

**This document contains additional material to the submission to 2011 Senate Inquiry *The Social and Economic Impact of Rural Wind Farms*.**

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**‘Zero Carbon Australia – Stationary Energy Plan’ – Critique  
Addendum on Wind Farm Construction Rates  
Dr David Burraston**

**ZCA Assumption – Wind Implementation Time (IT) P37**

*“The implementation time is the sum of licensing, site acquisition, planning, construction and connection to the grid. This depends on guidelines and the application process of the responsible agencies, the specific design, the location and many more aspects of this process. As a future prediction of these is ambiguous at best, the [n]umbers in Table 2.3 are estimates arising from previous and current construction.”*

**ZCA 2020 Table 2.3 Energy production timetable** on p36 estimates Wind Implementation Time as 2-5 years, and with regard to CST states :

*“This source is very similar to wind with regard to planning and construction aspects that affect ITs. The EPBT for concentrated solar power depends mostly on the location’s hours and intensity of sunshine. 2–5 years”*

**Critique**

An example of a “real world” implementation time frame in Australia is shown in Table 1 for Capital Wind Farm.

**Table 1. Capital Wind Farm Installation Timeline**

<b>Wind Resource Monitoring</b>	<b>Environmental Impact Studies</b>	<b>Project Application</b>	<b>Public Exhibition</b>	<b>Approved</b>	<b>Online</b>	<b>Additional Works</b>
Oct 2002 to March 2005 (Capital 2005a)	Flora & Fauna Study began Oct 2004, report completed March 2005 (Capital 2005e)	Dec 2005 (Capital 2005b)	24/03/2006 to 28/04/2006 (Capital 2005c)	07/11/2006 (Capital 2005d)	October 2009 (RPV 2010)	March 2010
	Full Environmental Assessment Completed 15 <sup>th</sup> Feb 2006 (Capital 2005f)			Lapse period for construction to start before approval withdrawn = 3 years (Capital 2005d)		Urgent gearbox, generator and rotor works (RPV 2010)

Capital Wind Farm is a completed wind farm project of a small / small-medium size (RPV 2010). In summary it contains 67 wind turbines with a total installed capacity of 140.7MW (Infigen 2010), the implementation timeline was 7 years to online + an additional 6 months to fix urgent turbine problems. For wind farms the wind resource assessment is a minimum of 21 to 39 months to obtain a final bankable study and uses real world data from a monitoring tower at the proposed site (Coppin et al 2003 pages 11 & 12). Special note should be taken that construction of Capital Wind Farm began early 2008 (Infigen 2010), just over 1 year after the approval date. However, the lapse period available to this project allows construction to start anytime within 3 years of approval (Capital 2005d, Section 4, page 7). The lapse period is not always restricted to 3 years, as seen in the approval of a 282 turbine section of Silverton Wind Farm where the lapse period is 5 years (Silverton 2010a, Section 1.5, page 5). Two well known developer strategies are available to take advantage of this period; “develop & delay” and “develop & sell” (Kann 2009). Taralga Wind Farm is planned to be a similar size to Capital Wind Farm, consisting of 61 wind turbines (RES 2010a). Wind monitoring began more than 10 years ago and planning approval was given in Feb 2007 (RES 2010a). Construction has not yet started, and is estimated to begin in 2011 (RES 2010b).

The 2 to 5 years implementation time stated by ZCA 2020 report clearly does not agree with previous and current experience in Australia. A larger scale example from the Silverton Wind Farm Environmental Assessment estimates construction time for 1000MW will be 5 years (Silverton2010b, Page 14).

Table 2 shows a realistic Implementation Timeline figure for small / small-medium sized wind farms up to 1000MW taking into account the real world issues just described. Note that for the minimum timeline the lapse period has been set to zero and construction period is assumed to commence on the day of planning approval. **However, it is likely that there will be a time delay between approval and construction, which will depend on the preparedness of the developer.** The minimum construction time is based on Cullerin Range Wind Farm 30MW (Cullerin 2009). The maximum Environmental Impact Study time is based on Yass Valley Wind Farm which is currently under review and has a section (Carrols Ridge) removed for further detailed study requirements. However, assessments for each section were running concurrently (Yass 2009a page 15). Biodiversity studies for Yass Valley Wind Farm were undertaken beginning in September 2008 (Yass 2009b page 14) and the Carrol’s Ridge section has not been submitted to date. Therefore an estimation of maximum time for Environmental Impact Study will be set at 2 years, but this figure will probably need to be revised upwards once those studies are completed. Land acquisition is assumed to occur concurrently up to approval or in the lapse period.

**Table 2. Small & Small – Medium Wind Farm up to 1000MW Installation Timeline (Years)**

	Wind Resource Monitoring	Environmental Impact Studies	Planning Application	Lapse Period	Construction	Total Implementation Time
Min	1.75	1.25	1	0	1.5	5.5
Max	3.5	2	1	5	5	16.5

Current NSW Dept of Planning (DoP) legislation covering wind farms 30MW or greater comes under Major Projects Part 3a (NSW Planning 2005). NSW DoP also has a “Renewable energy development under Part 3A” Fact Sheet (NSW Planning 2010) which provides an overview of the current NSW streamlined legislation, some of this is reproduced below for reference. **Note** : this is commonly referred to as “Fast Track” or “Fast Tracking”.

## Conclusion

ZCA 2020 report seriously underestimates wind and solar Implementation Time. A realistic and generous figure in Australian conditions under the current NSW “Fast Track” planning legislation for **small to small-medium projects up to 1000MW is 5.5 to 16.5 years.**

**Renewable energy development under Part 3A Fact Sheet (NSW Planning 2010) quotes:**

“Under State Environmental Planning Policy (Major Projects) 2005 renewable energy proposals with a capital cost of more than \$30 million (or \$5 million in an environmentally sensitive area) are considered under Part 3A of the Act. \$30 million is equivalent to a generating capacity of roughly 10 to 15 megawatts (MW).”

