. This does not mean however, that the law is silent on how a consent authority should frame, consider and assess visual impact issues. This is because merits review case law provides a didactic model (the normative function of merits review) of the process a consent authority should undertake in considering potential visual impacts and in balancing these impacts against other relevant matters. One important decision in this respect is *Taralga Landscape Guardians Inc v Minister for Planning and RES Southern Cross Pty Ltd* [2007] NSWLEC 59; (2007) 161 LGERA 1 (*Taralga*). Yet, other authorities also provide guidance in this respect.<sup>171</sup> Additionally, a Land and Environment Court planning principle has been established to assist consent authorities assess development with impacts on “views from the public domain”.<sup>172</sup> There is strong evidence that the guidance offered by this case law has been followed by consent authorities. For instance, the PAC explicitly referred to and applied *Taralga* and the

<sup>169</sup> Department of Planning and Environment (NSW), ‘Wind Energy Framework: Frequently Asked Questions’ (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 1.

<sup>170</sup> EPA Act, ss 89H and 79C.

<sup>171</sup> See, eg, *King v Minister for Planning* [2010] NSWLEC 1102. See also, eg, *Genesis Power Ltd v Franklin District Council* [2005] NZRMA 541; (2005) 12 ELRNZ 71; *Maniototo Environmental Society Incorporated v Central Otago District Council* [2009] NZEnvC 293 and *Meridian Energy Ltd v Central Otago District Council* [2011] 1 NZLR 482; [2010] NZRMA 477; *Thackeray v Shire of South Gippsland* [2001] VCAT 922 (31 May 2001) [6.5]-[6.30]; *Hislop & Ors v Glenelg SC* [1998] VICCAT 1138 (15 October 1998).

<sup>172</sup> *Rose Bay Marina Pty Limited v Woollahra Municipal Council* [2013] NSWLEC 1046, [39]-[49]; See, Land and Environment Court of NSW, *Planning Principles* (14 December 2015) LEC <[http://www.lec.justice.nsw.gov.au/Pages/practice\\_procedure/principles/planning\\_principles.aspx](http://www.lec.justice.nsw.gov.au/Pages/practice_procedure/principles/planning_principles.aspx)>.

planning principle in considering the visual impacts of the proposed Collector Wind Farm Project.<sup>173</sup>

(a) *Taralga*

In *Taralga*, the Court determined that “the broader public good of increasing the supply of renewable energy” outweighed the “geographically narrower concerns of” the objector community group and, therefore, development consent for the proposed wind farm was granted.<sup>174</sup> A key issue to be weighed against the “broader public good” was the potential adverse visual amenity impacts of the development.<sup>175</sup> Prior to assessing these visual amenity impacts, the Court undertook an inspection of the site and surrounding area and was assisted by expert and objector evidence.<sup>176</sup> In essence, there was “a significant degree of agreement between the experts that the scenic quality of the landscape surrounding the village was at least moderate and, in some locations or from some perspectives, some portions of it might have a high scenic quality”.<sup>177</sup> In this decision, the Court established a methodology for assessing the potential visual impacts of proposed wind farms.

The preliminary “threshold question” that should be answered prior to holistically considering the visual impacts of a wind farm is the determination of “whether or not a first ‘breach’ in the present general landscape should be permitted”.<sup>178</sup> In the circumstances of *Taralga*, the Court concluded that the breach of the landscape by one turbine was acceptable despite conceding that the “intrusion of a single industrial structure (being a turbine) into this rural village would undoubtedly change the nature of the landscape viewed from the village”.<sup>179</sup> The breach was acceptable because the “rural context of Taralga village” was not such that

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<sup>173</sup> PAC, *NSW Planning Assessment Commission Determination Report: Collector Wind Farm Project, Upper Lachlan Shire LGA* (2 December 2013) PAC  
<<https://majorprojects.affinitylive.com/public/c042ee4e63d855b23274639e114cd102/Collector%20Wind%20Farm%20PAC%20Determination%20Report%20201213.pdf>> 6.

<sup>174</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 3 [3] and 41 [352].

<sup>175</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 1[1] and 17-21 [115]-[149].

<sup>176</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 17-18 [115].

<sup>177</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 18 [123].

<sup>178</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 18-19 [124].

<sup>179</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [127].

the landscape was required to be protected from any wind turbines.<sup>180</sup> This conclusion was supported by the fact that the National Trust had not identified the relevant rural landscape and setting of the village as being of “any particular intrinsic value”.<sup>181</sup> Given this, a visual breach of the landscape would not be “so antithetic to the landscape, generally, or to the outlook from the village, specifically, as to warrant its rejection”.<sup>182</sup> It is reasonable to conclude that the principle to be extracted from *Taralga* in respect of the threshold question is that a visual breach will be unacceptable if the landscape in question is, on a dispassionate assessment, so “iconic” that a visual breach would be “antithetic to the landscape”.<sup>183</sup> Although not made explicit in *Taralga*, it can be inferred that if the threshold question is answered in the negative, the adverse visual impact issues would normally trump any benefits of the wind farm proposal.<sup>184</sup>

If a first visual breach of a landscape is acceptable, the next step in the *Taralga* visual assessment methodology is to undertake a disaggregation analysis (although an aggregation analysis is not necessarily to be disfavoured).<sup>185</sup> On a disaggregation analysis, the preliminary question is whether, prima facie, the entire proposed wind farm “would have an unacceptable impact but that some lesser (but still viable) project might be approved”.<sup>186</sup> If, prima facie, the entire proposed wind farm will not have an unacceptable visual impact, it is arguably unnecessary to consider alternative modified proposals with potentially reduced visual impacts.<sup>187</sup> Conversely, if the project as a whole is likely to have unacceptable visual impacts, then the consent authority should consider alternative modified proposals. In *Taralga*, the Court considered four modification options and dismissed all four on the basis that none of these options significantly reduced the visual impacts of the proposal (compared to the original proposal) while allowing the wind farm to be economically viable.<sup>188</sup> Consequently, the decision before the Court was whether to approve the project as originally proposed (with its associated visual impacts) or to effectively not grant development approval. In those

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<sup>180</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [125]-[128].

<sup>181</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [126].

<sup>182</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [127].

<sup>183</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [126]-[127].

<sup>184</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [128].

<sup>185</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [129]-[132].

<sup>186</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [131].

<sup>187</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [131].

<sup>188</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 19 [133] and 21[144]-[146].

circumstances, the intuitive synthesis of the Court was that the broader public interest of the proposed wind farm outweighed the visual amenity impacts.<sup>189</sup>

(b) *The Visual Impacts Planning Principle*

In addition to this specific guidance provided in *Taralga*, the Land and Environment Court of NSW (‘LEC’) has established a planning principle, derived from *Rose Bay Marina Pty Limited v Woollahra Municipal Council* [2013] NSWLEC 1046, which provides less particularised guidance for considering and assessing “the acceptability of the impact of views from the public domain”.<sup>190</sup> The fundamental tenets of this principle are consistent with some other jurisdictions.<sup>191</sup> This principle adopts two methodological stages for approaching such issues, the first factual and the second analytical.<sup>192</sup> In the first factual “identification” stage, five steps should be undertaken: the identification of “the nature and scope of the existing views from the public domain”; the identification of the “locations in the public domain from which the potentially interrupted view is enjoyed”; “the identification of the extent of obstruction at each relevant location”; the identification of “the intensity of public use of those locations”; and the identification of “any document that identifies the importance of the view to be assessed”.<sup>193</sup>

In the second analytical stage, the planning principle does not mandate the slavish following of any “formal assessment matrix”.<sup>194</sup> Rather, the principle provides general guidance as to the nature and degree of quantitative and qualitative analysis required.<sup>195</sup> However, it should be noted that, analogously to *Taralga*, the principle requires that “a high value ... be placed

<sup>189</sup> [2007] NSWLEC 59; (2007) 161 LGERA 1, 21 [147].

<sup>190</sup> [43]; See, also, *Tenacity Consulting Pty Ltd v Warringah Council* [2004] NSWLEC 140; (2004) 134 LGERA 23, at [25]-[29].

<sup>191</sup> See, eg, *Tempora Pty Ltd v Shire of Kalamunda* (1994) 10 SR (WA) 296, 305 cited in Leslie Stein, *Principles of Planning Law* (OUP, 2008) 197.

<sup>192</sup> [43].

<sup>193</sup> [44]-[49].

<sup>194</sup> [50].

<sup>195</sup> [51]-[59].

on what may be regarded as iconic views”.<sup>196</sup> The principle is also consistent with *Taralga* in its recognition that a “sufficiently adverse conclusion on the impact on views from the public domain may be determinative of an application. However, it may also be merely one of a number of factors in the broader assessment process for the proposal”.<sup>197</sup>

## *2 The Adequacy of the Consideration of Visual Impacts under NSW Law*

From a legal perspective, there is limited utility in criticising the merits of the consideration and determination of visual impact issues relating to any particular large scale renewable development by a consent authority. What the legal regime can fairly be criticised for is any inadequacy in providing an appropriate framework to support and guide consent authorities in considering such issues. The legal regime should not be blamed if consent authorities do not perform their assessment competently, unless this incompetence can be attributed to a structural deficiency in the planning law regime. Similarly, it is not helpful - legally speaking - to simply criticise the perceived merits of findings related to visual impact issues on the basis that others would have reached a different conclusion. In contrast to these public administration and merits related criticisms, there are two plausible legal criticisms that have been (either explicitly or implicitly) directed against the regime in respect of the consideration and assessment of the potential visual impacts of proposed wind farms. First, that the regime, especially case law, does not provide sufficient guidance to consent authorities as to how to exercise their discretion in considering visual amenity impacts. Second, that the regime does not provide for sufficient public participation to enable the public to meaningfully shape the consideration and assessment of such impacts.

### *(a) A Lack of Guidance?*

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<sup>196</sup> [57].

<sup>197</sup> [59].

Criticism has been levelled at the existing regime on the basis that the law does not provide sufficient guidance to consent authorities on how to consider and balance visual impact issues in resolving the polycentric problem of determining a wind farm development application. Prior to setting out this criticism, it is important to stress the distinction between further guidance and further information. For instance, the proposed NSW Wind Energy Framework reforms appear to focus on providing consent authorities with more detailed information for the consideration of visual amenity impacts, such as a proponent prepared visual impact assessment, while retaining the existing position that “[i]t is the consent authority’s responsibility to determine the acceptability of those visual impacts when balanced against other social, environmental and economic issues”.<sup>198</sup>

In contrast, some commentators have argued that the guidance provided by the legal regime as to how a consent authority should consider and balance visual impact issues is unsatisfactory. In particular, Jones has pointed to a “need for further guidance from planning regimes to specifically address the nature of landscape values that ought to be protected ‘no matter what’, that is, even against developments that might have more global environmental benefits”.<sup>199</sup> Furthermore, albeit not necessarily a criticism, Jones asserts that the courts have not (in their merits review capacity – focusing on *Taralga*) provided guidance on how consent authorities are to balance visual amenity impacts against the broader benefits of a renewable development when assessing a project:

What [*Taralga*] does not do is provide guidance on how to balance that global interest [the benefits of renewable energy] against a local interest of any magnitude – and in the absence of any legislative direction, leaves the judgment to the decision-maker on a case-by-case basis.<sup>200</sup>

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<sup>198</sup> Department of Planning and Environment (NSW), *Wind Energy: Visual Impact Assessment Bulletin (Draft for Consultation)* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 16.

<sup>199</sup> Judith Jones, ‘Global or Local Interests? The Significance of the Taralga Wind Farm Case’ ch 15 in T Bonyhady and P Christoff (Eds), *Climate Law in Australia* (The Federation Press, 2007) 266.

<sup>200</sup> Judith Jones, ‘Global or Local Interests? The Significance of the Taralga Wind Farm Case’ ch 15 in T Bonyhady and P Christoff (Eds), *Climate Law in Australia* (The Federation Press, 2007) 274.

More generally, international commentators have either explicitly or implicitly claimed that a lack of detailed direction on how a consent authority should “value and balance the interests involved” in considering wind farm proposals is detrimental.<sup>201</sup> For instance, Pettersson et al favourably compare the “precise regulations and specified prerequisites in the Danish laws and bylaws as well as the Norwegian [non-legally binding] guidelines” with the corresponding Swedish law, which does “not in any precise way outline how to value and balance the interests involved”, on the basis that the Danish and Norwegian regimes “leave the administrative authorities in these countries with less room for discretion”.<sup>202</sup> Similarly, although recognising the need for the “delicate balance of short-term social and environmental impacts with the long-term potential for [wind farm] projects to reduce, significantly, national greenhouse gas emissions”, Durrant has unfavourably compared Australian regimes with those of New Zealand and the UK for being “very different” in persisting with the “traditional regulatory approach” “where authorities must still weigh up the pros and cons of these projects”.<sup>203</sup>

The abovementioned criticisms arguably, to varying extents, propose that the existing legal regime be adjusted (or reformed) to narrow (or at least condition) the administrative discretion currently afforded to consent authorities. In contrast, the current guidance for considering visual impacts provided to consent authorities by the Court focusses on process rather than outcome. As stated in the abovementioned planning principle, the assessment of visual impacts “is not a process of mathematical precision requiring an inevitable conclusion based on some fit in a matrix”.<sup>204</sup> Such an approach would be detrimental given that “[v]isual amenity is about perception, matters of taste, memory, and ascribing a benefit to beauty, which has deep, psychological roots”.<sup>205</sup>

Good governance requires consistency in the approach to assessing visual impacts. As Dwyer has stated, “[c]onsistency in decision-making is widely recognised as an important feature of

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<sup>201</sup> Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3121.

<sup>202</sup> Maria Pettersson et al, ‘Wind power planning and permitting: Comparative perspectives from the Nordic countries’ (2010) 14 *Renewable and Sustainable Energy Reviews* 3116, 3121.

<sup>203</sup> Nicola Durrant, *Legal Responses to Climate Change* (Federation Press, 2010) 134.

<sup>204</sup> *Rose Bay Marina Pty Limited v Woollahra Municipal Council* [2013] NSWLEC 1046, [50].

<sup>205</sup> Leslie Stein, *Principles of Planning Law* (OUP, 2008) 194.



good executive and judicial decision-making”.<sup>206</sup> However, it also requires, arguably, that consent authorities be afforded sufficient freedom to consider and balance these impacts depending on the unique circumstances of the proposed development.<sup>207</sup> As has been noted by Bates, one reason why detailed guidelines and policies relating to “how values should be weighed” are disfavoured by some in principle, even if “carefully thought out”, “is because flexibility in decision-making is considered important in order that the decision-maker can respond to the circumstances of each individual case”.<sup>208</sup> Stein has also persuasively claimed that, albeit in a different context, “[t]his is not a defect in the operation of the planning system; to have a more precise formulation would defeat the purpose of amenity as an indefatigable servant of shifting community values. What is possible, however, is to provide for a systematic approach to this analysis ... .”<sup>209</sup> To be sure, further guidance does not necessarily impinge upon good governance. However, compelling arguments should be made to justify the conditioning or restriction of administrative decision making in this respect. It could be validly asked: what evidence is there that the existing legal system has not encouraged the proper consideration of visual amenity impacts (keeping in mind that reasonable minds will differ as to how to balance various impacts of a development in arriving at a final managerial decision)?<sup>210</sup> This is particularly true given that there is evidence to demonstrate that consent authorities have not appeared to have any particular difficulty in exercising their functions in accordance with the existing guidance of case law.

More specifically, in response to Jones’ contention that planning regimes should provide further guidance on the landscape values that ought to be protected no matter what, why should this question not be left to the relevant consent authority to determine on a case-by-case basis? In response to Pettersson et al, why is it advantageous to precisely delineate how

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<sup>206</sup> Guy Dwyer, ‘Comity and consistency: What role should “the two C’s” play in determining class 1 development appeals in the Land and Environment Court?’ (2015) 20 *LGLJ* 3, 18 citing, amongst others, Michael McHugh, ‘The Growth of Legislation and Litigation’ (1995) 69 *ALJ* 37, 43.

<sup>207</sup> See, by analogy, the discussion of “flexible guidance” in Mark Aronson and Matthew Groves, *Judicial Review of Administrative Action* (Lawbook Co, 5<sup>th</sup> ed, 2013) 296 and the discussion of “inflexible application of a rule or policy” in Peter Cane and Leighton McDonald, *Principles of Administrative Law: Legal Regulation of Governance* (OUP, 2008) 156.

<sup>208</sup> Gerry Bates, *Environmental Law in Australia* (LexisNexis, 9<sup>th</sup> ed, 2016) 277.

<sup>209</sup> Leslie Stein, *Principles of Planning Law* (OUP, 2008) 197.

