

CHAPTER 1

INTRODUCTION

1.1 This introductory chapter covers the conduct of the inquiry and provides some background to the technology and operation of wind farms and their distribution in Australia.

Terms of reference

1.2 On 27 October 2010, the Senate referred the following matter to the Committee for inquiry and report by 30 April 2011:

The social and economic impacts of rural wind farms, and in particular:

- (a) any adverse health effects for people living in close proximity to wind farms;
- (b) concerns over the excessive noise and vibrations emitted by wind farms, which are in close proximity to people's homes;
- (c) the impact of rural wind farms on property values, employment opportunities and farm income;
- (d) the interface between Commonwealth, state and local planning laws as they pertain to wind farms; and
- (e) any other relevant matters.

The reporting date was subsequently changed to 23 June 2011.

Conduct of the inquiry

1.3 The inquiry was advertised in *The Australian* on 10 and 24 November 2010, on 8 December 2010 and again on 2 February 2011. The inquiry was also advertised on the Internet. The committee received more than 1000 submissions, many letters and other documents, and had access to much published information. Public hearings were held in Canberra on 25 March and 17 May, Ballarat on 28 March, Melbourne on 29 March and Perth on 31 March 2011. The Committee conducted site visits to the Waubra and Hepburn wind farms in Victoria on 28 March 2011.

1.4 The Committee thanks all those who made submissions, gave oral evidence or in other ways assisted in the inquiry.

Structure of the report

1.5 The report is structured broadly to reflect the details of the committee's terms of reference. Following a brief introduction, the Committee considers noise and any adverse health effects in Chapter 2, planning laws in Chapter 3 and property values, employment and farm income in Chapter 4.

Wind farms

1.6 A wind farm is a group of wind turbines in the same location used for production of electric power. A large wind farm may consist of several hundred individual wind turbines, and cover an extended area of hundreds of square kilometres, but the land between the turbines may be used for agricultural or other purposes. Wind farms may also be located offshore.¹

1.7 In 2009 there were 85 Australian wind farms, 57 of which were in Victoria, South Australia and Western Australia (nineteen in each state). The capacity of all these installations amounted to 1703 MW, with 48 percent of total capacity in South Australia.² (In South Australia, the Australian Energy Market Operator expects that by mid-2011, conventional energy sources will generate 3699 MW while 1150 MW will be generated from wind.)³ More wind farm developments have been approved by the various state authorities since 2009 and many more are planned.

1.8 According to an Australian Government study the wind energy industry has been the fastest growing renewable energy source, largely because it is a proven technology, and has relatively low operating costs and environmental impacts.⁴ Turbines are increasing in size and may be up to 150 metres in diameter or, as one witness expressed it, 'as high as from the flag on top of the Sydney Harbour Bridge to the waterline'.⁵ Bigger turbines increase the swept area of the blades and proportionally increase the wind energy captured. These turbines need to be further from each other, with implications for the area needed for each farm. Some evidence to the inquiry also suggested that the increased size of modern wind turbines could potentially intensify any health problems related to noise and vibrations.

Commonwealth responsibility

1.9 Planning and compliance issues for wind farms are matters for the state governments, although the states have devolved some of these responsibilities to local governments. Generally, proposals for wind farms of more than 30 MW capacity are

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- 1 *WIKIpedia the free encyclopedia* , http://en.wikipedia.org/wiki/Windmill_farm, accessed 14 April 2011.
 - 2 *Australian Energy Resource Assessment*, Geoscience Australia and ABARE, 2010, Canberra, Chapter 9, https://www.ga.gov.au/products/servlet/controller?event=GEOCAT_DETAILS&catno=70142, accessed 18 March 2011.
 - 3 Mr David Swift, Australian Energy Market Operator, *Committee Hansard*, 17 May 2011, p. 2.
 - 4 *Australian Energy Resource Assessment*, Geoscience Australia and ABARE, 2010, Canberra, Chapter 1, https://www.ga.gov.au/products/servlet/controller?event=GEOCAT_DETAILS&catno=70142, accessed 18 March 2011.
 - 5 Mr A G Hodgson AM, *Committee Hansard*, 31 March 2011, p. CA 17.

dealt with by the responsible state government minister. Planning and compliance issues are dealt with in detail in Chapter 3.