“The NSW Government has committed to assessing renewable energy projects qualifying as major projects within 4 months. This period starts with the exhibition of the environmental assessment report, but doesn’t include the time the proponent takes to prepare a preferred project report.”

“In 2009 the Minister declared renewable energy projects with a peak generating capacity of 30 megawatts (MW) or more to be ‘critical infrastructure’... “

“Critical infrastructure fees under Section 245H of the *Environmental Planning and Assessment Regulation 2000* are being waived for renewable energy projects classified as critical infrastructure from August 2009 to 30 June 2011.”

**References (All web links accessed between 5-08-2010 & 7-08-2010)**

Capital (2005a) B1 CWF Project Community Brochure March 2005, RPV,  
<http://majorprojects.planning.nsw.gov.au/files/24989/B1%20CWF%20Project%20Community%20Brochure%20March%202005.pdf>

Capital (2005b) RPV Major Projects Application 1-12-2005 App Num 05\_0179, NSW Dept of Planning  
<http://majorprojects.planning.nsw.gov.au/files/10674/Project%20Application.pdf>

Capital (2005c) Capital Wind Farm – Tarago, Project Application - wind farm, NSW Dept of Planning  
[http://majorprojects.planning.nsw.gov.au/page/project-sectors/transport--communications--energy--water/generation-of-electricity-or-heat-or-co-generation/?action=view\\_job&job\\_id=670](http://majorprojects.planning.nsw.gov.au/page/project-sectors/transport--communications--energy--water/generation-of-electricity-or-heat-or-co-generation/?action=view_job&job_id=670)

Capital (2005d) Project Approval document App Num 05\_0179, NSW Dept of Planning  
<http://majorprojects.planning.nsw.gov.au/files/6720/Project%20Approval.pdf>

Capital (2005e) Appendix F1 Flora & Fauna Assessment, Kevin Mills & Associates, App Num 05\_0179, NSW Dept of Planning  
<http://majorprojects.planning.nsw.gov.au/files/25017/Appendix%20F1%20A%20Flora%20and%20Fauna%20Text%20Mar%202005.pdf>

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<http://majorprojects.planning.nsw.gov.au/files/24925/CWF%20EA%20V1%2002%20EA%20Certification.pdf>

Coppin PA, Ayotte KA, Steggel N. (2003) “Wind resource assessment in Australia – A planners guide.” Wind Energy Research Unit, CSIRO Land and Water. Available as a free pdf at :  
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Cullerin (2009) Cullerin Range Wind Farm, Origin Energy Australia  
<http://www.originenergy.com.au/593/Cullerin-Range-wind-farm>

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<http://www.infigenenergy.com/media/413636/capital%20brochure.pdf>

Kann, S (2009) Overcoming barriers to wind project finance in Australia, Energy Policy 37 p3139-3148  
<http://www.sciencedirect.com/science/article/B6V2W-4W68F2M->

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NSW Planning (2005) State Environmental Planning Policy (Major Development) 2005  
<http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+194+2005+cd+0+N>

NSW Planning (2010) Fact Sheet Renewable energy development under Part 3A, April 2010  
<http://www.planning.nsw.gov.au/LinkClick.aspx?fileticket=2Mixl8sMTEg%3d&tabid=394&language=en-US>

RES (2010a) Taralga Wind Farm - Introduction  
<http://www.res-australia.com/wind-farms/taralga-wind-farm/introduction.aspx>

RES (2010b) Taralga Wind Farm - Timetable  
<http://www.res-australia.com/wind-farms/taralga-wind-farm/timetable.aspx>

RPV (2010) Work Progress Updates, Renewable Power Ventures (RPV),  
<http://www.rpv.com.au/work-progress-updates.aspx>

Silverton (2010a) Project Approval document, App Num 08\_0022  
<http://majorprojects.planning.nsw.gov.au/files/36262/Project%20Approval.pdf>

Silverton (2010b) Silverton Wind Farm, Environmental Assessment Appendix 5 Final Traffic and Transport Impact Study, App Num 08\_0022  
<http://majorprojects.planning.nsw.gov.au/files/24434/Appendix%205%20-%20Traffic%20and%20Transport.pdf>

Yass (2009a) Environmental Assessment, Epuron, App Num MP08\_0246,  
<http://majorprojects.planning.nsw.gov.au/files/44329/Yass%20Valley%20Environmental%20Assessment%20&%20Attachments.pdf>

Yass (2009b) Appendix 3 Biodiversity Assessments, NGH Environmental, App Num MP08\_0246,  
[http://majorprojects.planning.nsw.gov.au/files/43922/Appendices%20Vol%201%20\(1.3\).pdf](http://majorprojects.planning.nsw.gov.au/files/43922/Appendices%20Vol%201%20(1.3).pdf)

**The main report by Martin Nicholson & Peter Lang, plus a further addendum by D Burraston on Solar Farm Construction Rates is available on line at :**

<http://bravenewclimate.com/2010/08/12/zca2020-critique/>

The push for large scale renewables such as that proposed in the Beyond Zero Emissions - Zero Carbon Australia 2020 report is impossible. A detailed critique of the Beyond Zero Emissions report is available at Prof. Barry Brooks (University of Adelaide) Brave New Climate (BNC) website. The original BNC community analysis is here :

<http://bravenewclimate.com/2010/07/14/zca2020/>

Prof Ted Trainer (University of NSW) also published an excellent critique here :

<http://bravenewclimate.com/2010/09/09/trainer-zca-2020-critique/>