<sup>210</sup> “[M]any planning judgments, not least those which have to assess a planning proposal in terms of its impact upon the amenity of a particular locality, necessarily involve a subjective element, leaving room for opinions to differ in weighing the same objective criteria” quoted from *Novak v Woodville City Corporation* (1990) 70 *LGRA* 233, 236 (See also *Allens Service Station Ltd v Glen Edit BC* (1985) 10 *NZTPA* 400), all cited in Leslie Stein, *Principles of Planning Law* (OUP, 2008) 202.

consent authorities are to value and balance competing interest? Of course, the affordance of administrative discretion means that consent authorities may make decisions that many people find fault with, yet the lack of administrative discretion can also come at a high cost. For instance, to provide an extreme example for the sake of argument, assume that a planning law regime instructed that the visual impacts of a wind farm were only to be a basis for refusing development consent if the affected landscape had been given a particular National Trust listing. This may lead to the undesirable situation where a highly iconic and treasured landscape is unacceptably developed upon simply because it has not been listed by the National Trust. Moreover, given the complexity involved in assessing and balancing visual impacts, it is arguably necessary to afford consent authorities with significant discretion to properly grapple with these matters.

*(b) Public Participation*

The complex, somewhat existential, international issue of how public participation should be incorporated into planning law regimes is a contested and a well-covered area.<sup>211</sup> This is also increasingly true of the question of the appropriate level and nature of public participation in the planning process for renewable energy projects in particular. This reflects the recognition that, in Newman's words, the "quality and quantity of public participation inherent in the planning process will be a key determinant in the final character of a renewable energy supply system".<sup>212</sup> For example, Newman refers to international examples where planning regime reforms to give an affected local community an economic stake in proposed renewable energy projects has facilitated the expansion of renewable energy capacity.<sup>213</sup> The impact of this focus on public participation is also reflected in the Government's recent

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<sup>211</sup> See, eg, Robert Stokes, 'Defining the Ideology of Public Participation: 'Democracy', 'Devolution', 'Deliberation', 'Dispute Resolution' and a New System for Identifying Public Participation in Planning Law' (2012) 8(2) *MqJICEL* 1; Tanya Howard, 'Olive Branches and idiot's guides: frameworks for community engagement in Australian wind farm development' (Working Paper, 29 September 2014, Australian Centre for Agriculture and Law).

<sup>212</sup> Andrew Newman, 'Creating the power for renewal: Evaluation of New South Wales' renewable energy planning law changes and suggestions for further reform' (2012) 29 *EPLJ* 498, 500.

<sup>213</sup> Andrew Newman, 'Creating the power for renewal: Evaluation of New South Wales' renewable energy planning law changes and suggestions for further reform' (2012) 29 *EPLJ* 498, 501-503.

proposed reform of the wind farm planning regime to “provide for early and meaningful community engagement”.<sup>214</sup>

Some commentators and members of the public are of the view that the existing process of public participation in the NSW planning regime is inadequate.<sup>215</sup> Implicit in such claims, and explicit in the recent proposed Wind Energy Framework reforms, is the view that the consideration and assessment of visual impacts should be informed by greater community consultation and public participation.<sup>216</sup> This paper will not enter into this complex debate save to make some short observations on the potential risks of poorly executed public participation requirements to the proper consideration of the visual impacts of proposed large scale wind farms.

Consent authorities should carefully consider the views of an affected local community - and the public more broadly - on the potential visual impacts of a proposed wind farm on the surrounding landscape. Yet, the consideration of visual impacts by the consent authority should only be informed by, rather than subordinated to, the views of the public. Similarly, this process of consideration should be carried out “on a dispassionate basis”.<sup>217</sup> An important reason for this is that public submissions concerning the visual impacts of a development may not accurately reflect the predominant view of the broader affected public. As was stated in *Tempora Pty Ltd v Shire of Kalamunda*, “[i]t is of concern that the views of those coming forward could not be typical and a proper survey might reveal a different cumulative view”.<sup>218</sup> More importantly, it is consistent with the principle of good governance that the views of the public (including any opinions of organisations or experts) are critically and objectively evaluated. A prevailing view of a community that a particular proposal will have acceptable or unacceptable visual impacts may be unconvincing. For instance, analogously to *Taralga*, a consent authority may validly disagree with submissions that a proposed wind

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<sup>214</sup> Department of Planning and Environment (NSW), *Wind Energy Framework: Frequently Asked Questions* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>> 1.

<sup>215</sup> See, eg, Sue Higginson, *The community’s right to participate: what happened to merits review?* (7 July 2016) Environmental Defenders Office NSW <[http://www.edonsw.org.au/the\\_community\\_s\\_right\\_to\\_participate\\_what\\_happened\\_to\\_merits\\_review](http://www.edonsw.org.au/the_community_s_right_to_participate_what_happened_to_merits_review)>.

<sup>216</sup> Department of Planning and Environment (NSW), *Wind Energy: Visual Impact Assessment Bulletin (Draft for Consultation)* (August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>>.

<sup>217</sup> *King v Minister for Planning* [2010] NSWLEC 1102, [188].

<sup>218</sup> (1994) 10 SR(WA) 296, 303 cited in Leslie Stein, *Principles of Planning Law* (OUP, 2008) 203.

farm will have unacceptable visual impacts on a non-iconic landscape. Conversely, a consent authority may determine that a heritage listed landscape will be unacceptably affected by a proposed wind farm despite the opposite view being expressed by an affected local community. The critical evaluation of the views of a local community would arguably be especially important if a local community was to acquire a significant financial stake in the proposed development,<sup>219</sup> given that such measures are intended to “improve community acceptance” (albeit arguably good public policy).<sup>220</sup>

Although beside the point, some may be of the opinion that greater control of (rather than participation in) the development approval process by the public and local communities would better facilitate the growth of renewable energy. Certainly, commentators have argued that “securing public participation is a vital ingredient to ensure these [renewable] developments are built”.<sup>221</sup> However, the former opinion is not necessarily true. For instance, in the UK, responsibility for a proportion of wind farm development approval decisions has been devolved from the Planning Inspectorate to local authorities.<sup>222</sup> Regardless of whether one sees this as a positive or negative reform, it has apparently led to the situation where the: “English market is in rapid decline. England has the lowest consenting rate across the UK, and the lowest rate of appeal, owing to changes to English planning, and the use of recoveries by the previous Government. The result is a low level of consented projects”.<sup>223</sup> Whereas, across Australia, “[i]n general, it may be said that the tendency in decision-making on wind farms has determined that the perceived impacts can be overcome (except perhaps for visual impacts that rely on ‘the eye of the beholder’) by appropriate operating conditions”.<sup>224</sup>

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<sup>219</sup> See the example of Portugal in Andrew Newman, ‘Creating the power for renewal: Evaluation of New South Wales’ renewable energy planning law changes and suggestions for further reform’ (2012) 29 *EPLJ* 498, 503.

<sup>220</sup> Tanya Howard, ‘Olive Branches and idiot’s guides: frameworks for community engagement in Australian wind farm development’ (Working Paper, 29 September 2014, Australian Centre for Agriculture and Law) 16.

<sup>221</sup> Andrew Newman, ‘Creating the power for renewal: Evaluation of New South Wales’ renewable energy planning law changes and suggestions for further reform’ (2012) 29 *EPLJ* 498, 503.

<sup>222</sup> Katherine Evans, *Policy Briefing: Government puts consent for onshore wind in local hands* (4 March 2016) PlanningResource <<http://www.planningresource.co.uk/article/1386053/policy-briefing-government-puts-consent-onshore-wind-local-hands>>.

<sup>223</sup> RenewableUK, *2014/15 Onshore Wind Update – Wind energy in the UK - Onshore Wind Factsheet 2015* (October 2015) RenewableUK <<http://ruk.pix18-hosting.co.uk/en/publications/index.cfm/onshore-wind-factsheet>> 2.

<sup>224</sup> Gerry Bates, *Environmental Law in Australia* (LexisNexis, 9<sup>th</sup> ed, 2016) 754.

## IV THE LAW AND SMALL SCALE RENEWABLE ENERGY

*A The Role of Legal Regimes in Regulating Small Scale Renewable Energy Development*

The future of small scale renewable energy production will not be shaped in a political vacuum. The expansion of the Australian residential solar photovoltaic electricity generating system ('solar pv system') market over the past decade illustrates the critical influence of policy, legislation and executive decision making on the development of small scale renewable energy. Recent figures indicate that a solar pv system has been installed by approximately 16 per cent of Australia households<sup>225</sup> (14 per cent in NSW).<sup>226</sup> Yet, the Grattan Institute has predicted that, excluding government subsidies, solar pv systems are likely to become economically viable by 2020.<sup>227</sup> While some households and businesses may not have installed their solar pv system for economic reasons, it is reasonable to assume that much of this expansion in the small scale solar pv system market was a consequence of subsidisation. On the other hand, legislation can also directly deter households from investing in small scale renewable technology. For instance, the suggestion that households and businesses using solar pv systems should pay a tariff for allegedly imposing hidden costs on other households using the electricity grid would, if implemented, likely suppress future investment in solar pv systems.<sup>228</sup> The reason why this ostensibly obvious point is emphasised is because it shows how any economically or scientifically based predictions as to the future of small scale renewable energy can be derailed by political developments.

Nevertheless, as has already been identified, there is likely to be a substantial increase in the proportion of households and businesses that establish (and expand existing) solar pv systems over the next two decades. This is because, from about 2020, solar pv systems are likely to

<sup>225</sup> REN21, *Renewables 2016 – Global Status Report* (REN21, 2016) 64.

<sup>226</sup> See S L Wade, C M Barry and M D Nelson (compilers), *Renewable energy map of New South Wales* (Geological Survey of New South Wales, 2016) available at <http://www.resourcesandenergy.nsw.gov.au/energy-supply-industry/renewable-energy/renewable-resources-map>.

<sup>227</sup> Tony Wood and David Blowers, *Sundown, sunrise: How Australia can finally get solar power right* (Grattan Institute, 2015) 27.

<sup>228</sup> See Will Willitts, 'Solar-powered homes to pay more to use grid: report', *Australian Financial Review* (online), 23 October 2013 <<http://www.afr.com/news/policy/climate/solarpowered-homes-to-pay-more-to-use-grid-report-20131022-jgv68>> and *CKI Utilities Development Pty Ltd v Australian Energy Regulator* [2016] FCA 17.

become economically beneficial regardless of government subsidies - due to increasing retail electricity prices<sup>229</sup> and the declining capital costs (and increasing generating capacity)<sup>230</sup> of solar pv systems.<sup>231</sup> Moreover, unlike some forms of small scale renewable energy, solar pv systems can be installed in many areas. In contrast, for example, there is unlikely to be any significant growth in the number of wind energy systems in urban areas. This is because the establishment of viable wind power systems in urban areas is “usually impossible” as “[u]rban areas have a poor wind resource that is usually extremely turbulent”.<sup>232</sup>

One of the factors which will importantly influence the future growth of the solar pv market is the environmental planning regime which regulates solar pv system development. If a planning law regime prevents a large amount of solar energy development from occurring, this will clearly hamper the growth of solar pv capacity. This may transpire, for example, if consent authorities are encouraged under the relevant legislation to prohibit such development or as the consequence of a cumbersome and inefficient development application process. In regards to the latter, this is particularly true for renewable energy because the attraction of subsidies or other incentives available for installing solar pv systems may be undermined if planning related delays gives rise to uncertainty as to whether such benefits will actually be obtained.<sup>233</sup> Conversely, an efficient planning approval process will likely facilitate the installation of small scale solar pv systems.

This begs the question of whether the regime is well equipped to effectively facilitate the transition of households and businesses from passive electricity consumers to solar pv system enabled “prosumers”.<sup>234</sup> As was cautioned in the previous section, it would be wrong to address this question by simply determining how amenable the planning law regime is for

<sup>229</sup> Frontier Economics, *Electricity market forecasts: 2015* (Australian Energy Market Operator, 2015) vi.

<sup>230</sup> Recently, the Sydney Morning Herald reported on how UNSW researchers have successfully developed a solar cell prototype capable of converting 34.5% of received solar energy into electricity (compared to the 14-22% efficiency rate for commercially available solar panels); Marcus Strom, ‘UNSW Researchers break solar efficiency record for unfocused sunlight’, *The Sydney Morning Herald* (online), 18 May 2016 <<http://www.smh.com.au/technology/sci-tech/unsw-researchers-break-solar-efficiency-record-for-unfocused-sunlight-20160517-gowsgx.html>>.

<sup>231</sup> Tony Wood and David Blowers, *Sundown, sunrise: How Australia can finally get solar power right* (Grattan Institute, 2015) 27; REN21, *Renewables 2016 – Global Status Report* (REN21, 2016) 64.

<sup>232</sup> Geoff Stapleton et al, *Wind systems* (2013) YourHome (Department of Industry, Innovation and Science (Cth)) <<http://www.yourhome.gov.au/energy/wind-systems>>.

<sup>233</sup> Sanya Carleyolsen, ‘Tangled in the Wires: An Assessment of the Existing U.S. Renewable Energy Legal Framework’ (2006) 46 *Natural Resources Journal* 759, 772.

<sup>234</sup> REN21, *Renewables 2015 – Global Status Report* (REN21, 2015) 31.

those proposing to install a solar pv system development. If, for example, listed heritage conservation areas were vandalised by inappropriate and dangerously installed solar pv development, it would be misleading to say that that the planning law regime had effectively managed the transition towards greater reliance on small scale renewable energy. As has already been stressed, if planning law regimes exclusively prioritise the efficient ‘rubber stamping’ of all solar pv development, regardless of the potential adverse impacts of such development, unacceptable adverse impacts will undoubtedly occur. This may also provoke a public backlash and, consequently, lead to retrograde legislative reforms adverse to solar pv development.

Thus, the proper inquiry is whether the regime is well equipped to efficiently facilitate solar pv system development while adequately managing the potential adverse impacts. As Carleyolsen has reasoned in relation to regulating renewable energy development in heritage areas:

A number of legislative measures typically exist within a given region that are intended to protect historic sites, environmental conditions of a particular piece of land, or public space. These controls often function as legislative barriers to RE [renewable energy] initiatives ... governments must strike an appropriate balance between these protective measures and RE measures; if it is feasible to build RE technologies while still upholding the integrity of a historic building or preserving a natural habitat, for instance, then the legislative barriers for development should be minimized.<sup>235</sup>

In undertaking this inquiry, this section will be divided so that it first considers whether the planning law regime is well equipped to efficiently facilitate the installation of solar pv systems. This is followed by the assessment of whether the regime adequately manages a key potential adverse impact of such development, namely, the diminution of aesthetic values of heritage significance. Finally, some brief comments are made on the issue of solar access and

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<sup>235</sup> Sanya Carleyolsen, ‘Tangled in the Wires: An Assessment of the Existing U.S. Renewable Energy Legal Framework’ (2006) 46 *Natural Resources Journal* 759, 786.

its significance for the prospects of the solar pv system market. However, prior to this, it is necessary to delineate how solar pv system development is regulated under the regime.

### *B The Operative Legislative Provisions*

The second tier of the NSW “approvals regime for renewable energy systems”<sup>236</sup> is principally contained within the State Environmental Planning Policy (Infrastructure) 2007 (NSW) (the ‘ISEPP’). The ISEPP prevents environmental planning instruments such as local environmental plans and development control plans from prohibiting “development for the purpose of a solar energy system”, which is defined to mean “a photovoltaic electricity generating system”,<sup>237</sup> on any land. In particular, clause 34(7) provides that such development “may be carried out by any person with consent on any land”. Yet, on land in a “prescribed residential zone” (Zones R1-R5 and RU5),<sup>238</sup> “development for the purpose of a photovoltaic electricity generating system may be carried out by a person with consent ... only if the system has the capacity to generate no more than 100kW”.<sup>239</sup> This is the upper limit for a solar pv system in residentially zoned areas.

Under the EPA Act and the ISEPP, a small scale solar pv system development will either constitute “development that needs consent”,<sup>240</sup> “complying development”,<sup>241</sup> “exempt development”<sup>242</sup> or will be prohibited.<sup>243</sup> The ISEPP permits “development for the purpose of a solar energy system” to be either complying or exempt development.<sup>244</sup> It should be stressed that the ISEPP has been drafted such that it is not a solar energy system (and, therefore, a photovoltaic electricity generating system) itself that is eligible to be exempt or complying development. Rather, it is “development for the purpose of a solar energy

<sup>236</sup> Department of Planning and Environment (NSW), *Renewable energy* (3 August 2016) DPE <<http://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy>>.

<sup>237</sup> ISEPP, cl 33.

<sup>238</sup> ISEPP, cl 33.

<sup>239</sup> ISEPP, cl 34(8).

<sup>240</sup> EPA Act, s 76A; ISEPP, cl 34(7).

<sup>241</sup> EPA Act, s 76A(5); ISEPP, cll 20B and 37(2).

<sup>242</sup> EPA Act, s 76; ISEPP, cll 20 and 39(3).

<sup>243</sup> EPA Act, s 76B; ISEPP, cl 34(8). The effect of this clause is to prohibit development for the purpose of a photovoltaic electricity system in residentially zoned areas if the system has the capacity to generate more than 100kW.

<sup>244</sup> ISEPP, cll 37(2) and 39(3).



system”.<sup>245</sup> In contrast, “the construction or installation of an air-conditioning unit”, for example, is specified as exempt development in and of itself under the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 (NSW) (‘the ECD SEPP’).<sup>246</sup> Development for the purpose of a solar energy system will be exempt or complying development under the ISEPP if such development meets specified “predetermined development standards”<sup>247</sup> set out in the instrument. If so, the development will not require development consent.