1.10 Incentives for the development of renewable energy, which includes wind farms, are provided by Commonwealth Government legislation, in particular the *Renewable Energy (Electricity) Act 2000*, as amended, which creates a guaranteed market for electricity generated from renewable sources. The Renewable Energy Target (RET), which is established by the legislation, is for 20 percent of Australia's electric energy to be generated from renewable resources by 2020.⁶ As noted earlier, wind, as the most advanced of the current renewable energy technologies, is expected to contribute significantly to meeting the RET. It is estimated that the share of wind energy in total electricity generation will increase from 1.5 percent in 2007-2008 to 12.1 percent in 2029-30.⁷ The number of wind farms in Australia therefore can be expected to increase dramatically in the next few years.

1.11 The Commonwealth also has responsibility for certain aspects of the development of wind farms, such as air safety, and it may become involved in planning processes under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999*. That Act is intended to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance.

1.12 In accordance with the Act, the responsible minister may declare the proposed development of a wind farm to be a controlled action, which requires that an environmental assessment be made of the impacts of the controlled action. The minister then may or may not approve the controlled action under the EPBC Act.

1.13 Additionally, if a proposal for a wind farm were to include development on Crown Land, the provisions of the Commonwealth *Native Title Act 1993* would apply.

1.14 Commonwealth Government agencies with research interests in health and the sciences may contribute to understanding issues related to the development of wind power and wind farms. CSIRO, the National Health and Medical Research Council (NHMRC) and the National Acoustics Laboratories (NAL) were able to assist the Committee by providing evidence to the inquiry. The NHMRC produced a document in 2010 on wind turbines and health and in June 2011 convened a scientific forum on

6 Senate Environment, Communications and the Arts Legislation Committee, *Renewable Energy (Electricity) Amendment Bill 2010 [Provisions]; Renewable Energy (Electricity) Charge Amendment Bill 2010 [Provisions]; Renewable Energy (electricity) (Small-scale Technology Shortfall Charge) Bill 2010 [Provisions]*, June 2010, Commonwealth of Australia 2010, p.1.

7 *Australian Energy Resource Assessment*, Geoscience Australia and ABARE, 2010, Canberra, Chapter 9, https://www.ga.gov.au/products/servlet/controller?event=GEOCAT_DETAILS&catno=70142, accessed 18 March 2011.

wind farms and human health.⁸ NAL is the research division of Australian Hearing, a statutory authority under the Commonwealth Department of Human Services. NAL undertakes scientific investigations into hearing, hearing habilitation and rehabilitation and the effects of noise on people, including the prevention of hearing loss.⁹

National Wind Farm Development Guidelines

1.15 The Commonwealth Government is also involved in the process for the development of wind farms through the Council of Australian Governments (COAG). The Environment Protection and Heritage Council (EPHC) of COAG has released draft *National Wind Farm Development Guidelines* 'to complement existing planning and development processes, taking into consideration that these are best practice guidelines, and are not mandatory'.¹⁰ Publication of the draft guidelines followed from an EPHC report on impediments to responsible wind farm development, which was made in response to 'growing community concerns'.¹¹ The Commonwealth's role in the development of the guidelines is limited to the Department of Climate Change and Energy Efficiency providing the chair of the relevant intergovernmental working group.¹²

8 *Wind Turbines and Health: A Rapid Review of the Evidence*, July 2010, Australian Government, National Health and Medical Research Council.

9 National Acoustics Laboratories: <http://www.nal.gov.au/current-research-profile.shtml> (accessed 21 June 2011).

10 *National Wind Development Guidelines DRAFT*, Environment Protection and Heritage Council of the Council of Australian Governments, July 2010, p. 1.

11 *National Wind Development Guidelines DRAFT*, Environment Protection and Heritage Council of the Council of Australian Governments, July 2010, p. 1.

12 Mr Andrew Bailey, First Assistant Secretary, Renewable Energy Efficiency Division, Department of Climate Change and Energy Efficiency, *Committee Hansard*, 25 March 2011, p. CA 5. See Chapter 4 for more information on the development of the Draft Guidelines.