To be exempt development, development for the purpose of a photovoltaic electricity generating system must, amongst other requirements: not involve more than minimal impact on the heritage significance of a heritage conservation area or listed heritage item; be installed in accordance with the manufacturer’s specifications and not involve mirrors or lenses to reflect or concentrate sunlight.<sup>248</sup> Additionally, if not ground-mounted, the development must, amongst other requirements: not reduce the structural integrity of any building to which it is attached; if in a heritage conservation area or on land containing a heritage item, not be attached to any wall or roof facing a primary road (the road to which the front of a dwelling house faces)<sup>249</sup> nor protrude more than 0.5 metres from the point of attachment; and not have the capacity to generate more than 10kW of electricity.<sup>250</sup> If ground mounted, the development must: not occupy an area of more than 150m<sup>2</sup>; not be higher than five metres above ground level; if in a heritage conservation area or on land containing a heritage item, not be visible from any road at the point where the road adjoins the property boundary concerned; and be no less than three metres from any adjoining property boundary (or 10 metres from a neighbouring dwelling not owned or occupied by the owner of the system if the system has the capacity to generate more than 10kW).<sup>251</sup>

To be complying development, a photovoltaic electricity generating system must, amongst other requirements: not be exempt development; be permissible with consent in the relevant

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<sup>245</sup> ISEPP, cll 37(2) and 39(3).

<sup>246</sup> ECD SEPP, Subdivision 3 of Division 1 of Part 2.

<sup>247</sup> This phrase is taken from Rosemary Lyster et al, *Environmental & Planning Law in New South Wales* (Federation Press, 3<sup>rd</sup> ed, 2012) 68-69.

<sup>248</sup> ISEPP, cll 39(3)(a) and 20(2)(e); cl 39(3)(b); cl 39(3)(d); cl 39(3)(f)(vi).

<sup>249</sup> ISEPP, cl 5.

<sup>250</sup> ISEPP, cll 39(3)(f)(i), (iv) and (vi).

<sup>251</sup> ISEPP, cl 39(3)(e).

land use zone; not be proposed for land in a heritage conservation area; be installed in accordance with the manufacturer's specifications; and have the capacity to generate no more than 100 kW if in a prescribed residential zone.<sup>252</sup> Additionally, if not ground-mounted, the development must, amongst other requirements: not reduce the structural integrity of any building to which it is attached; not involve mirrors or lenses to reflect or concentrate sunlight; and, if in a prescribed residential zone, not protrude more than 0.5 metres from the wall or roof.<sup>253</sup> If ground mounted, the development must: not occupy an area of more than 500m<sup>2</sup>; not be higher than 10 metres above ground level; and be no less than 10 metres from any adjoining property boundary (or 50 metres from a neighbouring dwelling not owned or occupied by the owner of the system if the system has the capacity to generate more than 10kW).<sup>254</sup>

In the event that development for the purpose of a photovoltaic electricity generating system is not exempt or complying development under the ISEPP, then the proponent of the development will likely be required to lodge a development application with the relevant consent authority and obtain development consent pursuant to the EPA Act and the applicable environmental planning instrument/s.

### *C The Efficiency of the Regime*

Despite a dearth of commentary concerning the ISEPP regime, it appears that the ISEPP regime is perceived to be responsible for facilitating the efficient installation of solar pv systems. Camenzuli and Poisel have claimed that the ISEPP “has likely contributed to the success of rooftop PV installation in NSW”.<sup>255</sup> The most substantial evidence to support this claim is found in a report by the Australian PV Association (the ‘APVA’), a non-for-profit association representing “companies, agencies, individuals and academics with an interest in

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<sup>252</sup> ISEPP, cll 37(2)(a) and 20B; cl 37(2)(b)-(c).

<sup>253</sup> ISEPP, cl 37(3)(f).

<sup>254</sup> ISEPP, cl 37(3)(e).

<sup>255</sup> Louise Camenzuli and Tim Poisel, ‘Renewable energy: Is the 20% target by 2020 really achievable?’ *Corrs Insights* (October 2012) <<https://www.corrs.com.au/assets/thinking/downloads/Renewable-Energy-Is-20-percent-by-2020-really-achievable.pdf>>.

solar energy research, technology, manufacturing, systems, policies, programs and projects”,<sup>256</sup> prepared for the Commonwealth Government’s “low emissions technology and abatement - renewables program”.<sup>257</sup> The implicit verdict of APVA’s report is that because most small scale solar pv system development in NSW is (and should be) exempt or complying development, the NSW regime does facilitate the efficient installation of small scale solar pv systems.<sup>258</sup> In APVA’s own words, “[t]he majority of installers did not have problems with councils because their systems qualified as either exempt or complying [development] and so did not have to go through a Development Application (DA) process”.<sup>259</sup> Exempt and complying development is favoured by “installers” because these forms of code based development are intended to “streamline assessment processes”.<sup>260</sup> From the perspective of a proponent of a development that constitutes exempt development, the planning regime is almost perfectly efficient. The development can proceed as soon as the proponent is ready to carry it out.

Yet, as noted by APVA, the availability of this ‘streamlined assessment process’ is considerably restricted for solar pv system development proposed for land within heritage conservation areas. In its report, APVA suggests that any requirement to obtain development approval to erect a solar pv system in a heritage conservation area, and more generally, is almost tantamount to prohibiting such development. This is primarily because the traditional development application process is seen to be overly burdensome and inefficient. When a development application is required to be lodged with local councils, it is said that “the PV industry, and hence customers, are routinely faced with delays, application costs, additional insurance and solar access uncertainties when trying to install even small PV systems which

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<sup>256</sup> APVA, *About us*, APVA <<http://apvi.org.au/about-us/>>.

<sup>257</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009).

<sup>258</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 6.

<sup>259</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 22.

<sup>260</sup> Rosemary Lyster et al, *Environmental & Planning Law in New South Wales* (Federation Press, 4th ed, 2016) 71.

meet all Australian standards”.<sup>261</sup> The overall regime is allegedly rendered cumbersome by the development application process because “each Council has a different approach and different requirements concerning the need for DAs, the level of detail required, and the associated cost and timeline”.<sup>262</sup> Furthermore, it appears to be implicitly suggested that, in heritage conservation areas, some local councils may be unlikely to approve solar pv development. For these reasons, in APVA’s view, the “need for Local Government involvement in PV deployment is not clear”.<sup>263</sup>

Aside from heritage related controls, other planning related statutes may obstruct the efficient expansion of solar pv system capacity by adding a further layer of de facto development approval requirements. For instance, as identified by Prest,<sup>264</sup> section 108 of the *Strata Schemes Management Act 2015* (NSW) only allows an owner of a lot in a strata title to erect a solar pv system on common property “if a special resolution” - which can only be passed with a maximum of 25 per cent opposition<sup>265</sup> - “has first been passed by the owners corporation that specifically authorises” such development.

Notwithstanding these exceptions, given that APVA, which is arguably the association most likely to identify and complain of inefficiencies, appears to be of the view that the planning law regime is generally not an obstacle to the efficient installation of solar pv systems, it can be relatively confidently inferred that the planning law regime is perceived to be well equipped to seamlessly facilitate the efficient installation of solar pv systems.

However, this perception, that the planning law regime is well equipped to encourage the efficient installation of small scale solar pv systems, is predicated on the assumption that

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<sup>261</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 3.

<sup>262</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 3.

<sup>263</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 3.

<sup>264</sup> Dr James Prest, in discussion with the authors.

<sup>265</sup> *Strata Schemes Management Act 2015*, s 5 (This Act is expected to commence on 30 November 2016. The same legal position is established by s 65A of the *Strata Schemes Management Act 1996*, which will be replaced on 30 November 2016).

most small scale solar pv system development will constitute exempt or complying development.<sup>266</sup> To be sure, it appears that most development of this nature has, to date, been viewed by proponents, installers, consent authorities and the NSW government to be exempt or complying development under the ISEPP, providing that it satisfies all of the relevant standardised criteria listed above.<sup>267</sup> Yet, due to the manner in which the relevant clauses of the ISEPP are drafted, a proper construction of the ISEPP arguably means that the installation of most small scale solar pv systems may not be exempt or complying development and, therefore, may require development approval.

### *1 Development for the Purpose of a Solar Energy System*

In NSW, and in many other jurisdictions, the environmental planning law regime is structured in accordance with the “popular and logical”<sup>268</sup> model (albeit not immune from criticism)<sup>269</sup> of regulating land use “by reference to the purpose of the use”.<sup>270</sup> As was recognised in *Chamwell Pty Limited v Strathfield Council* [2007] NSWLEC 114; (2007) 151 LGERA 400 at [27], environmental planning law requires that land is used for a purpose, an “end to which the land is seen to serve”.<sup>271</sup> Land is delineated into different zones<sup>272</sup> so as to “invest” different areas of land “with a certain predominant character and to protect it from avoidable invasion or erosion of that character”.<sup>273</sup> In areas zoned for residential use, for example, the predominant use or development that will be permitted (with or without

<sup>266</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 22.

<sup>267</sup> Search ‘solar energy system’ in, Department of Planning and Environment (NSW), *Residential Model, Interactive Buildings* <<http://interactivebuildings.planning.nsw.gov.au/planning-residential>>; Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 22.

<sup>268</sup> Jennifer Manefield, ‘A question of fact and degree: The impact of the doctrine of ancillary use on place-based planning’ (2006) 11 *LGLJ* 135, 135.

<sup>269</sup> See Leslie Stein, *Principles of Planning Law* (OUP, 2008) 34-35.

<sup>270</sup> Chris Grainger, ‘The Doctrine of Ancillary Use’ (1993) 10 *EPLJ* 267, 267 citing *Warringah Shire Council v Raffles* (1978) 38 LGERA 306 at 308.

<sup>271</sup> *Chamwell Pty Limited v Strathfield Council* [2007] NSWLEC 114; (2007) 151 LGERA 400 at [27] citing *Shire of Perth v O’Keefe* (1964) 110 CLR 529, 534.

<sup>272</sup> Leslie Stein, *Principles of Planning Law* (OUP, 2008) 32.

<sup>273</sup> *Baulkham Hills Private Hospital Ltd v Newcastle City Council* (1980) 46 LGERA 231, 235 cited in Leslie Stein, *Principles of Planning Law* (OUP, 2008) 32.

consent) is that which is for a residential purpose. Many uses of land for other purposes will be prohibited by environmental planning instruments in such areas. For example, the use of land for the purpose of an abattoir will almost certainly be prohibited.

However, the regime does not regulate all proposed development by reference to its purpose. In particular, the regime specifies some forms of development, under codes, as exempt development or complying development. For instance, under the exempt development code contained with the ECD SEPP, there are more than 41 types of development that are specified as exempt development.<sup>274</sup> To take one example, “the construction or installation of a hot water heater” is specified as exempt development providing that it satisfies a number of ‘predetermined development standards’.<sup>275</sup> Critically, the purpose of constructing the hot water heater is irrelevant. If the proposed hot water heater complies with the specified standards it will be exempt from requiring development consent. As the NSW Government advises proponents inquiring as to the requirements for a hot water heater through its “interactive buildings model” online tool, “[i]f your proposal meets these planning controls, no planning and building approval is required”.<sup>276</sup> Similarly, although slightly different, under South Australian regulation, “the installation, alteration, repair, maintenance of a designated photovoltaic system on the roof of a building” is not classified as “development” under the applicable regulation and, therefore, does not require development consent.<sup>277</sup>

Conversely, under the ISEPP clauses set out above, the installation of a solar pv system is not specified as exempt or complying development. Rather, only “development for the purpose of a solar energy system” is capable of being exempt or complying development<sup>278</sup> if certain ‘predetermined development standards’ are met. Therefore, for the construction and installation of a solar pv system to fall within the ambit of exempt and complying development, the installation of such a system will (1) have to constitute development and (2) the purpose of this development will have to be “solar energy system”. The installation of a

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<sup>274</sup> ECD SEPP, Division 1 of Part 2.

<sup>275</sup> ECD SEPP, Subdivision 23A of Division 1 of Part 2.

<sup>276</sup> Search ‘hot water system’ in, Department of Planning and Environment (NSW), *Residential Model*, Interactive Buildings <<http://interactivebuildings.planning.nsw.gov.au/planning-residential>>.

<sup>277</sup> *Development Regulations 2008* (SA), cl 15 of Sch 3.

<sup>278</sup> ISEPP, cll 37(2) and 39(3).

solar pv system, whether ground-mounted or not, will likely constitute development.<sup>279</sup> Yet, it is less clear whether, properly characterised, the installation of a solar pv system on a typical house in a residentially zoned area, for example, will be for the purpose of a solar energy system. If the solar energy system development is not for the purpose of a solar energy system, but is only for some other independent purpose, such as the purpose of “dwelling-house”, the development will not be exempt or complying development under the ISEPP and, therefore, the proponent will need to obtain development consent. As has already been explained, this would make the process of installing solar pv systems significantly less efficient.

The characterisation of the purpose of a use of land or a development must be determined “by asking what, according to ordinary terminology, is the appropriate designation of the purpose” in the relevant circumstances.<sup>280</sup> This inquiry should be approached in a “common sense and practical way”.<sup>281</sup> In making this determination, it is not correct that the subjective intention of the proponent of the development is either determinative or irrelevant. As was held by Reynolds JA, “[t]here may be many cases where a proposed activity or erection of a building cannot be characterised without reference to the intention of those concerned and other cases where it is of little or no relevance”.<sup>282</sup> Of course, a development may have multiple purposes. Environmental planning legislation and instruments cannot “eliminate the possibility that a development may be proposed for more than one of the denominated purposes”.<sup>283</sup> Importantly, where a development has, for example, two purposes and one purpose of the development is “subservient or subordinate” to a dominant purpose, “then the dominant purpose will be the purpose for which the development is characterised”.<sup>284, 285</sup> In

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<sup>279</sup> See EPA Act, s 4 ‘development (c)’ and ‘building’.

<sup>280</sup> *Shire of Perth v O’Keefe* (1964) 110 CLR 529, 535 cited in Rosemary Lyster et al, *Environmental & Planning Law in New South Wales* (Federation Press, 4th ed, 2016) 87.

<sup>281</sup> *Chamwell Pty Limited v Strathfield Council* [2007] NSWLEC 114; (2007) 151 LGERA 400, [45] cited in Rosemary Lyster et al, *Environmental & Planning Law in New South Wales* (Federation Press, 4th ed, 2016) 87.

<sup>282</sup> *CB Investments Pty Ltd v Colo Shire Council* (1980) 41 LGRA 270, 276.

<sup>283</sup> Peter Williams, ‘Development’ in Peter Williams (ed), *The Environmental Law Handbook* (Thomson Reuters, 6<sup>th</sup> ed, 2016) 167.

<sup>284</sup> Jennifer Manefield, ‘A question of fact and degree: The impact of the doctrine of ancillary use on place-based planning’ (2006) 11 *LGLJ* 135, 136.

<sup>285</sup> See Chris Grainger, ‘The Doctrine of Ancillary Use’ (1993) 10 *EPLJ* 267, 268; Jennifer Manefield, ‘A question of fact and degree: The impact of the doctrine of ancillary use on place-based planning’ (2006) 11 *LGLJ* 135; *Doyle v Newcastle City Council* (1990) 71 LGRA 55; *Foodbarn Pty Ltd v Solicitor-General* (1979) 32 LGRA 157; *Lizzio v Ryde Municipal Council* (1983) 155 CLR 211; *Ku-ring-gai Municipal Council v*

other words, the subordinate purpose “can be disregarded in deciding the status of the development”.<sup>286</sup> Whether or not one purpose of the development is subservient to another purpose “is a question of fact and degree”<sup>287</sup> and is “not capable of being reduced to a mathematical formula”.<sup>288</sup> If a purpose of the development is ancillary to another purpose, it may still be an independent purpose that is not subordinate to or dependent on the other purpose.<sup>289</sup>

A homeowner who installs a small solar pv system usually does so to generate electricity for self-consumption. Depending on the size and efficiency of the solar pv system installed, the homeowner may produce sufficient electricity not only to meet their own needs but also a surplus to feed back into the grid. Whether the generation and sale of electricity involved are sufficient to amount to a use for the purpose of solar energy system will depend on the nature, extent and other features of the generation and sale of electricity involved. But even if it could amount to a use for that purpose, it might be properly seen to be “subordinate and incidental”<sup>290</sup> to the dominant purpose of dwelling house. If so, the dominant purpose of dwelling house will be the purpose for which the use is characterised.<sup>291</sup> As Meagher JA said, “When a resident uses his land to park his motor car at his house, he is no doubt not conducting an independent use of car parking; when an employer installs at his factory a canteen for his workers, no doubt he is not conducting an independent use of running a restaurant”.<sup>292</sup>

The possible consequence of the above analysis is that the ISEPP clauses, that enable “development for the purpose of a solar energy system” to be exempt or complying development, may not apply to the installation of many small scale solar pv systems on residential, rural, commercial and industrial zoned land. Moreover, it means that the

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*Geoffrey Twibill & Associates* (1979) 39 LGRA 154; *Baulkham Hills Shire Council v O'Donnell* (1990) 69 LGRA 404; *Macquarie International Health Clinic Pty Ltd v University of Sydney* (1998) 98 LGERA 218.

<sup>286</sup> Rosemary Lyster et al, *Environmental & Planning Law in New South Wales* (Federation Press, 4th ed, 2016) 88 citing *Warringah Shire Council v Raffles* (1978) 38 LGRA 306.

<sup>287</sup> *Lizzio v Ryde Municipal Council* (1983) 155 CLR 211, 217.

<sup>288</sup> *Macquarie International Health Clinic Pty Ltd v University of Sydney* (1998) 98 LGERA 218, 223.

<sup>289</sup> *Baulkham Hills Shire Council v O'Donnell* (1990) 69 LGRA 404, 409; *Macquarie International Health Clinic Pty Ltd v University of Sydney* (1998) 98 LGERA 218, 224.

<sup>290</sup> *Wym v Sutherland Shire Council* (1990) 69 LGRA 322, 332.

<sup>291</sup> Jennifer Manefield, ‘A question of fact and degree: The impact of the doctrine of ancillary use on place-based planning’ (2006) 11 *LGLJ* 135, 135-136.

<sup>292</sup> *Baulkham Hills Shire Council v O'Donnell* (1990) 69 LGRA 404, 409-410.



apparently prevailing view that most small scale solar pv system development is exempt development in NSW may prove problematic. In fact, this prevailing view appears to be that accepted by the NSW Government in its “interactive building models” webpage, which guides proponents on the specific exempt development and complying development requirements for individual properties.<sup>293</sup> In its guidance on what is required for a solar energy system proposal to be exempt or complying development, no reference is made to the purpose of the development.<sup>294</sup> Therefore, it is unlikely that proponents or installers will consider the purpose of their solar pv system development when assessing whether their proposal is exempt or complying development.

It is unnecessary to more fully examine and analyse the implications of the drafting of ISEPP to regulate solar pv development based on the purpose of the development rather than, as with the ECD SEPP and South Australian law, simply specifying the installation of a solar pv system as exempt or complying development (or defining development to not include such activity) if it satisfies particular predetermined development standards. Suffice to say, this form of drafting potentially poses significant unnecessary complications and creates doubt as to whether the regime is well equipped to facilitate the efficient installation of solar pv systems in the future.

#### *D Solar PV Systems and Heritage*

As is self-evident from the relevant ISEPP predetermined development standards, the installation of solar pv systems can have a number of potential adverse impacts that must be effectively managed. For instance, the ISEPP is designed to prevent the potential adverse impacts caused by reflected sunlight from solar pv systems by excluding systems involving mirrors or lenses which reflect or concentrate sunlight from being exempt or complying

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<sup>293</sup> See Department of Planning and Environment (NSW), *Residential Model*, Interactive Buildings <<http://interactivebuildings.planning.nsw.gov.au/planning-residential>>.

<sup>294</sup> Search ‘solar energy system’ in, Department of Planning and Environment (NSW), *Residential Model*, Interactive Buildings <<http://interactivebuildings.planning.nsw.gov.au/planning-residential>>.

development.<sup>295</sup> Similarly, the ISEPP aims to mitigate the potential safety hazards of shoddily installed systems by requiring that solar pv systems are installed according to the manufacturer's instructions.<sup>296</sup>

Yet, of the various potential adverse impacts of solar pv system development, one impact which is likely to both generate significant community concern and prove complicated to effectively manage is the potential impact of such development on the aesthetic heritage values of heritage conservation areas. As noted by APVA in its study, “[h]eritage issues were by far the most significant PV related concern for City of Sydney, Woollahra and Randwick councils ... not just for the councillors but also for residents who opposed PV systems because of visual impact in heritage areas”.<sup>297</sup> Moreover, APVA asserts that the “main problems” with the NSW regime “were all related to heritage issues”.<sup>298</sup>

Solar pv systems have the potential to diminish the aesthetic values of heritage areas because “many of these systems alter views of the structure and roofline” of heritage listed buildings and buildings in heritage conservation areas.<sup>299</sup> The case of *Leitinger v Melbourne City Council* [2015] VCAT 1442 (11 September 2015) illustrates in more detail the potential adverse consequences of solar pv system development on heritage items. In this case it was held, at [16], that:

... [t]he solar energy facility is prominent in views of the subject building and the broader streetscape. It almost completely covers the front of the street-facing roof slope and is an evident departure from the heritage elements which characterise the built form in this locality. It detracts from the area's heritage character ... They stand as clearly identifiable modern additions to the heritage building and are unlikely to be likened to slate. Due to their siting, size and

<sup>295</sup> ISEPP, cll 37(2)(e)(iv) and 39(3)(d).

<sup>296</sup> ISEPP, cll 37(2)(c)(i) and 39(3)(b).

<sup>297</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 25.

<sup>298</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 22.

<sup>299</sup> Ellis Judson, Usha Iyer-Raniga and Ralph Horne, ‘Greening heritage housing: understanding homeowners’ renovation practices in Australia’ (2014) 29 *Journal of Housing and the Built Environment* 61, 67-68.

appearance, I agree with the Council that the panels draw attention away from the contributory elements and features of the dwelling such as the verandah decoration, verandah roof, parapet and wing walls.



**The solar pv system at issue in *Leitinger v Melbourne City Council*.<sup>300</sup>**

The impact of solar pv system development on the aesthetic values of heritage areas may ostensibly appear to be a fringe issue that presents only a minor obstacle to the transition of Australia from a nation of electricity consumers to “prosumers”.<sup>301</sup> Any such assumption is likely to be misleading. In many local government areas, particularly in inner city and wealthy municipalities, a considerable proportion of buildings are located within a heritage conservation area or are heritage listed.<sup>302</sup> The focus on heritage issues in the APVA report supports the fact that heritage areas may be an (increasingly) attractive ‘untapped’ market. For instance, research by Judson, Iyer-Raniga and Horne has demonstrated that “retrofitting ... solar photovoltaics are popular among home-owners” in heritage areas.<sup>303</sup> Indeed, “[d]uring the interviews home-owners were enthusiastic about their acquisitions and

<sup>300</sup> Kirsten Robb, ‘Heritage overlay forces Parkville man to pull down solar panels’ *The Age – Domain* (online), 24 September 2015 <<http://www.domain.com.au/news/heritage-overlay-forces-parkville-man-to-pull-down-solar-panels-20150924-gju3ew/>>.

<sup>301</sup> REN21, *Renewables 2015 – Global Status Report* (REN21, 2015) 31.

<sup>302</sup> See, eg, Tristan Orgill, ‘Secrets of local heritage places: An assessment of the integrity of the NSW ‘heritage conservation area’ legal regime’ (2016) 21 *LGLJ* 3, 7.

<sup>303</sup> Ellis Judson, Usha Iyer-Raniga and Ralph Horne, ‘Greening heritage housing: understanding homeowners’ renovation practices in Australia’ (2014) 29 *Journal of Housing and the Built Environment* 61, 67.

technologies to enhance efficiency, particularly ... solar installations” – both for economic and environmental reasons.<sup>304</sup> It should also be borne in mind that whilst this may not yet be a hot-button issue, it may become one as the economic attractiveness of solar development increases beyond 2020. Indeed, more broadly, as both the proportion of buildings with solar pv systems and the scale of these systems on buildings increase, the aesthetic related issues of solar pv systems are likely to become an ever thornier issue for the planning law regime to manage. Hence, it is important to consider whether the regime is equipped to adequately manage the issue of the potential adverse impact of solar pv system development on heritage items and heritage conservation areas.

The relevant clauses of the ISEPP prevent development for the purpose of a solar energy system from being complying development if it is proposed for land within a heritage conservation area.<sup>305</sup> In contrast, such development in a heritage conservation area is not precluded from being exempt development.<sup>306</sup> This difference is likely to be because the solar pv systems assessed as complying development will normally be larger and, therefore, more prominent than that which will be exempt development.<sup>307</sup> Yet, for a solar pv system to constitute exempt development in a heritage conservation area two criteria must be satisfied.

First, the proposed system must not be attached to a wall or a roof that faces a primary road (or, if the system is ground-mounted, must not be visible from any road).<sup>308</sup> Second, the solar pv system must not, if it is likely to affect a heritage item or a heritage conservation area, involve more than minimal impact on the heritage significance of a listed heritage item or heritage conservation area.<sup>309</sup> The rationale for “streamlining [the] assessment”<sup>310</sup> of solar pv system development that meets these two criteria, that is to say not assessing such proposed development, is presumably that if the development will not be publicly visible, then it will generally not have unacceptable impacts on the aesthetic values of a heritage area. Although

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<sup>304</sup> Ellis Judson, Usha Iyer-Raniga and Ralph Horne, ‘Greening heritage housing: understanding homeowners’ renovation practices in Australia’ (2014) 29 *Journal of Housing and the Built Environment* 61, 71.

<sup>305</sup> ISEPP, cl 37(2)(b).

<sup>306</sup> ISEPP, cll 39(3)(e)(iv) and (f)(iv).

<sup>307</sup> Compare, eg, ISEPP, cl 39(3)(f)(vi) and cl 37(2)(f).

<sup>308</sup> ISEPP, cll 39(3)(f)(iv) and (3)(e)(iv).

<sup>309</sup> ISEPP, cll 39(3)(a) and 20(2)(e).

<sup>310</sup> Rosemary Lyster et al, *Environmental & Planning Law in New South Wales* (Federation Press, 4th ed, 2016) 71.

not necessarily unreasonable, it should be noted that this is a contestable assumption. From a heritage scholar's perspective, a heritage item and/or heritage conservation area can still be diminished by the installation of a solar pv system even if this system is not readily visible from the public domain. If protected heritage was only protected based on what can be seen by the public, the protection of interior features of heritage significance in private buildings could not be justified.<sup>311</sup>

The second subjective criterion, in a list of objective predetermined development standards, is arguably more problematic. How is a proponent of a solar pv development able to determine whether or not their intended installation of a solar pv system is likely to affect a heritage conservation area and, if so, whether the impact is sufficiently minimal? This is complex question on which a heritage scholar may come to a very different conclusion to a layperson.<sup>312</sup> In fact, if this requirement was known to a proponent, it is not unlikely that he or she would lodge a development application (or simply not proceed) to ensure that they did not come to the wrong conclusion in this respect. Yet, problematically, the Government's "interactive building models" webpage, which many may rely on to determine whether "planning and building approval is required" for their proposed solar pv system, does not list the second criterion as a requirement.<sup>313</sup> On the information provided by this tool, solar pv system development in a heritage conservation area will be exempt development providing that it satisfies the first criterion.<sup>314</sup>

If the proposed installation of a solar pv system does not constitute exempt development under the ISEPP, the proponent of the installation of a solar pv system in a heritage conservation area will need to obtain development consent from the relevant consent authority. As has already been noted, this requirement appears to be perceived by the solar pv industry to be currently indistinguishable from prohibiting the development. Perhaps for this reason, the greater liability of a proponent of a solar pv system living on land within a

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<sup>311</sup> See, eg, *Council of the City of Sydney v Adams* [2015] NSWLEC 206.

<sup>312</sup> See Tristan Orgill, 'Secrets of local heritage places: An assessment of the integrity of the NSW 'heritage conservation area' legal regime' (2016) 21 *LGLJ* 3, 13.

<sup>313</sup> Search 'solar energy system' in, Department of Planning and Environment (NSW), *Residential Model, Interactive Buildings* <<http://interactivebuildings.planning.nsw.gov.au/planning-residential>>.

<sup>314</sup> Search 'solar energy system' in, Department of Planning and Environment (NSW), *Residential Model, Interactive Buildings* <<http://interactivebuildings.planning.nsw.gov.au/planning-residential>>.

heritage conservation area to be required to lodge a development application for assessment of the development on its merits has been questioned.<sup>315</sup> The requirement for publicly visible solar pv systems to be assessed by a consent authority is seen by some as unnecessarily restricting the growth of the small scale pv market. Two legislative reforms, both arguably premised on the conviction that the regime does not strike an “appropriate balance between ... protective measures and renewable energy measures”,<sup>316</sup> have been proposed to remedy this.

The first proposed reform is that the regime should substitute the current “black and white” approach for an “aesthetically based approach”.<sup>317</sup> That is to say that, if a proponent of solar development can demonstrate that the proposed system is sympathetic to the heritage conservation area (e.g. amorphous pv tiles, transparent glass pv, solar slate tiles), the development should proceed. This proposal is difficult to engage with because it appears to propose something which already exists. If the installation of a solar pv system in a heritage conservation area does not constitute exempt development under the ISEPP, it can still proceed if the relevant consent authority considers that the development is acceptable against the standard EPA Act merits criteria,<sup>318</sup> which includes the consideration of aesthetic impacts.<sup>319</sup> If the argument is that aesthetic considerations could be incorporated into the code for complying or exempt development, this should be dismissed as inconsistent with the nature of code based development. As the APVA acknowledges, “[t]he obvious problem with this sort of approach is that it is subjective”.<sup>320</sup> Perhaps more importantly, such a reform would likely unacceptably threaten aesthetic values of heritage significance (a certifier or a layperson is unlikely to be well placed to assess the impact of a solar pv development on aesthetic values of heritage significance).

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<sup>315</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 6 and 25.

<sup>316</sup> Sanya Carleyolsen, ‘Tangled in the Wires: An Assessment of the Existing U.S. Renewable Energy Legal Framework’ (2006) 46 *Natural Resources Journal* 759, 786.

<sup>317</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 25-26.

<sup>318</sup> EPA Act, s 79C.

<sup>319</sup> EPA Act, s 79C(1)(b).

<sup>320</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 26.

A second proposed reform is that publicly visible solar pv systems in heritage conservation areas should be approved, or possibly classified as exempt or complying development, if they conform to guidelines listing aesthetically acceptable solar pv systems for particular heritage conservation areas.<sup>321</sup> For similar reasons to those expressed immediately above, the inherent complexity involved in adequately conserving the distinct heritage value of particular heritage items or heritage conservation areas - and balancing these values with other considerations - makes it unlikely that a standardised list of aesthetically acceptable solar pv systems would be capable of acceptably managing the potential adverse aesthetic impacts of such development. The proper conservation of heritage conservation areas arguably requires that publicly visible solar pv system developments are considered on their merits by an entity that is disinterested in the outcome.<sup>322</sup> Of course, this should not mean that consent authorities unnecessarily refuse sensible and appropriate development in heritage conservation areas. As was canvassed in the previous section, such a position would be contrary to the principle of good governance.



**A solar pv system on Selkirk Parish Church.**<sup>323</sup>

<sup>321</sup> See Muriel Watt and Rob Passey, 'Best Practice Guidelines for Local Government Approval of Photovoltaic Installations' (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 26.

<sup>322</sup> See, eg, *Leitinger v Melbourne City Council* [2015] VCAT 1442.

<sup>323</sup> 'Solar Panels on Selkirk Parish Church, Scottish Borders' - Michael Northcott, 'Caring for the future through ancestral time' on *Caring for the Future: Thinking Forward through the Past* (18 November 2014) <<http://careforthefuture.exeter.ac.uk/blog/page/2/>>.

*E Solar Access*

While not a focus of this paper, it is important to note a separate but interrelated issue that the regime must manage effectively to facilitate the expansion of the small scale solar pv market. Namely, the access of buildings and land to the sun (this is known as “solar access” or “solar access rights”).<sup>324</sup> If planning law regimes do not regulate solar access, many people who would like to install a solar pv system may not do so because they cannot “be assured that their investment will not be wasted as a result of shading caused by the activities of the owners of neighbouring properties”.<sup>325</sup> A person or business will not invest in a solar pv system if there is a significant possibility that it will be rendered useless due to future overshadowing by proximate development. Thus, “the lack of [solar access] rights is a significant deterrent to investment”.<sup>326</sup> While it is not clear how significant an issue solar access is for the development of the solar pv market in NSW, there is evidence that it is an issue.<sup>327</sup> For instance, the City of Sydney, Woollahra and Randwick City councils all reported to APVA that “solar access was a very difficult issue”.<sup>328</sup>

Since the Law Reform Committee of South Australia issued a detailed report on solar access in 1978,<sup>329</sup> some relevant academic literature has developed.<sup>330</sup> Despite this, according to Bradbrook,

... there have been relatively few new developments in this area of the law and no comprehensive reform of the relevant law in any Australian State or

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<sup>324</sup> Adrian Bradbrook, “Solar access law: 30 years on” (2010) 27 *EPLJ* 5; Anna Kapnoullas, “The ideal model for solar access rights” (2011) 28 *EPLJ* 416.

<sup>325</sup> Adrian Bradbrook, “Solar access law: 30 years on” (2010) 27 *EPLJ* 5, 5.

<sup>326</sup> United Nations Sustainable Energy Organisation for Renewable Energy and Energy Efficiency, *Energy Law and Sustainable Development* <<http://www.uniseo.org/legal.htm>> cited in Anna Kapnoullas, “The ideal model for solar access rights” (2011) 28 *EPLJ* 416, 417.

<sup>327</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 4-5 and 24-25.

<sup>328</sup> Muriel Watt and Rob Passey, ‘Best Practice Guidelines for Local Government Approval of Photovoltaic Installations’ (Report for the low emissions technology and abatement – renewables program, APVA, July 2009) 24.

<sup>329</sup> Law Reform Committee of South Australia, *Solar energy and the law in South Australia* (LRCSA, 1978).

<sup>330</sup> See, eg, Rosemary Lyster and Adrian Bradbrook, *Energy Law and the Environment* (CUP, 2008) 19.



Territory. The only significant change in modern times is that solar access has now been declared by State legislation as a relevant factor in planning and development decisions, but it has been left to the individual local planning authorities to determine its significance in each case in light of the surrounding circumstances.<sup>331</sup>

One such development under NSW law is that the LEC has established two relevant legal planning principle to guide councils in the assessment of solar access issues relating to development which needs development consent.<sup>332</sup> For example, in assessing development applications for residential subdivisions, the planning principle encourages consent authorities to “strive for a future residential area in which the great majority of dwellings can achieve good solar access”.<sup>333</sup> Another example of a relevant ‘rule’ from one of these planning principles is that “[o]vershadowing arising out of poor design is not acceptable”.<sup>334</sup> These principles have been adopted by some councils through local environmental planning instruments.<sup>335</sup>

However, these principles have no application to complying and exempt development.<sup>336</sup> Code development does not provide for the consideration - let alone management and regulation - of solar access. To be sure, some development standards may result in a de facto level of solar access protection, such as minimum setback provisions. Yet, this is not comparable with the deliberate consideration of solar access issues that would occur in the merits based assessment of a development application. Thus, given the increasing prevalence of code based development, it is certainly arguable that the NSW legal regime is unlikely to be well equipped to effectively managing solar access issues. Therefore, this deficiency may undesirably restrict the development of small scale solar pv development.

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<sup>331</sup> Adrian Bradbrook, “Solar access law: 30 years on” (2010) 27 *EPLJ* 5, 6.

<sup>332</sup> *The Benevolent Society v Waverley Council* [2010] NSWLEC 1082, [133]-[144]; *Wallis & Moore Pty Ltd v Sutherland Shire Council* [2006] NSWLEC 713, [74]; Land and Environment Court of NSW, *Planning principles ‘Access to sunlight’ and ‘Solar access for allotments in residential subdivisions’* (14 December 2015) LEC <[http://www.lec.justice.nsw.gov.au/Pages/practice\\_procedure/principles/planning\\_principles.aspx](http://www.lec.justice.nsw.gov.au/Pages/practice_procedure/principles/planning_principles.aspx)>.

<sup>333</sup> *Wallis & Moore Pty Ltd v Sutherland Shire Council* [2006] NSWLEC 713, [74].

<sup>334</sup> *The Benevolent Society v Waverley Council* [2010] NSWLEC 1082, [144].

<sup>335</sup> See, eg, *Mosman Residential Development Control Plan 2012* (NSW), cl 5.8 (p. 74).

<sup>336</sup> See ECD SEPP.

## V THE LAW AND ENERGY EFFICIENCY

*A The Future Role of Energy Efficiency Measures*

Public awareness of, and engagement with, the policy issues relating to climate change has led to heightened interest in the regulation of fossil fuel and renewable energy related development. Similarly, the literature examining the role of legal regimes in facilitating the economic transition from fossil fuel energy dependency to a greater reliance on renewable energy, and in promoting ecologically sustainable development more generally, has become substantial. In contrast, the mosaic of policies and legislation designed to improve energy efficiency has failed to pique a similar level of public interest and has been the subject of less critical examination and analysis.<sup>337</sup> This is despite the widespread recognition that the implementation of effective energy efficiency measures will be essential for Australia to effectively reduce its greenhouse gas emissions ('GGEs') profile and become an ecologically sustainable society. Indeed, as has been cited above, as much as half of the required global GGEs reductions may need to be found in energy productivity improvements.

As has been noted, the final energy consumption of residential and commercial buildings in Australia equates to approximately 17 per cent of total energy consumption,<sup>338</sup> which "accounts for approximately 20 per cent of Australia's greenhouse gas emissions – split equally between commercial and residential buildings".<sup>339</sup> However, this figure of 20 per cent does not account for the vast amount of embodied energy which is used throughout the entire life-cycle of buildings.<sup>340</sup> Regardless, the contribution of residential and commercial buildings to Australia's overall GGEs footprint means that "[t]he need to reduce the

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<sup>337</sup> Although see, eg, Neil Gunningham and Megan Bowman, 'Energy regulation for a low carbon economy: Obstacles and opportunities' (2016) 33 *EPLJ* 118.

<sup>338</sup> Bureau of Resources and Energy Economics, *Australian Energy Projections to 2049-50* (Bureau of Resources and Energy Economics, 2014) 40.

<sup>339</sup> Council of Australian Governments, *National Strategy on Energy Efficiency* (Commonwealth of Australia, July 2009) <[http://www.federalfinancialrelations.gov.au/content/npa/environment/energy\\_efficiency/national\\_partnership.pdf](http://www.federalfinancialrelations.gov.au/content/npa/environment/energy_efficiency/national_partnership.pdf)> 22.

<sup>340</sup> See, eg, Andre Stephan, Robert Crawford and Kristel de Myttenaere, 'A Comprehensive Assessment of the Life Cycle Energy Demand of Passive Houses' (2013) 112 *Applied Energy* 23.

environmental impacts of buildings is undisputed”.<sup>341</sup> All Australian governments have recognised that the successful transition to a sustainable economy requires an effective and sustained national energy efficiency program. This is reflected in the *National Partnership Agreement on Energy Efficiency* (the ‘Agreement’),<sup>342</sup> the *National Strategy on Energy Efficiency* (the ‘Strategy’),<sup>343</sup> the *National Energy Productivity Plan 2015-2030* (the ‘Plan’)<sup>344</sup> and, at the State level, the *NSW Energy Efficiency Action Plan*.<sup>345</sup> In particular, energy productivity improvements are expected by the Commonwealth Government to “contribute more than a quarter of the savings required to meet Australia’s 2030 greenhouse gas emissions reduction target” (that is, more than a quarter of the 26-28 per cent GGEs reduction target expected to be achieved by 2030).<sup>346</sup> Theoretically, energy efficiency measures have the potential to contribute significantly more than this (expected) seven per cent reduction in GGEs by 2030. For example, ClimateWorks Australia and the Australian Sustainable Built Environment Council (‘ASBEC’) have recently estimated that “cost-effective energy efficiency actions across the [built environment] sector could deliver a 23 per cent reduction in emissions by 2030, and 55 per cent by 2050”.<sup>347</sup>

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<sup>341</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 486, citing Intergovernmental Panel on Climate Change (IPCC), ‘Ch 6 – Residential and Commercial Buildings’ in *Climate Change 2007: Mitigation of Climate Change* (IPCC Fourth Assessment Report, 2007) 39.

<sup>342</sup> *National Partnership Agreement on Energy Efficiency* (Council of Australian Governments Intergovernmental Agreement, 2 July 2009) <[http://www.federalfinancialrelations.gov.au/content/npa/environment/energy\\_efficiency/national\\_partnership.pdf](http://www.federalfinancialrelations.gov.au/content/npa/environment/energy_efficiency/national_partnership.pdf)>.

<sup>343</sup> Council of Australian Governments, *National Strategy on Energy Efficiency* (Commonwealth of Australia, July 2009) <[http://www.federalfinancialrelations.gov.au/content/npa/environment/energy\\_efficiency/national\\_partnership.pdf](http://www.federalfinancialrelations.gov.au/content/npa/environment/energy_efficiency/national_partnership.pdf)>.

<sup>344</sup> Commonwealth Government and COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>>.

<sup>345</sup> NSW Government, *NSW Energy Efficiency Action Plan* (Office of Environment and Heritage, August 2013) available at <<http://www.environment.nsw.gov.au/resources/energyefficiencyindustry/130588-energy-efficiency-action-plan.pdf>>.

<sup>346</sup> Commonwealth Government and COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) available at <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>> 11.

<sup>347</sup> Australian Sustainable Built Environment Council and ClimateWorks Australia, *Low Carbon, High Performance: How buildings can make a major contribution to Australia’s emissions and productivity goals* (ASBEC, 2016) available at <[http://climateworks.com.au/sites/default/files/documents/publications/summary\\_report\\_-\\_low\\_carbon\\_high\\_performance\\_20160511\\_1.pdf](http://climateworks.com.au/sites/default/files/documents/publications/summary_report_-_low_carbon_high_performance_20160511_1.pdf)> 8.

In addition to the environmental benefits of improving the energy efficiency of buildings, energy efficiency reform also has the potential to reap considerable economic benefits. Indeed, Australian industry has estimated that the realisation of energy savings could generate “annual net financial benefits of \$1.2 billion”.<sup>348</sup> Hence, the plan asserts that “[e]nergy productivity is a smart way to tackle climate change because it encourages economic growth while reducing emissions”.<sup>349</sup> Considerably more ambitiously, ClimateWorks Australia and ASBEC estimate that their identified energy efficiency measures could reap benefits of “\$20 billion in financial savings by 2030”.<sup>350</sup> Regardless of the precise predicted economic benefits of energy efficiency reform, there appears to be significant support for Daly and Cooper’s claim that “improving the energy efficiency of existing buildings is one of the quickest, easiest and cheapest ways to cut greenhouse emissions”.<sup>351</sup>

The significant and cost-effective<sup>352</sup> “energy productivity savings” that can realistically be achieved by making existing and new residential and commercial buildings more energy efficient may partly be explained because Australia is starting from a low base. This year, the American Council for an Energy-Efficient Economy ranked Australia as the 16<sup>th</sup> most energy efficient country out of the 23 countries measured, which positioned Australia “just slightly better than Russia and Indonesia”.<sup>353</sup> In particular, the *Strategy* recognises that Australian

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<sup>348</sup> Commonwealth Government and COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) available at <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>> 10.

<sup>349</sup> Commonwealth Government and Council of Australian Governments Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) available at <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>> 11.

<sup>350</sup> Australian Sustainable Built Environment Council and ClimateWorks Australia, *Low Carbon, High Performance: How buildings can make a major contribution to Australia’s emissions and productivity goals* (ASBEC, 2016) available at <[http://climateworks.com.au/sites/default/files/documents/publications/summary\\_report\\_-\\_low\\_carbon\\_high\\_performance\\_20160511\\_1.pdf](http://climateworks.com.au/sites/default/files/documents/publications/summary_report_-_low_carbon_high_performance_20160511_1.pdf)> 2.

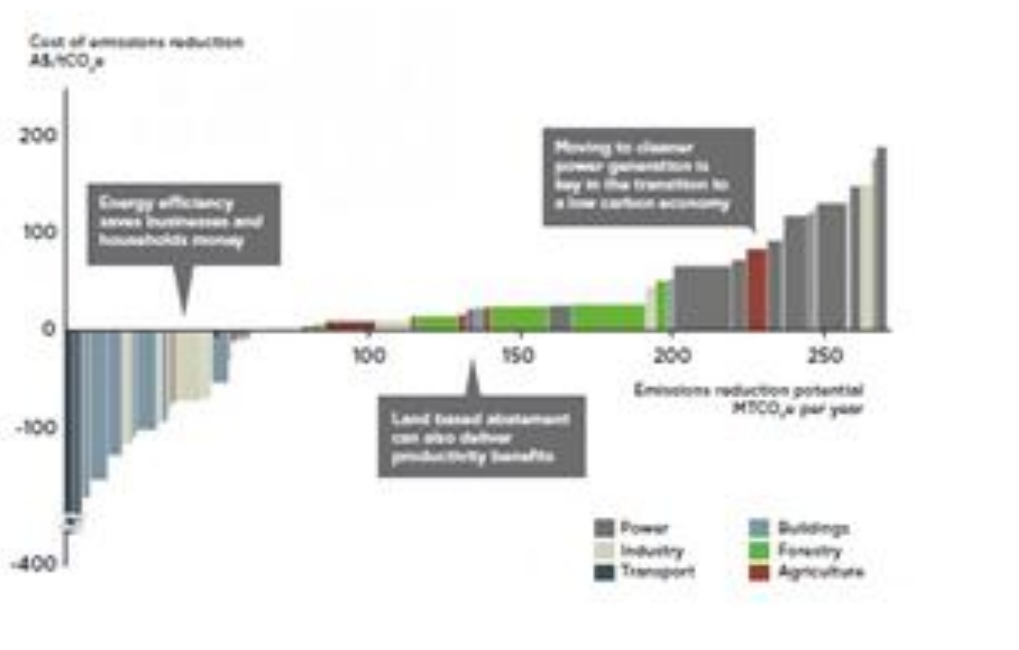
<sup>351</sup> Daniel Daly and Paul Cooper, ‘Green building scheme review adds yet more policy uncertainty’ *The Conversation* (13 November 2014) <<http://theconversation.com/green-building-scheme-review-adds-yet-more-policy-uncertainty-32748>>.

<sup>352</sup> See, eg, ClimateWorks Australia, *Low Carbon Growth Plan for Australia* (ClimateWorks Australia, 2010) available at <[http://www.climateworksaustralia.org/sites/default/files/documents/publications/climateworks\\_lcgpa\\_australia\\_full\\_report\\_mar2010.pdf](http://www.climateworksaustralia.org/sites/default/files/documents/publications/climateworks_lcgpa_australia_full_report_mar2010.pdf)> 64-70.

<sup>353</sup> ACEEE, *The International Energy Efficiency Scorecard 2016* (2016) ACEEE <<http://aceee.org/portal/national-policy/international-scorecard>>; ACEEE, *Australia* (2016) ACEEE <<http://aceee.org/sites/default/files/pdf/country/2016/australia.pdf>>.

“buildings have not been built with energy efficiency as a key concern”.<sup>354</sup> As of 2016, energy intensity has allegedly only “improved only 2 per cent across the commercial sector and 5 per cent in residential [buildings]”.<sup>355</sup> Consequently, some have expressed the view that “Australia’s building energy performance falls a long way short of best practice”<sup>356</sup> and there is consensus across Australian governments that Australia is “lagging behind many countries, such as Japan, Germany and the United Kingdom”.<sup>357</sup>

**Figure 8: “The [Plan] targets lowest-cost emissions savings”<sup>358</sup>**



<sup>354</sup> Council of Australian Governments, *National Strategy on Energy Efficiency* (Commonwealth of Australia, July 2009) <[http://www.federalfinancialrelations.gov.au/content/npa/environment/energy\\_efficiency/national\\_partnership.pdf](http://www.federalfinancialrelations.gov.au/content/npa/environment/energy_efficiency/national_partnership.pdf)> 22.

<sup>355</sup> Australian Sustainable Built Environment Council and ClimateWorks Australia, *Low Carbon, High Performance: How buildings can make a major contribution to Australia’s emissions and productivity goals* (ASBEC, 2016) available at <[http://climateworks.com.au/sites/default/files/documents/publications/summary\\_report\\_-\\_low\\_carbon\\_high\\_performance\\_20160511\\_1.pdf](http://climateworks.com.au/sites/default/files/documents/publications/summary_report_-_low_carbon_high_performance_20160511_1.pdf)> 2.

<sup>356</sup> pitt&sherry and Swinburne University of Technology, *National Energy Efficient Building Project: Final Report* (State of South Australia, 2014) viii.

<sup>357</sup> Commonwealth Government and COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) available at <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>> 10.

<sup>358</sup> Commonwealth Government and COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) available at <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>> 11.

The failure to implement effective energy productivity measures may make the Australian economy less internationally competitive and impose unnecessary cost of living pressure on Australians.<sup>359</sup> Specifically, it has been predicted that a five year delay in implementing energy efficiency reforms in the “buildings sector” “could lead to \$24 billion in wasted energy costs”.<sup>360</sup> This being said, poorly conceived and implemented energy efficiency programs can come at a high economic cost without delivering significant outcomes. For instance, on 14 April 2016, the UK National Audit Office published a report assessing a £240 million energy efficiency government finance program called “the Green Deal”. The conclusion of this report was that the program “has not generated additional energy savings because its design and implementation ... did not persuade people that energy-efficiency measures are worth paying for. The Green Deal has therefore not been value for money.”<sup>361</sup>

The strong rhetorical support of Australian governments for improving energy efficiency<sup>362</sup> matters little if it is not translated into policy and regulatory measures capable of so doing. As has been warned by commentators, the effective transition to energy efficient sustainable buildings “will require strong policy support”<sup>363</sup> and will need to be underpinned by “regulations [which] are progressively upgraded”.<sup>364</sup> To this end, the Agreement emphasises that, pursuant to the Strategy, a “nationally consistent [energy efficiency] regulatory framework” should be adopted which is “based on consistent performance standards” and

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<sup>359</sup> Commonwealth Government and COAG Energy Council, *National Energy Productivity Plan 2015-2030* (Commonwealth of Australia, 2015) available at <<https://scer.govspace.gov.au/files/2015/12/National-Energy-Productivity-Plan-release-version-FINAL.pdf>> 10.

<sup>360</sup> Australian Sustainable Built Environment Council and ClimateWorks Australia, *Low Carbon, High Performance: How buildings can make a major contribution to Australia’s emissions and productivity goals* (ASBEC, 2016) available at <[http://climateworks.com.au/sites/default/files/documents/publications/summary\\_report\\_-\\_low\\_carbon\\_high\\_performance\\_20160511\\_1.pdf](http://climateworks.com.au/sites/default/files/documents/publications/summary_report_-_low_carbon_high_performance_20160511_1.pdf)> 3.

<sup>361</sup> National Audit Office (UK), *Green Deal and Energy Company Obligation* (National Audit Office, 2016) 12 [26].

<sup>362</sup> See, eg, *National Partnership Agreement on Energy Efficiency* (Council of Australian Governments Intergovernmental Agreement, 2 July 2009) <[http://www.federalfinancialrelations.gov.au/content/npa/environment/energy\\_efficiency/national\\_partnership.pdf](http://www.federalfinancialrelations.gov.au/content/npa/environment/energy_efficiency/national_partnership.pdf)> 6.

<sup>363</sup> Australian Sustainable Built Environment Council and ClimateWorks Australia, *Low Carbon, High Performance: How buildings can make a major contribution to Australia’s emissions and productivity goals* (ASBEC, 2016) available at <[http://climateworks.com.au/sites/default/files/documents/publications/summary\\_report\\_-\\_low\\_carbon\\_high\\_performance\\_20160511\\_1.pdf](http://climateworks.com.au/sites/default/files/documents/publications/summary_report_-_low_carbon_high_performance_20160511_1.pdf)> 2.

<sup>364</sup> Hugh Saddler, *Power down II: The continuing decline in Australia’s electricity demand* (The Australia Institute, 2015) 4.

applies a “national building code and standards”.<sup>365</sup> Australian governments have agreed to achieve this by progressively strengthening the energy efficiency standards in the National Building Code of Australia and by establishing mandatory energy efficiency disclosure requirements for residential and commercial buildings. At the State level, the NSW Government has signalled its intention to save 16,000 GWh of energy by 2020 by, amongst other measures, “[i]mproving minimum energy efficiency standards for appliances and buildings”.<sup>366</sup>

In contrast to the aspirational nature of many of the measures outlined in various government energy efficiency plans and policy documents, the National Australian Environment Rating System (NABERS) program,<sup>367</sup> which is managed by the NSW Government, is a prominent example of a measure that is operational. NABERS is a system which allows for the assessment and rating of the “energy performance of different types of buildings [including] offices, hotels, shopping centres and data centres”.<sup>368</sup> The purpose of NABERS is to create a ‘race to the top’ in the energy use performance of buildings by encouraging businesses and companies to discriminate against buildings with poor energy efficiency ratings. The Commercial Energy Efficiency Disclosure Scheme, which is given effect under the *Building Energy Efficiency Disclosure Scheme 2010* (Cth), requires that the NABERS energy rating of affected commercial offices with a floor space greater than 2000 sqm (1000 sqm from 1 July 2017)<sup>369</sup> be disclosed prior to offers being invited for their purchase or lease.<sup>370</sup>

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<sup>365</sup> *National Partnership Agreement on Energy Efficiency* (Council of Australian Governments Intergovernmental Agreement, 2 July 2009) <[http://www.federalfinancialrelations.gov.au/content/npa/environment/energy\\_efficiency/national\\_partnership.pdf](http://www.federalfinancialrelations.gov.au/content/npa/environment/energy_efficiency/national_partnership.pdf)>7 (Item 26).

<sup>366</sup> NSW Government, *NSW Energy Efficiency Action Plan* (Office of Environment and Heritage, 2013) <<http://www.environment.nsw.gov.au/resources/energyefficiencyindustry/130588-energy-efficiency-action-plan.pdf>> 5 and 8.

<sup>367</sup> See NSW Government, *NABERS*, NABERS <<https://nabers.gov.au/public/webpages/ContentStandard.aspx?module=0&template=3&include=homeIntro.htm>>.

<sup>368</sup> NSW Government, *NSW Energy Efficiency Action Plan* (Office of Environment and Heritage, 2013) <<http://www.environment.nsw.gov.au/resources/energyefficiencyindustry/130588-energy-efficiency-action-plan.pdf>> 7.

<sup>369</sup> See *Building Energy Efficiency Disclosure (Disclosure Affected Buildings) Determination 2016* (Cth) <<https://www.legislation.gov.au/Details/F2016L01148>> cl 6; Australian Government, *Changes to the Commercial Building Disclosure Program* (21 June 2016) Commercial Building Disclosure Program <<http://cbd.gov.au/news-events/changes-to-the-commercial-building-disclosure-program>>.

<sup>370</sup> *Building Energy Efficiency Disclosure Act 2010* (Cth) ss 10 and 11; *Building Energy Efficiency Disclosure (Disclosure Affected Buildings) Determination 2016* (Cth) <<https://www.legislation.gov.au/Details/F2016L01148>> cl 6.

It is beyond the scope of this paper to examine NABERS or the plethora of other regulatory measures which Australian governments have implemented, or intend to implement, to improve energy productivity. Rather, this section will critically examine a single NSW energy efficiency regulatory measure, implemented through the environmental planning law regime, as a case study that, it is hoped, illuminates the likely role for, and challenges facing, planning law regimes in facilitating the desired transition of Australian society towards an energy efficient future. The regulatory measure that will be examined is the Building Sustainability Index program ('BASIX').

## B BASIX

The overarching aim of BASIX, which commenced on 1 July 2004,<sup>371</sup> is to “encourage sustainable residential development”<sup>372</sup> by reducing the electricity, gas (and, therefore, GGEs profile) and mains-supplied potable water used in residential buildings.<sup>373</sup> Specifically, BASIX aims to reduce the GGEs and potable water consumption of most new detached and semi-detached residential buildings (classified as “BASIX affected developments”) by 40 per cent<sup>374</sup> compared to the average benchmarks for pre-BASIX development of 3,292 kilograms of carbon dioxide emissions per person per year and 90,340 litres of potable water per person per year.<sup>375</sup> BASIX “also sets minimum performance levels for the thermal comfort of the dwelling”.<sup>376</sup> In late 2013, the NSW Government proposed to increase the BASIX targets by approximately 10 per cent and improve the thermal comfort assessment method.<sup>377</sup> This was

<sup>371</sup> State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (NSW) cl 2.

<sup>372</sup> State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (NSW) cl 3(1).

<sup>373</sup> See *Environmental Planning and Assessment Regulation 2000* (NSW) cl 164A(5).

<sup>374</sup> This target applies to buildings in Zone 1 (Coastal zone). For interior areas of NSW, the target is either 35% or 25%; See, NSW Government, *Current BASIX Energy Targets: Map*, BASIX <[https://www.basix.nsw.gov.au/iframe/images/4050pdfs/Basix\\_Energy\\_Targets.pdf](https://www.basix.nsw.gov.au/iframe/images/4050pdfs/Basix_Energy_Targets.pdf)> 1.

<sup>375</sup> NSW Government, *Basix targets*, BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/basix-assessment/basix-targets.html>>.

<sup>376</sup> NSW Government, *Basix targets*, BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/basix-assessment/basix-targets.html>>.

<sup>377</sup> NSW Government, *BASIX Target Review*, BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/basix-target-review.html>>; NSW Government, *BASIX Target Review Overview*, BASIX <<https://www.basix.nsw.gov.au/iframe/images/4050pdfs/target-review-print.pdf>> 5.



predicted to “provide a net financial benefit to the NSW community of over \$511 million”.<sup>378</sup> After a process of public consultation, in which 81 per cent of those who stated their position supported the proposed strengthening of BASIX,<sup>379</sup> the amendments were abandoned.<sup>380</sup> This may have been due to the opposition to the proposed target increases by the members of industry organisations such as the Urban Taskforce and the Property Council of Australia.<sup>381</sup> Nevertheless, the NSW Government has maintained, since at least 2009, that “BASIX is one of the strongest sustainable planning measures to be undertaken in Australia”.<sup>382</sup>

In essence, BASIX operates by overlaying NSW planning legislation with energy efficiency, water efficiency and thermal comfort requirements for residential development. Importantly, parts of the energy efficiency standards in the *Building Code of Australia*, which would otherwise apply,<sup>383</sup> are varied for NSW to allow BASIX to regulate the energy efficiency requirements for most residential buildings.<sup>384</sup> Yet, the NSW Government has expressed its intention to keep BASIX aligned with the requirements of the *Building Code of Australia* in the past.<sup>385</sup> The framework of the BASIX scheme is largely contained within the *Environmental Planning and Assessment Regulation 2000* (NSW) (the ‘Regulation’).<sup>386</sup>

Under the Regulation, “BASIX affected development” - whether development requiring approval<sup>387</sup> or complying development<sup>388</sup> - must obtain a BASIX certificate and comply with

<sup>378</sup> NSW Government, *BASIX Target Review Overview*, BASIX

<<https://www.basix.nsw.gov.au/iframe/images/4050pdfs/target-review-print.pdf>> 5.

<sup>379</sup> NSW Government, *BASIX Target Review – Summary of Submissions and Feedback*, BASIX

<<https://www.basix.nsw.gov.au/iframe/target-review-submissions/target-review-summary-of-submissions-and-feedback.html>>.

<sup>380</sup> Environmental Defenders Office NSW, *Planning for Climate Change: How the NSW Planning System Can Better Tackle Greenhouse Gas Emissions* (EDO NSW 2016) 21.

<sup>381</sup> Urban Taskforce, Submission to the BASIX Targets Review, *BASIX Targets Review*, 17 February 2014; Property Council of Australia, Submission to the BASIX Targets Review, *BASIX Targets Review*, 18 February 2014. See also, eg, Meriton Property Services Pty Ltd, Submission to the BASIX Targets Review, *BASIX Targets Review*, 14 February 2014.

<sup>382</sup> NSW Government, *BASIX*, BASIX <<https://www.basix.nsw.gov.au/iframe/>>.

<sup>383</sup> *Environmental Planning and Assessment Regulation 2000* (NSW) cl 7(1), 98 and 136A; *Building Code of Australia 2016*; For more detail, see Australian Building Codes Board, *NCC Volume One – Energy Efficiency Provisions 2016 Handbook*.

<sup>384</sup> *Environmental Planning and Assessment Regulation 2000* (NSW) cl 7(2); NSW Government, *What classes of buildings need a BASIX certificate*, BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/basix-assessment/basix-certificates/what-classes-of-building-need-a-basix-certificate.html>>.

<sup>385</sup> NSW Government, *BASIX Target Review: Frequently Asked Questions* (December 2013) BASIX

<[http://www.basix.nsw.gov.au/iframe/images/4050pdfs/BASIX-Target-Review-GeneralQA\\_extension.pdf](http://www.basix.nsw.gov.au/iframe/images/4050pdfs/BASIX-Target-Review-GeneralQA_extension.pdf)> 1.

<sup>386</sup> State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (NSW) cl 3(1).

<sup>387</sup> cl 97A and 136D.

the commitments in such a certificate. The fulfilment of the BASIX commitments is a prescribed condition of a development consent or complying development certificate.<sup>389</sup> Under cl 3 of the Regulation, “BASIX affected development” means development that involves the erection of a building with more than one dwelling or the alteration, enlargement or extension of a building with construction costs over \$50,000. The required content of BASIX certificates includes: “a description of the proposed development”, “a detailed list of the commitments that the applicant has made ... in order to promote the sustainability of the development” and a “statement to the effect that the proposed development will meet the Government’s requirements for sustainability if the applicant’s commitments are fulfilled”.<sup>390</sup>

The regulatory process mandated by BASIX, as explained on the BASIX website, is relatively simple in its practical operation. Usually, on behalf of the proponent, a building professional will complete the required BASIX sustainability assessment via the online BASIX assessment tool.<sup>391</sup> This tool will assess the sustainability of the proposed development “against BASIX targets that are based on the NSW home benchmark average”.<sup>392</sup> BASIX uses proxies to assess the likely thermal comfort and the energy and water use of a dwelling: for the former, BASIX measures “the design, insulation, shading, glazing and floor area of proposed dwellings” (adjusted for the climatic zone), for the latter, BASIX measures “the building fabric, appliances and floor area”.<sup>393</sup>

In order to meet - or outperform - the required BASIX targets (usually a reduction of 40 per cent against the average pre-BASIX NSW benchmarks), BASIX advocates a number of design principles including: greater reliance on natural lighting, the installation of more efficient hot water systems (and other energy efficient appliances) and the use of central water and cooling/heating systems in multi-dwelling developments.<sup>394</sup> If the development

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<sup>388</sup> cl 136D.

<sup>389</sup> cl 97A(2) and 136D(2).

<sup>390</sup> cl 164A(4) and Dictionary, ‘BASIX certificate’.

<sup>391</sup> NSW Government, *BASIX certificates*, BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/basix-assessment/basix-certificates.html>>.

<sup>392</sup> NSW Government, *BASIX assessment*, BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/basix-assessment.html>>.

<sup>393</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 488.

<sup>394</sup> NSW Government, *Design principles*, BASIX <<https://www.basix.nsw.gov.au/iframe/basix-help-notes/energy/design-principles-energy.html>>.

meets the BASIX targets and the required fee is paid, a BASIX certificate will be issued. In certain circumstances, such as in the case of a proposed development subject to heritage protections, a proponent may be able to obtain an alternative form of assessment.<sup>395</sup> As aforementioned, the proponent will then be required to comply with the commitments set out in the BASIX certificate.

### *C Has BASIX been Effective?*

While by no means impossible,<sup>396</sup> the empirical assessment of regulatory energy efficiency building standards and other measures is notoriously problematic.<sup>397</sup> An example of the difficulty inherent in assessing these regulatory measures is illustrated in the debate concerning whether California's regulatory energy efficiency standards, a jurisdiction that is acknowledged to be at the forefront of energy efficiency regulation,<sup>398</sup> have been effective.

On the one hand, Levinson has argued (although recognising that such regulatory standards may have been effective) that it has not been proven that the "declining relative energy consumption" of California has been caused by energy efficiency regulations, as opposed to being the result of other phenomena "little to do with regulatory decisions".<sup>399</sup> In his own words: "[t]he poster-child for energy efficiency regulations is residential electricity. Many groups have made the correlation-proves-causation argument supporting California's efficiency regulations by ... noting that California's energy slowdown seems to roughly

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<sup>395</sup> *Environmental Planning and Assessment Regulation 2000* (NSW) cl 164A(1) and (2); NSW Government, 'Alternative assessments' <<https://www.basix.nsw.gov.au/iframe/about-basix/basix-assessment/alternative-assessments.html>>.

<sup>396</sup> See, eg, Meredith Fowlie, Michael Greenstone, Catherine Wolfram, 'Do Energy Efficiency Investments Deliver? Evidence from the Weatherization Assistance Program' (Working Paper No 21331, National Bureau of Economic Research, July 2015); Anin Aroonruengsawat, Maximilian Auffhammer, Alan Sanstad, 'The Impact of State Level Building Codes on Residential Electricity Consumption' (2012) 33(1) *The Energy Journal* 31; Grant Jacobsen and Matthew Kotchen, 'Are Building Codes Effective at Saving Energy? Evidence from Residential Billing Data in Florida' (2013) 95(1) *The Review of Economics and Statistics* 34.

<sup>397</sup> See, eg, Arik Levinson, 'California energy efficiency: Lessons for the rest of the world, or not?' (2014) 107 *Journal of Economic Behaviour & Organisation* 269; Matthew Kahn, Nils Kok and Peng Liu, 'Is California More Energy Efficient than the Rest of the Nation? Evidence from Commercial Real Estate' (Working Paper No 21912, National Bureau of Economic Research, January 2016).

<sup>398</sup> California is currently ranked as the second most energy efficient state in the United States by the American Council for an Energy Efficient Economy. See, ACEEE, 'The State Energy Efficiency Scorecard: 2015' <<http://aceee.org/state-policy/scorecard>>.

<sup>399</sup> Arik Levinson, 'California energy efficiency: Lessons for the rest of the world, or not?' (2014) 107 *Journal of Economic Behaviour & Organisation* 269, 270-271.

coincide with the initiation of those regulations.”<sup>400</sup> On the other hand, other commentators have rejected Levinson’s claim by asserting that “rigorous” empirical analysis exists proving “that energy codes have statistically demonstrated energy savings”.<sup>401</sup> However, despite these studies, it remains true that “surprisingly little is known about how energy codes affect residential energy consumption in practice”.<sup>402</sup> Jacobsen and Kotchen claim that this lack of practical knowledge is because most evaluations of energy efficiency regulatory standards are based on theoretical engineering simulations and models that have three key limitations: the models do not usually reflect the actual level of compliance with standards, the models do not account for “potential behavioural responses” to more energy efficient buildings (they assume that behaviour stays constant) and they are predicated on assumed, rather than measured, reductions in energy consumption.<sup>403</sup>

In this context, Levinson’s cautionary note about why the assessment of the effectiveness of energy efficiency building standards is problematic should be heeded:

... we cannot simply compare electricity consumption in energy-efficient and inefficient homes. People living in efficient homes may use more energy services because the cost is lower – the rebound effect. If air conditioning costs less because the walls are insulated, homeowners might leave their systems on while they go to work. And second, people who want to use more energy services may install energy efficiency features or buy more efficient homes – the selection effect. Together, the rebound and selection effects make the consequences of California’s policies difficult to assess empirically...<sup>404</sup>

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<sup>400</sup> Arik Levinson, ‘California energy efficiency: Lessons for the rest of the world, or not? (2014) 107 *Journal of Economic Behaviour & Organisation* 269, 288.

<sup>401</sup> David Goldstein, *How Much Energy Do Building Energy Codes Really Save?: How to Misuse Statistics* (3 March 2015) Natural Resources Defence Council Expert Blog <<https://www.nrdc.org/experts/david-b-goldstein/how-much-energy-do-building-energy-codes-really-save-how-misuse-statistics>>.

<sup>402</sup> Grant Jacobsen and Matthew Kotchen, ‘Are Building Codes Effective at Saving Energy? Evidence from Residential Billing Data in Florida’ (2013) 95(1) *The Review of Economics and Statistics* 34, 48.

<sup>403</sup> Grant Jacobsen and Matthew Kotchen, ‘Are Building Codes Effective at Saving Energy? Evidence from Residential Billing Data in Florida’ (2013) 95(1) *The Review of Economics and Statistics* 34, 34.

<sup>404</sup> Arik Levinson, ‘California energy efficiency: Lessons for the rest of the world, or not? (2014) 107 *Journal of Economic Behaviour & Organisation* 269, 288.

Moreover, Levinson warns that economists (and others) should generally be sceptical of energy efficiency regulatory standards because, contrary to the polluter pays principle, they “make polluting activities cheaper rather than more expensive”.<sup>405</sup> That is to say, efficiency standards operate on the opposite rationale of internalising externalities because they require “people to pay a fixed cost in the form of more expensive appliances, homes, or vehicles in order to reduce the marginal cost of using them”.<sup>406</sup>

With these cautionary observations in mind, the effectiveness of BASIX can now be assessed. In order to determine whether BASIX is well equipped to achieve its objective of encouraging sustainable residential development, and thereby facilitate the shift towards an ecologically sustainable society, two questions must be answered. The first is whether BASIX, “being an outcomes-based sustainability tool”,<sup>407</sup> has achieved its intended outcome of achieving a 40 per cent reduction<sup>408</sup> in the GGEs and potable water consumption of new “BASIX affected development”.<sup>409</sup> Although BASIX also has the objective of improving the level of thermal comfort in BASIX developments, this will not be considered here because of a lack of relevant evidence. Moreover, the efficacy of the thermal comfort requirements of BASIX should theoretically be reflected in the success or failure of BASIX in meeting its GGEs reductions targets. A building which has complied with effective thermal comfort regulatory requirements should use less gas or electricity for heating and, therefore, have a smaller GGEs footprint.

In light of the above discussion, the assessment of whether BASIX has achieved its intended reduction in GGEs and water consumption cannot simply be determined by identifying the correlation of the introduction of BASIX and a sustained reduction in residential electricity consumption. What has to be considered is whether BASIX has been the cause, or at least a primary cause, of these targets being met (if they have indeed been met). What should not be

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<sup>405</sup> Arik Levinson, ‘California energy efficiency: Lessons for the rest of the world, or not? (2014) 107 *Journal of Economic Behaviour & Organisation* 269, 288.

<sup>406</sup> Arik Levinson, ‘California energy efficiency: Lessons for the rest of the world, or not? (2014) 107 *Journal of Economic Behaviour & Organisation* 269, 288.

<sup>407</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 488.

<sup>408</sup> See, NSW Government, *Current BASIX Energy Targets: Map*, BASIX <[https://www.basix.nsw.gov.au/iframe/images/4050pdfs/Basix\\_Energy\\_Targets.pdf](https://www.basix.nsw.gov.au/iframe/images/4050pdfs/Basix_Energy_Targets.pdf)> 1.

<sup>409</sup> *Environmental Planning and Assessment Regulation 2000* (NSW) cl 3.

considered is whether the targets are adequate to encourage sustainable residential development more broadly. However compelling such analysis might be, this is ultimately a political exercise masquerading as apolitical analysis. The effectiveness of the regime must be assessed on its own terms. To illustrate this difference, consider the claims of Thorpe and Graham in a sentence which reads, “[t]he targets set by BASIX are very low, and no effort has been made to ensure that even these are achieved”.<sup>410</sup> This critique of BASIX will, as (in fairness) Thorpe and Graham have done, focus on considering whether the targets have been “achieved” by BASIX, rather than the appropriateness of the targets.

To be considered successful, BASIX must not only substantially cause the realisation of its targets. BASIX should also represent value for money and not have any significant unforeseen adverse consequences. As was concluded by the UK National Audit Office in the abovementioned report, despite the fact that the relevant Department “achieved its main target” for the Green Deal energy efficiency program “ahead of schedule”,<sup>411</sup> the Green Deal scheme “has ... not been value for money”.<sup>412</sup> If BASIX has brought about the realisation of its targets and has represented value for money, it would be tenable to claim that BASIX has successfully encouraged sustainable residential development. Of course, this would not necessarily mean that BASIX will be well equipped to do so in the future. For instance, it may be that BASIX is an effective (albeit arguably “modest”)<sup>413</sup> regime for improving the sustainability of residential buildings but would be an inappropriate vehicle for implementing a more ambitious residential energy efficiency program.

### *1 Has BASIX Resulted in the Intended Reduction in GGEs?*

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<sup>410</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 491.

<sup>411</sup> National Audit Office (UK), *Green Deal and Energy Company Obligation* (National Audit Office, 2016) 7 [11].

<sup>412</sup> National Audit Office (UK), *Green Deal and Energy Company Obligation* (National Audit Office, 2016) 12 [26].

<sup>413</sup> See, eg, Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 488 and 491.

In a detailed critique of BASIX published in 2009, Thorpe and Graham prudently prefaced their analysis with the observation that it was “difficult to measure the effectiveness of BASIX in achieving its stated goals, as this has not been the focus of the monitoring so far undertaken”.<sup>414</sup> In particular, they identified that it was “impossible” to assess whether BASIX has actually achieved its emissions reduction targets given that there was no study which had “compare[ed] the emissions of houses that have been certified under BASIX with a large sample of existing houses”.<sup>415</sup> However, in June 2010, EnergyAustralia (on behalf of the NSW Government) published<sup>416</sup> an empirical “preliminary study of emissions savings in BASIX houses”.<sup>417</sup> This study relied on electricity consumption data of several small sample sets (2,835 households in total) of BASIX single dwellings and a larger sample of pre-BASIX single dwellings (804,000 households in total) located in different areas of NSW from 1 July 2007 to 30 June 2009.<sup>418</sup> The buildings that were measured were built in the first three years of the BASIX regime.<sup>419</sup> The median and average electricity consumption of these BASIX dwelling sample sets were then assessed against the BASIX benchmarks for GGEs reductions.<sup>420</sup>

This study revealed that, in relation to “all-electric” BASIX households, the average percentage reduction for households with three, four and five or more bedrooms measured against the BASIX benchmark was four per cent (ten per cent for houses built in the third

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<sup>414</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 488.

<sup>415</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 488.

<sup>416</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>>.

<sup>417</sup> NSW Government, *Five Year Outcomes Summary: BASIX, BASIX* (February 2011) <[https://www.basix.nsw.gov.au/iframe/images/BASIX\\_Five\\_Year\\_Outcomes\\_Summary.pdf](https://www.basix.nsw.gov.au/iframe/images/BASIX_Five_Year_Outcomes_Summary.pdf)>.

<sup>418</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 2 and 4-5.

<sup>419</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 1.

<sup>420</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 13, 14 and 16.

year of BASIX).<sup>421</sup> Although the study did not have access to actual data to calculate the GGEs for dwellings with gas, sample sets of such dwellings (less than 3000) were modelled by using a combination of actual electricity consumption data and predicted gas consumption (“from the BASIX calculation tool”).<sup>422</sup> This showed that the average percentage reduction in GGEs for households with three, four and five or more bedrooms, measured against the BASIX benchmark, was nil (16 per cent for houses built in the third year of BASIX).<sup>423</sup> The study also analysed the percentage reduction in GGEs for BASIX gas reliant (predicted) houses against a corrected BASIX benchmark (to include an additional 116 kg of CO<sup>2</sup> per person at the request of the Department of Planning - to reflect increases in the use of electricity for plug-in electrical appliances since BASIX was developed and higher assumed occupancy figures).<sup>424</sup> Against these corrected benchmarks, the average reductions for the associated benchmarks increased by six per cent.<sup>425</sup>

EnergyAustralia identified a number of factors which qualified its findings and analysis. First, it stressed that the measured BASIX single dwellings were “generally larger and more highly occupied than existing single dwellings” and had “a higher percentage of large air conditioning systems”.<sup>426</sup> This is significant because “[h]igher consuming energy households [tend] to be larger households”.<sup>427</sup> The average number of bedrooms for existing single dwellings in the EnergyAustralia Network Area was 3.3 bedrooms whilst the average for the

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<sup>421</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 13.

<sup>422</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 13.

<sup>423</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 14.

<sup>424</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 15.

<sup>425</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 16.

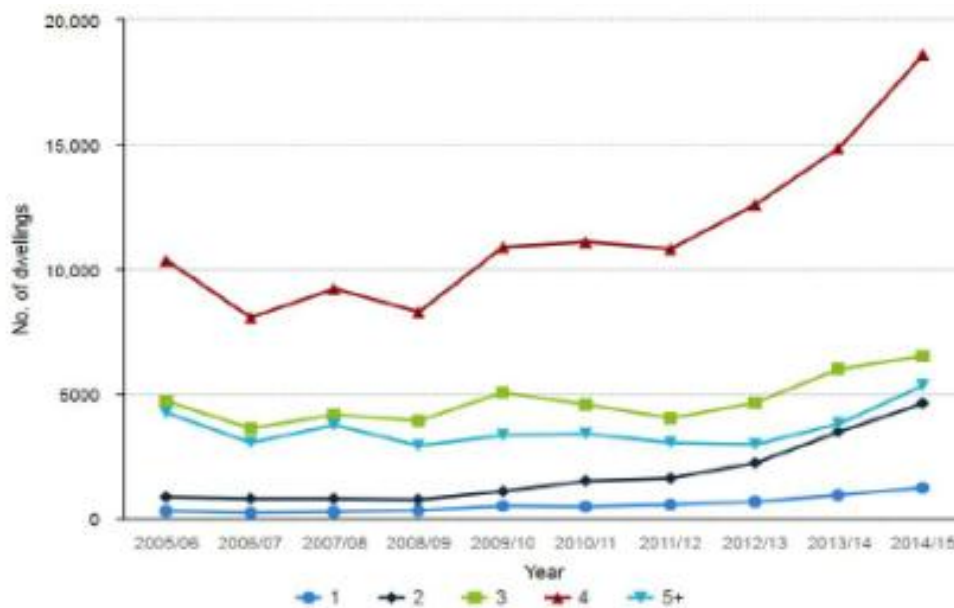
<sup>426</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 7 and 17.

<sup>427</sup> Darren Holloway and Raymond Bunker, ‘Planning, Housing and Energy Use’ (Paper presented at the National Housing Conference – Building for Diversity, Perth, 26-28 October 2005) 5.



measured BASIX sample was 4.26 bedrooms.<sup>428</sup> However, as EnergyAustralia recognises, the average number of bedrooms for BASIX Sydney households more generally was 4.2 bedrooms.<sup>429</sup> As is shown below for the period spanning 2005 to 2014, the trend for BASIX houses to have more bedrooms than pre-BASIX houses appears to have continued.<sup>430</sup> Therefore, EnergyAustralia’s recommendation, that in “assessing the effectiveness of the BASIX policy” BASIX households should be compared with “a more appropriate” “baseline control group with similar characteristics”, should be rejected.<sup>431</sup>

**Figure 9: “BASIX single dwelling houses: Number of Bedrooms”<sup>432</sup>**



The BASIX target for the relevant households included in the EnergyAustralia study is to reduce their energy consumption against historical benchmarks by either 35 per cent or 40 per

<sup>428</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 6.

<sup>429</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 6.

<sup>430</sup> Department of Planning and Environment (NSW), *ePlanning Data reports: BASIX Building Sustainability Index (July 2005 – June 2015) Single dwelling houses: Number of bedrooms (2015)* ePlanning Data reports <[http://datareporting.planning.nsw.gov.au/images/data-reporting/BASIX/highlights/BASIX\\_available\\_reports\\_Nov15.pdf](http://datareporting.planning.nsw.gov.au/images/data-reporting/BASIX/highlights/BASIX_available_reports_Nov15.pdf)> 6.

<sup>431</sup> EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 7.

<sup>432</sup> Department of Planning and Environment (NSW), *ePlanning Data reports: BASIX Building Sustainability Index (July 2005 – June 2015) Single dwelling houses: Number of bedrooms (2015)* ePlanning Data reports <<http://www.datareporting.planning.nsw.gov.au/basix-reporting-overview>> 6.

cent,<sup>433</sup> not to reduce the energy consumption of households against a projected target of what the energy consumption of a hypothetical new (bigger) household would have been but for BASIX. In other words, “the BASIX benchmarks reflect typical water and energy use at a point in time, namely when BASIX commenced”.<sup>434</sup> Hence, BASIX was designed to promote sustainable development by reducing the total energy consumption of new BASIX houses compared to existing households, not to act as a drag or restraint on the rate of growth of residential energy consumption. If total residential electricity consumption was to triple because the size of BASIX households now is far greater than that of pre-BASIX households, it is not a compelling defence of BASIX to claim that it would have achieved its target if houses had remained the same size. Thus, the observation that “measures taken in new BASIX homes to reduce electricity consumption are still predicted to result in significantly lower greenhouse gas emissions than if BASIX did not apply” is perhaps correct but is beside the point.<sup>435</sup> So too is NERA Economic Consulting’s comment in its 2010 BASIX cost-benefit analysis that “we believe that energy consumption for these dwellings would have been even higher in the absence of BASIX”.<sup>436</sup> Yet, even on this alternative lesser claim, NERA Economic Consulting concedes that “there is currently no strong reliable empirical evidence upon which this statement can be verified”.<sup>437</sup>

Second, and more validly, the report warned that as the majority of BASIX single dwellings are reliant on (less GGE intensive) gas supply, their results should be treated with caution and

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<sup>433</sup> Compare NSW Government, *Current BASIX Energy Targets: Map*, BASIX <[https://www.basix.nsw.gov.au/iframe/images/4050pdfs/Basix\\_Energy\\_Targets.pdf](https://www.basix.nsw.gov.au/iframe/images/4050pdfs/Basix_Energy_Targets.pdf)> 1 with EnergyAustralia, *BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09* (EnergyAustralia, 2010) <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> Appendix A.

<sup>434</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> 13; See also NSW Government, *Five Year Outcomes Summary: BASIX* (28 February 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> 1.

<sup>435</sup> NSW Government, *Five Year Outcomes Summary: BASIX* (28 February 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> 9.

<sup>436</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> v-vi.

<sup>437</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> v-vi.

“may be considered to be a lower bound of greenhouse savings”.<sup>438</sup> That being said, the gas dwellings in their survey fared worse than all-electric dwellings.

Third, EnergyAustralia noted that “other socio-demographic, climatic or appliance factors have a significant influence on ... electricity consumption”.<sup>439</sup> This was picked up in the NSW Government’s response to the study, which stated that the study “suggests that a number of factors beyond the scope of BASIX are significantly influencing gross electricity consumption in new houses in Sydney” (an observation that was also said to have been made by the NSW Independent Pricing and Regulatory Tribunal).<sup>440</sup> The NSW Government has also confirmed that it is “collecting improved consumption data to more effectively verify emission reductions attributable to BASIX in the context of external factors”.<sup>441</sup>

Yet, even if there are a host of countervailing factors precluding BASIX from achieving its GGEs reduction target, it cannot change the fact that the targets are not being achieved by BASIX. It is not plausible to claim that BASIX is effective after excluding a number of unexceptional realities. As an “outcomes-based sustainability tool”,<sup>442</sup> the effectiveness of BASIX should be measured against whether it is achieving its intended outcomes. As Sydney Water recognised in its BASIX water savings monitoring report, “BASIX avoids prescriptive measures and actions that do not result in a measurable reduction in water use or greenhouse emissions”.<sup>443</sup> Arguably, the assessment of other unexceptional factors only becomes important when the BASIX targets are being substantially achieved but there is uncertainty as to whether BASIX is responsible for this.

Given the “preliminary” nature of the EnergyAustralia report and the lack of more recent empirical evidence, it is not possible to reach a firm conclusion on whether or not BASIX is

<sup>438</sup> EnergyAustralia, ‘BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09’ (June 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 13.

<sup>439</sup> EnergyAustralia, ‘BASIX Monitoring Report: Electricity Consumption for 2007-08 and 2008-09’ (June 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/images/energyMonitoringReport2007-2009.pdf>> 1.

<sup>440</sup> NSW Government, *Five Year Outcomes Summary: BASIX* (28 February 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> 9.

<sup>441</sup> NSW Government, *Five Year Outcomes Summary: BASIX* (28 February 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> 9.

<sup>442</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 488.

<sup>443</sup> Sydney Water, *BASIX Water Savings Monitoring for 2010-11* (Sydney Water, 2012) BASIX <[https://www.basix.nsw.gov.au/iframe/images/water\\_monitoring\\_report-2010-11.pdf](https://www.basix.nsw.gov.au/iframe/images/water_monitoring_report-2010-11.pdf)> 6.

achieving its targets. However, the available evidence does strongly indicate that BASIX may not be achieving its targets for reducing the GGEs of BASIX development. If BASIX has not substantially achieved these targets, the scheme will have been ineffective. Moreover, if so, this may affect the favourable cost benefit analyses supporting BASIX. For example, the cost benefit analysis conducted by NERA Economic Consulting in 2010 did not involve verifying “whether the savings that are assumed for a development by the BASIX tool for each compliance action remain valid” because of time constraints.<sup>444</sup> However, NERA Economic Consulting did attempt to take precautions against this by incorporating what it said was “likely to be a reasonable and conservative estimate of the energy benefits ... that have occurred as a consequence of BASIX”.<sup>445</sup>

A number of important criticisms of BASIX have been made that may help to explain the poor results in EnergyAustralia’s study. As has already been discussed, a critical issue for the BASIX tool is that it appears to have no means of addressing the issue that new BASIX certified residential buildings are significantly bigger than pre-BASIX buildings and, therefore, consume significantly more electricity than existing buildings. Thorpe and Graham have identified four further “key shortcomings”.<sup>446</sup>

First, BASIX does not account for a buildings embodied energy (which potentially equates to 40 per cent to 77 per cent of the total energy use of a building over 100 years)<sup>447</sup> and favours some energy-intensive materials. As Stephan, Crawford and de Myttenaere have separately concluded in relation to the failure of energy efficiency regulations to account for embodied energy, “results show that current building energy efficiency certifications might not ensure a lower energy demand and can, paradoxically result in increased energy consumption because

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<sup>444</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> ii.

<sup>445</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> ii.

<sup>446</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 489.

<sup>447</sup> Andre Stephan, Robert Crawford and Kristel de Myttenaere, ‘A comprehensive assessment of the life cycle energy demand of passive houses’ (2013) 112 *Applied Energy* 23; Darren Holloway and Raymond Bunker, ‘Planning, Housing and Energy Use: A Review’ (2006) 24 *UPR* 115 cited in Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 489.

of their limited scope”.<sup>448</sup> Arguably, BASIX cannot promote sustainable development<sup>449</sup> by banking measured GGEs reductions from energy efficient materials while ignoring the countervailing (and potentially greater) unmeasured GGEs from the embodied energy of such materials. Second, BASIX allows the use of poor building materials to be offset by efficient appliances that have a short-life span.<sup>450</sup> Third, BASIX attempts to achieve sustainable design at too late a stage in the development application process to make substantial improvements.<sup>451</sup> Fourth, “BASIX prevents consent authorities imposing more stringent water and energy efficiency requirements on residential development”.<sup>452</sup> This is problematic because to achieve the overall BASIX targets it may be necessary that some buildings, where appropriate,<sup>453</sup> are required to outperform the targets.<sup>453</sup>

In addition to these criticisms, it should be stressed that for BASIX to be effective, compliance with BASIX commitments must necessarily be high. Currently, there is no strong evidence to allay fears that compliance with BASIX related commitments is unsatisfactory. Conversely, there is anecdotal evidence from “stakeholder groups in all states and territories” that “full compliance with the energy performance requirements” in buildings codes “is rare”.<sup>454</sup> However, as these stakeholder groups recognise, there is limited “hard evidence ... as few detailed audits have been undertaken”.<sup>455</sup> Similarly, the Australia Institute has claimed that there is “widespread non-compliance with the regulated energy efficiency requirements for new buildings”.<sup>456</sup> However, in relation to BASIX, the NSW Government did commission a consultant to audit compliance levels in 2013, who concluded that the level of compliance

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<sup>448</sup> Andre Stephan, Robert Crawford and Kristel de Myttenaere, ‘A comprehensive assessment of the life cycle energy demand of passive houses’ (2013) 112 *Applied Energy* 23.

<sup>449</sup> State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (NSW) cl 3(1).

<sup>450</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 489.

<sup>451</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 489.

<sup>452</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 489.

<sup>453</sup> Amelia Thorpe and Kristy Graham, ‘Green buildings – are codes, standards and targets sufficient drivers of sustainability in New South Wales?’ (2009) 26 *EPLJ* 486, 489; *Environmental Planning and Assessment Regulation 2000* (NSW) cl 7(2); State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (NSW) cll 3(3), 7-10.

<sup>454</sup> pitt&sherry and Swinburne University of Technology, *National Energy Efficient Building Project: Final Report* (State of South Australia, 2014) x.

<sup>455</sup> pitt&sherry and Swinburne University of Technology, *National Energy Efficient Building Project: Final Report* (State of South Australia, 2014) x.

<sup>456</sup> Hugh Saddler, *Power down II: The continuing decline in Australia’s electricity demand* (The Australia Institute, 2015) 4.

“can generally be described as fair to good” (aside from thermal comfort compliance).<sup>457</sup> Yet, this audit only assessed compliance by way of reviewing development applications and construction certificates, rather than by actually examining completed households.<sup>458</sup> Indeed, the consultant advised that “[b]uilt as promised and post-occupancy dwelling performance measured via energy and water billing data is warranted”.<sup>459</sup>

## *2 Has BASIX Resulted in the Intended Reduction in Water Consumption?*

In 2013, the NSW Government commissioned a consultant to determine whether “BASIX has achieved its primary water saving objective for BASIX single residential dwellings ... of [a] 40 per cent reduction in potable water consumption compared with the average pre-BASIX household”.<sup>460</sup> The consultant conducted its review by selecting a water service area, analysing the BASIX dwelling water consumption data for this area from July 2006 to July 2011, and comparing this data with the water consumption ‘savings’ predicted by the BASIX tool.<sup>461</sup> Although the report identified considerable variability in water savings across the water service area,<sup>462</sup> it ultimately found that BASIX buildings consumed 49 per cent less water than existing buildings.<sup>463</sup> Thus, the report concluded that “BASIX is successfully

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<sup>457</sup> David Eckstein, *BASIX Compliance Audit Program* (April 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/images/BASIX%20%20COMPLIANCE%20AUDIT%20April%202013.pdf>> 3.

<sup>458</sup> David Eckstein, *BASIX Compliance Audit Program* (April 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/images/BASIX%20%20COMPLIANCE%20AUDIT%20April%202013.pdf>> 3.

<sup>459</sup> David Eckstein, *BASIX Compliance Audit Program* (April 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/images/BASIX%20%20COMPLIANCE%20AUDIT%20April%202013.pdf>> 3.

<sup>460</sup> Hydrosphere Consulting, *Rous Water BASIX Performance Report* (September 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/images/pdfs/RousWaterBASIXPerformanceReport.pdf>> Executive Summary.

<sup>461</sup> Hydrosphere Consulting, *Rous Water BASIX Performance Report* (September 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/images/pdfs/RousWaterBASIXPerformanceReport.pdf>> Executive Summary.

<sup>462</sup> Hydrosphere Consulting, *Rous Water BASIX Performance Report* (September 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/images/pdfs/RousWaterBASIXPerformanceReport.pdf>> 24-25.

<sup>463</sup> Hydrosphere Consulting, *Rous Water BASIX Performance Report* (September 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/images/pdfs/RousWaterBASIXPerformanceReport.pdf>> 24.

achieving its 40 per cent Water Savings Objective” and that “the BASIX tool do[es] reasonably approximate the metered averages”.<sup>464</sup>

These results have been corroborated by a Sydney Water study prepared for the NSW Government which examined whether BASIX was achieving its water reduction target by measuring (between 2007-2011) “metered potable water consumption”.<sup>465</sup> This study found that “BASIX dwellings are performing close to the 40 per cent reduction target”, with Sydney Water predicting a stabilisation of average water reductions at 36 per cent.<sup>466</sup>

Thus, although not comprehensive, there appears to be sufficient preliminary evidence to reasonably claim that BASIX has likely been at least moderately effective at achieving its water consumption reduction target. Moreover, given that these studies compare BASIX buildings to pre-BASIX buildings, it is reasonable to conclude that there is a causative relationship between the operation of BASIX and the reduction in potable water consumption. Yet, BASIX is unlikely to be entirely responsible for the reduction in water consumption. To determine the causative effect of BASIX with more certainty, it would need to be examined to what extent new buildings would use less water regardless of BASIX.

### *3 Has BASIX Represented Value for Money?*

The question of whether BASIX represents value for money arguably only become important if it can be shown that the scheme has been effective in achieving its targets. The cost benefit analyses that have been published to date do not appear to be based on data of the actual energy savings that BASIX has achieved. On the basis of “a reasonable and conservative estimate of the energy benefits ... that have occurred as a consequence of BASIX”, BASIX

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<sup>464</sup> Hydrosphere Consulting, *Rous Water BASIX Performance Report* (September 2013) BASIX <<https://www.basix.nsw.gov.au/iframe/images/pdfs/RousWaterBASIXPerformanceReport.pdf>> Executive Summary.

<sup>465</sup> Sydney Water, *BASIX Water Savings Monitoring for 2010-11* (Sydney Water, 2012) BASIX <[https://www.basix.nsw.gov.au/iframe/images/water\\_monitoring\\_report-2010-11.pdf](https://www.basix.nsw.gov.au/iframe/images/water_monitoring_report-2010-11.pdf)> 5.

<sup>466</sup> Sydney Water, *BASIX Water Savings Monitoring for 2010-11* (Sydney Water, 2012) BASIX <[https://www.basix.nsw.gov.au/iframe/images/water\\_monitoring\\_report-2010-11.pdf](https://www.basix.nsw.gov.au/iframe/images/water_monitoring_report-2010-11.pdf)> 5.

has been estimated to result in total economic benefits of \$2.2 to \$3.1 billion between 2004 and 2050 in net present value terms.<sup>467</sup> The largest component (potentially up to 85 per cent) of this projected economic benefit derives from predicted “energy bill savings”.<sup>468</sup> The estimated total economic costs over the same period are predicted to total \$1.92 billion.<sup>469</sup> The wide range in the sum of the predicted benefits may be the result of uncertainty as to future retail water, electricity and gas prices. In contrast, the single figure for the predicted economic costs may reflect the fact that it is easier to estimate the costs for households in complying with BASIX commitments and the government’s administration costs. Overall, the net economic benefit to NSW of BASIX until 2050 in net present value terms is projected to be between \$294 million to \$1.1 billion.<sup>470</sup> On these figures, if BASIX significantly fails to bring about the predicted reductions in GGEs and water consumption, and therefore the consequent energy bill savings, the economic costs of BASIX could possibly outweigh its benefits.

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<sup>467</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/about-basix/news/reports.html>> iv.

<sup>468</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/basix-cost-benefit-analysis-summary.html>> 30.

<sup>469</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/basix-cost-benefit-analysis-summary.html>> 38.

<sup>470</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/basix-cost-benefit-analysis-summary.html>> 45.



**Figure 10: “Net Benefits for New South Wales (\$ million)”<sup>471</sup>**

**Table 5.4 Net Benefits for New South Wales (\$ million)**

	Benefits from dwellings complying between 2005 and 2009	Benefits from dwellings complying between 2009 and 2050	Total
<b>Direct benefits</b>			
- Water bill savings	184	311	495
- Energy bill savings	559 - 767	960 - 1,314	1,518 - 2,081
Avoided network augmentation	44 - 81	53 - 102	97 - 183
Environmental benefits	56 - 123	50 - 177	106 - 300
<b>Total benefits</b>	<b>843 - 1,155</b>	<b>1 374 - 1,904</b>	<b>2,216 - 3,059</b>
<b>Direct costs</b>			
- Compliance costs	-701	-1 207	-1,907
- Administration costs	-6	-8	-15
<b>Total costs</b>	<b>-707</b>	<b>-1,215</b>	<b>-1,922</b>
<b>Net benefits</b>	<b>135 - 448</b>	<b>159 - 689</b>	<b>294 - 1,137</b>
<b>Cost-benefit ratio</b>	<b>1.2 - 1.6</b>	<b>1.1 - 1.6</b>	<b>1.2 - 1.6</b>

*Note: Some of the numbers do not add due to rounding.*

## VI CONCLUSION

For the ‘rapid market shift’ towards renewable energy and improved energy efficiency to reach its full potential, environmental and planning regimes must be appropriately designed to encourage renewable energy development and to successfully implement well-crafted energy efficiency schemes. In particular, this paper has argued that the NSW regime will need to facilitate the expansion of the large scale wind farm sector, the more widespread installation of solar pv systems and the progressive improvement in the energy efficiency of residential buildings. Conversely, if the regime creates unnecessary obstacles to the realisation of these three likely developments, the success of the transition to a sustainable energy future may be significantly hampered. Yet, this is not to say that the merits of the regime (or any other environmental and planning law regime) should be solely determined based on whether or not it helps to achieve these ends. Rather, this paper has contended that

<sup>471</sup> NERA Economic Consulting, *BASIX Post-Implementation Cost-Benefit Analysis: An Economic Evaluation of the State Environmental Planning Policy – Building Sustainability Index (BASIX)* (5 August 2010) BASIX <<https://www.basix.nsw.gov.au/iframe/basix-cost-benefit-analysis-summary.html>> 45.

what must be assessed is whether the regime is likely to effectively facilitate the realisation of these ends. Will the regime encourage the efficient processing of wind farms whilst ensuring that the potential adverse impacts of such development are appropriately assessed and weighed against their significant benefits? Similarly, will the regime enable the efficient installation of solar pv systems without compromising the integrity of heritage conservation areas? Finally, will energy efficiency schemes such as BASIX effectively achieve their intended targets and represent value for money?

The first analytical section of this paper critically examined the regime in respect of the regulation of large scale wind farm development. It was suggested - after a consideration of the relevant literature - that the potential visual impacts of wind farms are likely to pose a significant and difficult issue for consent authorities to grapple with. Although it may be validly argued that the regime should be reformed to improve the efficiency of the development application process, it was contended that the regime is appropriately designed to enable consent authorities to properly assess and weigh the potential visual impacts of proposed wind farms. This is partly because the regime has allowed the Court to guide consent authorities to assess and consider visual impacts in a systematic and consistent manner. Furthermore, it was argued that - consistently with the principle of good governance - caution should be exercised before the discretion of consent authorities to assess and balance such impacts is constrained. More broadly, this examination provides qualified support for the view that the regime is relatively well equipped to effectively facilitate large scale wind farm development.

This section was followed by an assessment of the principal environmental planning instrument regulating small scale solar pv system development. It was argued that the unusual drafting of the relevant clauses of this instrument may pose an unnecessary and significant obstacle to the successful growth of solar pv electricity generation. In particular, this is because the instrument is drafted so that, contrary to conventional legislative drafting, solar pv system development is only capable of being exempt or complying development if the development is for the 'purpose of solar energy system'. Moreover, it was considered whether the existing regulatory framework achieves a proper balance between encouraging such development while protecting the aesthetic values of heritage significance in listed

heritage conservation areas. In response to proposals to amend the law by exempting proposed publicly visible solar pv systems within heritage conservation areas from merits assessment, such reform was considered to pose unacceptable risks to the heritage integrity of these areas. Additionally, some legal issues regarding solar access were briefly canvassed.

Finally, this paper presented a case study of the NSW Building Sustainability Index scheme. For BASIX to be effective, it was determined that the scheme should substantially achieve its self-imposed GGEs and water consumption reduction targets and do so in a cost effective way. On the available evidence, it was concluded that BASIX is unlikely to be substantially achieving its GGEs reduction targets for various possible reasons. The suggestion by some that BASIX was having a discernible effect in reducing residential energy consumption was not challenged but was viewed as the wrong measure by which to judge the efficacy of BASIX.

The partial examination of the NSW environmental and planning regime undertaken in this paper has shown that the necessary adaptation to a sustainable energy future will present significant and complex challenges for existing environmental and planning law frameworks. To what extent should legal regimes condition the discretion of consent authorities to assess the potential adverse visual impacts of wind farms and to balance these impacts against the global environmental benefits of large scale renewable energy projects? Should publicly visible solar pv systems in heritage conservation areas be exempt from a merits based development application process? How should legal regimes regulate solar access? Can traditional legal regimes effectively regulate the energy efficiency of development or must there be overarching structural reform for meaningful energy efficiency improvements to be achieved? These difficult questions relate to trends in the energy sector that have been widely predicted. However, the transition to a sustainable energy future is likely to feature important unexpected developments. These developments may pose even greater challenges for traditional legal regimes. Ultimately, to successfully manage these challenges, the judiciary, legislature and executive should endeavour to adapt traditional legal regimes to anticipate and respond to the shifting energy landscape whilst respecting the laudable guiding principles that have shaped these regimes.